URS

January 21, 2009

Mr. Steven F. Nightingale, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794

Subject: Response to IEPA's November 25, 2008 Letter
Shell Oil Products US
Roxana, Illinois

Dear Mr. Nightingale:

On behalf of Shell Oil Products US (SOPUS), URS Corporation is submitting the enclosed documents in response to the Agency's November 25, 2008 letter. The schedule for this submittal was extended via telephone call with IEPA on December 12, 2008 and letter dated December 18, 2008. The following documents are included:

- Response to Comments document;
- *Route 111/Rand Avenue Subsurface Investigation Report*, originally dated August 19, 2008 (report text only); and
- *Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation Work Plan*, originally dated September 8, 2008 (entire document).

If you have any questions during your review, please contact Kevin Dyer, SOPUS project manager, at kevin.dyer@shell.com (618/288-7237), or me at bob_billman@urscorp.com (314/743-4108).

Sincerely,

Robert B Billman

Robert B. Billman
Senior Project Manager

Enclosures (original plus 2 copies)

Cc: Kevin Dyer, SOPUS
Mara McGinnis, IEPA
Chris Cahnovsky, IEPA
Lance Tolson, Shell Oil Company (electronic copy)
Sanjay Garg, Shell Global Solutions (electronic copy)

1001 Highland Plaza Drive West, Suite 300
St. Louis, MO 63110
Phone: 314.429.0100
Fax: 314.429.0462

Response to IEPA's November 25, 2008 Comments
Route 111/Rand Avenue Subsurface Investigation Report (August 19, 2008) and Dissolved Phase Groundwater Investigation Work Plan (September 5, 2008)

SOPUS appreciates the opportunity provided to respond to the Agency's comments on its August 19 Report, and September 5 Work Plan, as well as the extension to January 23, 2009 in which to provide this input.

Comment

1. *The document entitled Route 111/Rand Avenue Subsurface Investigation Report, August 19, 2008 cannot be approved based on the following deficiencies:*

   a. *In Section 1.0 of the subject submittal, SOPUS states that; "the April 18, 2008 Illinois EPA letter to SOPUS and the WRR, the IEPA approved the work plan and provided: 1) conditions related to information to be included in the report for this work; and 2) a condition requiring a Water Well Survey". However, the April 18, 2008 Illinois EPA letter (Log No. B-43-CA-6) did not approve the February 15, 2008 work plan. As stated specifically by the Illinois EPA in the letter:*

   "The subject document was not submitted for Illinois EPA review and approval; however, the following conditions and modifications apply to the results obtained from the groundwater investigations being conducted by SOPUS", which is followed by conditions and modifications.

   Therefore, in order to clarify, the letter's purpose was to provide a framework for the submittal of results obtained from groundwater investigation being conducted at the facility.

Response

The February 15, 2008 work plan was provided to IEPA for input. Although SOPUS would acknowledge consistent with the above that the IEPA did not formally approve the work plan, the Agency did provide substantive comments directing activities. The section will be modified to reflect the letter's purpose as described above.

Comment

   b. *The Illinois EPA does not consider a 15 foot well screen to be an appropriate length for intercepting a contaminant plume. In order to provide discrete sampling results in the investigation area, the facility must install all future monitoring wells with 5 or 10 foot well screens, and install nested wells as appropriate.*

Response

The comment is acknowledged, and shorter well screens (i.e., 10 foot) will be used in the future for monitoring purposes.

Longer screen lengths (15 foot) were used during the 2008 investigation program since the area had not previously been investigated. This was done to ensure that the screens intercepted the water table. Most of the monitoring wells along the WRR west fenceline have 25 foot long screens, and the amount of seasonal fluctuation or fluctuation due to variable WRR pumping was not yet known.

Comment

c. *A copy of the data collected during the spring of 2006 Cone Penetrometer Testing and Rapid Optical Screening Tool probes must be included in the report.*

Response

The comment is acknowledged and the CPT/ROST data have been integrated into the revised work plan, instead of the investigation report. The data are related to investigation in the area of well P-60, and this subject is covered in detail in the work plan. This information is included in Attachment A of the work plan.

Comment

d. *Sampling protocol outlined in Section 4.4 of this plan is unacceptable, based on the following:*

   i. *Sampling with the submersible pump and the hydrasleeve samplers must occur at the top of the water column so that any dissolved hydrocarbons will be detected during the sampling;*

   ii. *The "Standard Operating Procedure for Low-Stress (Low-Flow)/Minimal Drawdown Groundwater Sample Collection" on Page 29 of the USEPA May 2002 guidance emphasizes the importance of placing the pump at or near the known source of contamination within the screened interval;*

      A. *Discrete groundwater sampling at the location of the pump intake is dependent on the distribution of the hydraulic conductivity of the aquifer within the screened interval;*

      B. *The "Technical Guidance on Low-Flow Purging & Sampling and Passive Sampling" dated December 1999, David Nielsen and Gillian Nielsen provides requirements for pump placement. Section 2.5.2 Pump Placement states "In situations in which contaminants of interest are known to concentrate near the top or the bottom of the screened zone, it may be desirable to position the pump intake to target this zone."*

Response

The comments are acknowledged, and the sampling procedures followed for the work described in the August 19, 2008 report were those described in the February 15, 2008 work plan on which the Agency previously provided comments. Comment 1(d) above appears to be associated with the September 8, 2008 work plan, and may have been inadvertently associated with the August 19, 2008 report.

Section 4.6 of the work plan and the groundwater sampling SOPs have been modified to indicate that groundwater samples from wells and piezometers will be collected at the top of the water column (but not above the top of the well screen) and that the pump intake or HydraSleeve sampler will be positioned accordingly.

Comment

e. A copy of all referenced SOPs must be included in the report.

Response

Similar to the previous comment, this appears to be associated with the September 8, 2008 work plan (the August 19, 2008 report did not make reference to SOPs). Copies of the SOPs referenced in the work plan are included in Attachment C of the revised work plan.

Comment

f. The soil gas analytical data contained in the Subsurface Investigation report is not acceptable for the following reasons:

i. Section 2.3 of the report indicates soil vapor samples were collected from a total of sixteen different sampling points (consists of four different vertical intervals at four different locations). However, no information was provided regarding the construction of these sampling points to demonstrate that only soil gas from the vertical interval of interest was collected.

ii. No information was provided indicating that a leak detection compound was used to ensure the samples were properly collected.

iii. No information was provided to demonstrate that rigid-walled tubing made of nylon or Teflon were used in the collection of the samples.

iv. No information was provided regarding the procedures and data used to calculate the volume of air which should be purged from the sampling points prior to collection of soil gas samples for analysis.

It is extremely important that soil gas samples be properly collected and analyzed in accordance with procedures developed by Illinois EPA, USEPA and other governmental or quasi-governmental entities. It must be noted that Illinois EPA has proposed regulations regarding the indoor inhalation exposure pathway; this pathway is impacted by the levels of contaminants in soil gas at a facility. These proposed regulations have been filed with the Illinois Pollution Control Board (IPCB) and assigned Docket No. R09-009; a copy of these regulations can be found on the IPCB's internet site (www.ipcb.state.il.us).

Response

The comments are acknowledged. We agree with the importance of collecting samples using standardized, verifiable procedures. However, again, the sampling procedures followed were those described in the February 15, 2008 Work Plan that the Agency reviewed and on which it provided comments. Further, they were similar procedures to those developed for vapor sampling by the Hartford Working Group. These procedures are generally in line with those described in the proposed regulations referenced in the comment. {Note that the proposed regulations were promulgated in September 2008, several months after the sampling was performed} A leak detection compound was not used during sampling; however we will incorporate this step going forward.

Section 2.3 of the report has been revised to include a discussion of the construction of the vapor sampling points and additional information on sample collection. Limited information regarding the construction of the vapor sampling points is available. The summa canister and flow regulator assembly used were checked with a pressure gauge prior to sampling to verify there were not leaks in the setup; however, a leak detection compound was not used during sampling. Rigid-walled Teflon tubing was used in the sampling setup. The report provides additional information on the calculation of purge volumes.

Comment

2. *The work plan entitled, "Dissolved Phase Groundwater Investigation", dated September 5, 2008, cannot be approved based on the following:*

   a. *The primary and secondary transects are not sufficient to assess the nature and extent of hydrocarbons in areas of known contamination along the fenceline. At a minimum, in addition to the proposed groundwater sampling locations on Figure 4 of the subject work plan, the following groundwater sampling locations listed below must be included in the workplan required by Condition 3 below:*

      i. The intersection of Second and Chaffer Street;

      ii. The intersection of Third an Chaffer Street;

iii. The intersection of Fourth and Chaffer Street;

iv. The intersection of Fifth and Chaffer Street;

v. The intersection of Sixth and Chaffer Street;

vi. East to west transects should be proposed similar to those in the subsurface investigation;

vii. The east to west block of Third Street that les between Chaffer Street and Highway 111 (S. Central Ave.) requires a transect of investigation probes due to the product present in the P-60 area;

viii. The east to west block of Fourth Street that lies between Chaffer Street and Highway 111 (S. Central Ave.) requires a transect of investigation probes due to the product present in the P-60 area;

ix. In addition to the groundwater sampling locations required above, the Illinois EPA concurs that locations may be added based on field observations or results obtained during the work.

Response

The comments are acknowledged. SOPUS was developing a separate work plan, to be submitted to IEPA, to review the issue of product in the well P-60 area. However, in light of the Agency's comments the P-60 scope of work has been integrated into this work plan. Figure 4 in the September 5th work plan has been renamed Figure 7 and displays the combined scope of work as well as addressing IEPA's comments.

Comment

b. *First Street cannot be used to define the northern boundary of the dissolved groundwater plume, rather, a boundary of wells that show no exceedances of the applicable 35 Ill. Adm. Code, Part 620, Class I GQSs must be in place to define the lateral and vertical extent of the dissolved groundwater plume in all directions.*

Response

The comment is acknowledged and, once the plume of dissolved groundwater impact has been delineated via groundwater profiling, a monitoring well location plan will be proposed to the Agency. The reference to First Street was based on available information, and investigation will continue northward until the groundwater plume has been delineated.

Comment

c. *To facilitate the Illinois EPA oversight of the proposed work in the field, and to aid in the technical review of the proposed work and the results of the investigation, submit a site-wide map which depicts all monitoring points, wells and piezometers at the facility and area of investigation in the Village of Roxana.*

Response

Revised and/or new Figures 2 and 3 have been included in the work plan to show monitoring wells and piezometers on the WRR property and in the Village of Roxana.

Comment

d. *One set of Volatile Organic Compounds (VOCs) trip blanks (two 40 ml vials) be submitted with samples each day that samples are collected and for every ten (10) samples collected.*

Response

The comment is acknowledged. Section 5 of the work plan has been modified to describe that trip blank samples (consisting of two 40-mL vials each) will be collected and included in each cooler containing samples for VOC analysis and a minimum of one trip blank set for every ten investigative samples collected.

Comment

e. *Groundwater must be analyzed for the full list of VOCs, Semivolatile Organic Compounds (SVOCs), and Polycyclic Aromatic Hydrocarbons (PAHs).*

Response

The comment is acknowledged, and Section 7 of the work plan has been modified to include analysis of groundwater samples for Method 8260B VOCs, and Method 8270C SVOCs (including PAHs). The reporting list will include the constituents included in the subject methods.

The following analytical approach is proposed for groundwater profiling, as described in Sections 4.2 and 7 in the work plan:

- Groundwater samples from each profile location will be analyzed for VOCs.
- Groundwater samples for SVOC analysis will initially be collected from locations on the north-south transect closest to the refinery – labeled "Primary Profiling Transect" on

Figure 7. These samples will be analyzed for SVOCs on an expedited basis via local laboratory. The results will be compared to the decision criteria (e.g., GQS' shown in Table 6 of the plan). If the results from a location are less than the respective GQS', then the samples from the locations directly to the west, i.e., on the secondary and tertiary transects, will not be analyzed for SVOCs. If desired, these results and proposed decisions can be shared with IEPA in real time.

- Depending on the pace of sampling, decision-making and other logistical factors, sample bottles for SVOC analysis may be filled for locations along the secondary and tertiary transects. If this occurs, the samples will either be held at the laboratory or extracted and held, as necessary, to complete the process.

Table 4 has also been added to the work plan to help summarize and explain the activities planned at each proposed location.

Comment

f. Groundwater analysis must be in accordance with the applicable methods found in USEPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Final Update III (December 1996), or the most current SW-846 Method.

Response

Section 7 of the work plan has been revised to more clearly reference groundwater sample analysis via USEPA SW-846 methodologies.

Comment

g. SOPUS has installed one (1) skimmer pump at well P-60 to remove free product. SOPUS must submit, for Illinois EPA review and approval, the basis for the current cycle of six (6) times per day, and pumping for ten (10) minutes per cycle calculations.

i. Any modifications to the current pumping time and cycles per day must be approved by the Illinois EPA; and

ii. 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.

iii. If free product is discovered by SOPUS outside of the WRR property boundaries, a remediation method must be proposed within thirty (30) days to promptly remove any potential threat to human health and the environment.

Response

The comments are acknowledged. Section 3.2 of the work plan has been revised to provide more detailed information on the skimmer pump system installed in well P-60. In particular, it is important for the Agency to understand that the system was installed as an interim application. The system is currently being field-tested, and as such, different pumping configurations are being tested. The initial cycle time and frequency described in the plan were based on conversations with the pump manufacturer (Xitech). The cycle time has since been adjusted upward to 12 cycles per day for 10 minutes per cycle. We are continuing to monitor and optimize product recovery to the extent possible with this system, and as such we request that the Agency withdraw the statement in comment (*i*) above ("*Any modifications to the current pumping time and cycles per day must be approved by the Illinois EPA"*). This statement is more appropriate once a particular long term remedy has been selected.

SOPUS acknowledges comment (*ii*) above with respect to corrective action beyond the facility boundary where necessary to adequately protect human health and the environment from historical SOPUS releases migrating from the facility.

If free product is discovered outside the WRR property boundary through the course of the investigation described in the subject work plan, SOPUS will commit to meet with the Agency to discuss this issue within 30 days of the completion of field activities. SOPUS is committed to promptly mitigate actual threats to human health and the environment for which it is accountable.

Comment

h. The facility must utilize available technologies to adequately determine FPH/residual hydrocarbon contamination present in the subsurface.

Response

Please clarify the Agency's intent and meaning of the comment, as we believe that *available technologies* have been and are proposed to be used to assess hydrocarbon impact in the subsurface. Prior investigative efforts have included using ROST and MIP screening technologies as well as conventional soil sampling. The proposed scope of work includes CPT/ROST and soil sampling and field analysis using Sudan IV oil screening kits. Let us know if you are aware of other methods that would be helpful to achieve the goals of this plan.

Comment

i. *Similar to the deficiency listed in 1.e above, Section 4.6 of the Dissolved Phase Groundwater Investigation Work Plan contains very limited information as to the collection of soil gas samples. Specifically, a reference is made to a standard operating procedure, but a copy of that procedure is not provided. In addition, the other deficiencies noted above also apply to the information in this section.*

Response

Section 4.8 (formerly Section 4.6) has been revised to include a more detailed discussion of the collection of soil gas samples. SOPs referenced in the work plan have also been included as an attachment.

Refer to the Response to Comment 1.f above and Section 4.8 of the work plan for soil gas sampling procedures.