INDOOR AIR SAMPLING PLAN
ROXANA JUNIOR AND SENIOR HIGH SCHOOL
ROXANA, ILLINOIS

Introduction

On July 12, 2011, the Illinois Environmental Protection Agency (IEPA) requested that Shell Oil Products US (SOPUS) conduct soil gas and indoor air sampling of the Roxana Junior and Senior High School, located at 401 N. Chaffer Ave. in Roxana, Illinois.

The school grounds are northeast of the current residential sampling study area in Roxana, and directly north of the WRB Refining LP Wood River Refinery (**Figure 1**).

This plan describes the general approach and proposed scope of work to sample the schools. Specific procedures and protocols will be the same as those approved by the IEPA for the residential sampling in Roxana (SOPUS 2011 and IEPA 2011).

Sampling Approach

The junior and senior high school campus consists of several buildings, some of which are connected together (**Figure 1**). The closest buildings are located approximately 900 feet north of the northern boundary of the study area for residential sampling.

The sources of petroleum impact currently being investigated by SOPUS in Roxana are related to: 1) former operations at the Wood River Refinery; and 2) a 1986 release of benzene from a pipeline near the intersection of Route 111 and Rand Avenue. The possible routes for migration of petroleum constituents from these sources to the school area, if any, are limited to groundwater and soil gas migration. Based on these potential migration scenarios, the school buildings on the southern end of the campus (i.e., just north of the running track) would be most likely to exhibit impact (if present), and as such are proposed for sampling. These buildings are shaded yellow on the figure. This approach of initially sampling in the buildings closest to the potential source areas is consistent with the approach that was proposed to, and approved previously by, IEPA, and is being used in the residential sampling in Roxana. Should the results of this sampling indicate a potential concern, then additional sampling will be performed in a "step out" fashion in the school buildings to the north, consistent with the residential sampling approach.

Sampling Program

Consistent with the residential sampling, the work is expected to be conducted by URS using a two-person team(s) overseen by an IEPA or Illinois Department of Public Health (IDPH)

representative. This may be adjusted depending on the field needs and schedule. The sampling program will consist of the following general steps.

Prefield Activities

We will meet with representatives of the school district, IEPA, and IDPH to tour the school buildings. The tour will focus on developing an understanding of the construction of the buildings and accessibility for sampling. It appears that the one or more of the buildings has rooms/offices partially below ground. Based on this, it is anticipated that one subslab port per building would be installed near the southern wall of each of the buildings. If the building is slab on grade, the subslab port would be through that floor near the southern wall. In addition, indoor air samples will be collected, one from the partially subsurface and one from the first floor above the ground surface. Obviously, if the building is slab on grade only one indoor air sample will be collected. In addition, consistent with the residential monitoring, we will identify potential indoor emission sources that could complicate the interpretation of the indoor air measurements, and request that these items be removed at least 48 hours prior to the testing.

SOPUS provided school officials with an access agreement on July 21, 2011; this is needed to authorize the sampling.

Sampling Activities

Indoor air will be screened for potentially combustible vapors with a flame ionization detector (FID), photoionization detector (PID), a lower explosive limit (LEL) meter, and methane detector. Measurements will be collected from the first floor and basement areas. Measurements will be made at breathing zone height and, in basement areas within two inches of floor drains, visible cracks in floors and walls, and penetrations (e.g., utility entrances). Personnel will not physically enter crawl space areas or confined spaces. Screening measurements will be recorded. Trigger levels will be those specified for the residential sampling (SOPUS 2011, IEPA 2011). The initial triggers include a combustible gas level greater than non-detect or an FID concentration of greater than 20 parts per million (ppm).

A visual inspection of the subject buildings will be conducted along with an interview with a knowledgeable school district representative(s). The results of this inspection will be documented via photographs and the *Walk Through Assessment Survey* form.

The indoor air samples will be collected using 6-Liter stainless steel canisters set to draw air over a 24 hour period. Canisters will be generally placed on the first floor and in the basement areas, and located as described above. At least one outdoor, upwind, sample will also be collected. The samples will be sent to Air Toxics Ltd. laboratory for testing. The analyte list will be the same as that used for the residential indoor air sampling program. Indoor air samples will be collected and analyzed following the procedures used in the residential sampling (SOPUS 2011, IEPA 2011).

Subslab soil gas samples will be collected from subslab probes installed at designated locations in the building basements, if present. Samples will be collected from beneath the first floor if a building does not have a basement. Samples will be collected using 1-Liter stainless steel canisters set to intake over a 2 hour period. Field screening of the soil gas will be conducted via Tedlar bags using the instruments used for indoor air field screening. The analyte list for testing will be the same as that used for the residential sampling. The subslab probe installation and sampling procedures, including helium leak check, will be the same as those used for the residential sampling. Trigger levels will be those specified for the residential sampling, e.g., combustible gas level greater than 1% of the LEL or an FID concentration of greater than 500 parts per million (ppm).

Data Review and Reporting

To the extent possible, the results of the work will be compiled and reported prior to the beginning of the Fall 2011 school session (which begins August 19th). To accomplish this, the laboratory will analyze samples on an expedited basis. URS will review the results and develop a sampling report. Based on the anticipated schedule, the initial report will in all likelihood be a "preliminary results memo" conveying the field screening and laboratory results with limited interpretation. A separate report, similar to the residential sampling reports, will be developed and submitted within approximately two weeks of receipt of laboratory results. The reports will be issued to the IEPA, IDPH and Roxana school district.

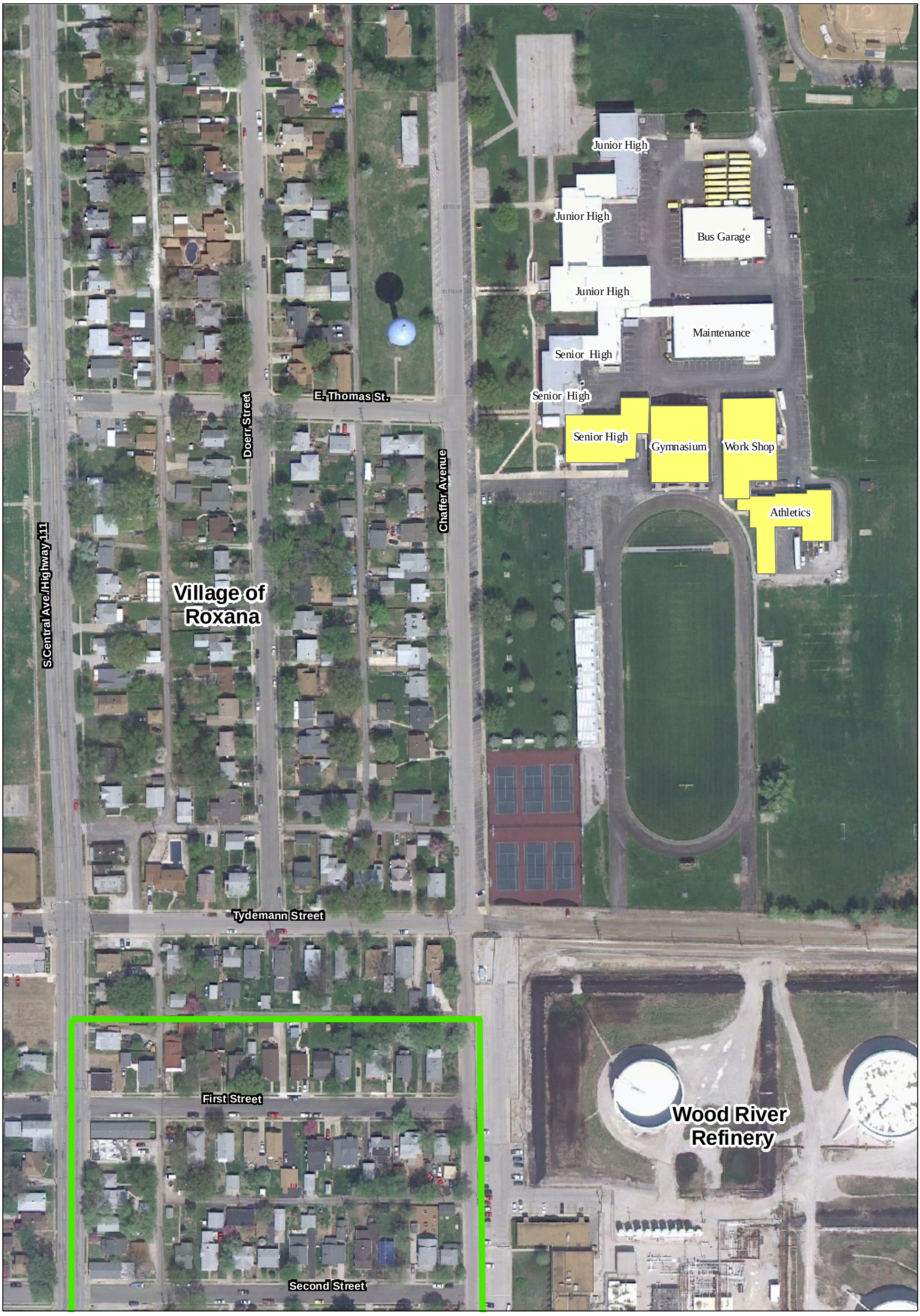
Schedule

The work is expected to occur once access is obtained from the school board. To the extent possible, the work will be performed prior to the beginning of school, as described previously. This schedule is based on sampling activities occurring the weeks of July 25th and August 1st.

References

SOPUS 2011, *Vapor Intrusion Investigation Workplan*, Roxana, Illinois. Prepared by URS Corporation, revised March 29, 2011.

IEPA 2011, Letter to SOPUS approving the subject workplan with comments, dated April 6, 2011.



Study Area for Residential Sampling Project

Building Proposed for Sampling

N

0 100 200 400 Feet

Indoor Air Sampling Program-
Roxana Jr & Sr High School Map

map:sej

18July2011

Project No. 21562593

FIGURE 1

URS