SAMPLING PLAN

FOR

ROXANA COMMUNITY UNIT SCHOOL DISTRICT NO. 1

ROXANA, ILLINOIS

JUNE 2012

PROJECT NUMBER: 12-18782

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INTRODUCTION

URS, as a contractor to Shell Oil Products US, conducted air monitoring at the Roxana High School/Jr. High School Complex located at 401 Chaffer Ave. The sampling was requested by the Illinois Environmental Protection Agency (IEPA).

The air sampling was requested to address the potential for vapor intrusion inside the school building from a subsurface source. Historical petroleum releases have occurred both on and near the refinery. The releases involve several petroleum hydrocarbons, including Benzene. URS is also the contractor working for Shell to identify and remediate the sub-surface chemical contamination in and around the refinery. Multiple residential properties in the community have also been evaluated for vapor intrusion by URS.

INITIAL SURVEY RESULTS

Air samples were collected at the following locations:

- Large Gym Building
- Small Gym Building
- Vocational Building
- Workshop Building
- Upwind outside ambient air.

All samples were collected during a 24 hour period starting between August 4 and 5, 2011. Samples were collected in accordance with EPA method T0-15 and analyzed for 14 specific petroleum hydrocarbons.

Our analysis of the methodology and sample results indicated the following concerns:

- Ambient air sample results for Benzene are 34 times greater than the highest indoor sample. The High School is not air conditioned and windows were open during part of the sampling time. Indoor samples, if representative, should not be significantly less than outdoor ambient samples. Assuming outside ambient samples are representative they are 14 times higher than the CDC minimum risk level (MRL) for long term Benzene exposure.

- There are numerous tunnels in the school complex. These tunnels are a natural migration path for vapor intrusion. Occupied areas adjacent to tunnel hatches should be chosen to identify potential vapor intrusion. One sample collected in the workshop crawlspace indicated the highest level of petroleum hydrocarbons. The sample results were approximately 23 times the next highest building and 5.5 times outdoor levels. These results indicate a potential vapor intrusion source and warrant further study.

- Four (4) samples in the High School/Junior High School complex is very light coverage for a building of this size.

- Samples were collected over one time period. Samples should be collected on at least two (2) days with variable meteorological conditions. Two days of sampling allows us to better calculate mean levels.

- Modeling and representative sub-surface sampling has predicted the contamination plume. The Senior/Junior High School was chosen based on the proximity to the model predicted contamination. Subsurface migration paths can be affected by many factors such as underground utilities, topography and construction. All schools have subsurface tunnels which distribute commercial and domestic water services. The two other Roxana schools are in close proximity to the refinery. Based on the amount of human exposure, hours in the schools and the age of the occupants, all schools should be tested.

Our proposed sampling plan has been developed because of these concerns.

PROPOSED AIR SAMPLING LOCATIONS/PHASES

Three (3) different types of air sampling locations are proposed. Two (2) t**unnel sample locations** per phase have been chosen for each school. While these samples are not indicative of occupant exposure, they can assist us in identifying potential source and the need for remedial action before school resumes in the fall. One upwind **outside air ambient sample** per phase should be collected concurrent with the inside building sample.

The following numbers of **inside samples** are proposed per phase for each building:

- Central Elementary: 6 occupied areas and 2 tunnels
- South Roxana Elementary: 6 occupied areas and 2 tunnels
- Jr./Sr. High School: 14 occupied areas and 2 tunnels

Exact locations of tunnel and inside samples are shown on drawings in Appendix I.

Two (2) separate sampling phases should be performed at least seven (7) days apart to test for variability. Outside barometric conditions should be above standard (29.92" Hg) on one phase and below standard on the other phase.

LABORATORY ANALYSIS

An independent laboratory should be used to prepare sampling SUMMA canisters and analyze the samples. Samples should be analyzed using EPA method TO-15 for a comprehensive list of chemicals. Appendix II lists the analytes that should be included and minimum reporting levels.

The laboratory performing the analysis should be approved as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for EPA TO-15.

We have identified the following three laboratories as candidates for the analysis:

- ALS Environmental
  4388 Glendale-Milford Road
  Cincinnati, OH 45242

- Contest Analytical Laboratory
  39 Spruce St.
  East Longmeadow, Ma 01028

- Galson Laboratories
  6601 Kirkville Rd.
  East Syracuse, NY 13057

SAMPLING PROCEDURES

Schools should be operated in normal occupied mode for all sampling. HVAC systems need to be in occupied mode so fresh air cubic feet per minute (cfm) rates are approximate for fully occupied buildings (approximately 13 cfm per occupant). If possible, we would prefer to sample non-air conditioned spaces with windows closed and mechanical fresh air ventilation systems on.

Five (5) days prior to each sampling phase, activities in the building that introduce any volatile organic chemicals (VOC's) through maintenance or student activities should be halted. All samples will be collected over approximately a 7-hour period which is reflective of a normal school day exposure.

School District personnel and/or student representatives should be present for the placement of al SUMMA Canisters. SUMMA canisters and flow controllers will be mailed directly from the laboratory to the School District.

Together with the air sampling technician, the following information will be recorded for each sample:

- SUMMA Canister ID #
- Flow Controller ID #
- Initial Vacuum
- Sample location from Appendix I drawings
- Start date and Time
- Final Vacuum
- End date and time (approximately 7 hours after start time)
- Additional information as requested by the laboratory.

Once a phase of sampling is complete, SUMMA canisters and flow controllers will be shipped directly from Roxana to the laboratory. Chain of custody (COC) forms will be completed by the air sampling technician and witnessed by the District Representative.

Air sampling results should be available within 10 business days of the laboratory's receipt of samples. We are requesting copies of the COC forms and laboratory data be mailed and e-mailed simultaneously to the District's Environmental Representatives and Company/Government contacts. The District's environmental contact is:

Mr. Geoffrey J. Bacci, MS, CIH
Aires Consulting Group, Inc.
1550 Hubbard
Batavia, Illinois 60510
gjb@airesconsulting.com

We are not requesting a formal report from any company contractors or government representatives. The District will utilize their Environmental Representative to interpret the data and report to the school community.

PROFESSIONAL CERTIFICATION

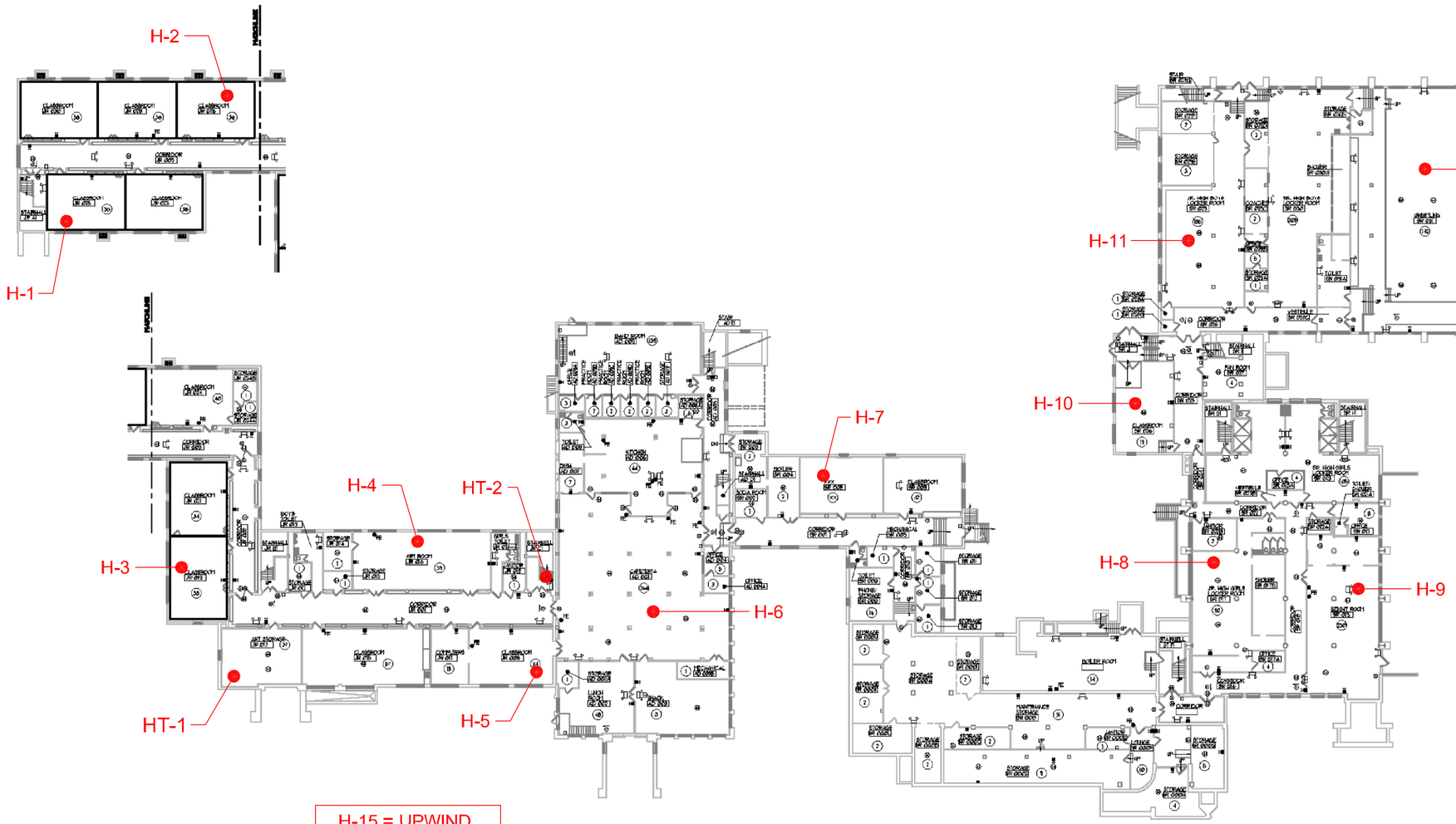
Aires Consulting Group, Inc. has developed this air sampling plan to assist the Roxana School District evaluate environmental conditions inside their buildings. This study was not intended to include every health hazard or exposure that may be present in the facility; only those items specifically addressed in the plan were evaluated. If you have any questions concerning this study please let us know.

Respectfully submitted,

AIRES CONSULTING GROUP, INC.

Geoffrey J. Bacci, M.S., C.I.H.
Principal

APPENDIX I



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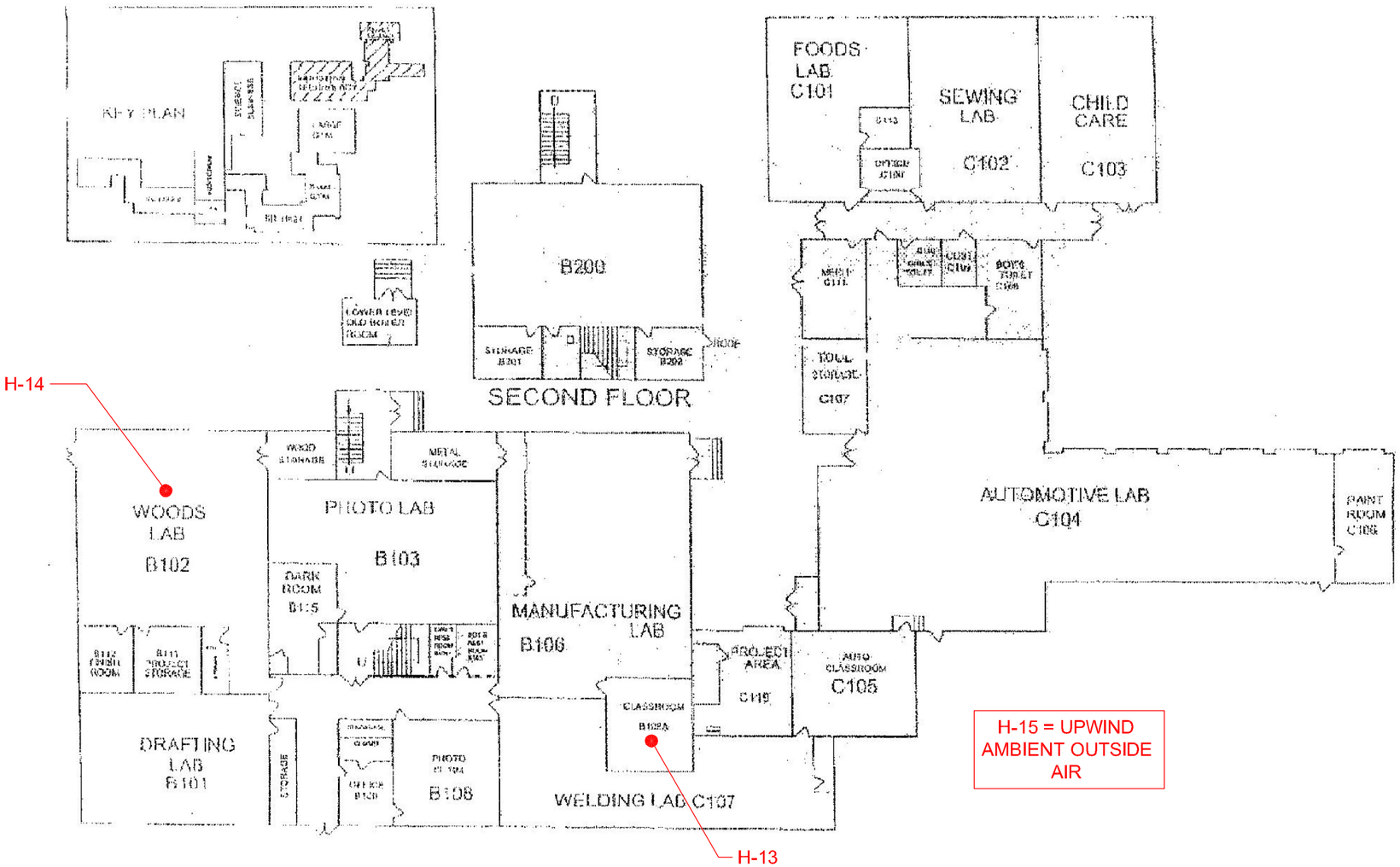
ROXANA SCHOOL DISTRICT

FIGURE 1

JR. / SR. HIGH SCHOOL
AIR SAMPLING LOCATION PLAN

SCALE:	N.T.S.	DRAWN BY:	JMO
PROJECT:	12-18782	DATE:	6.6.12



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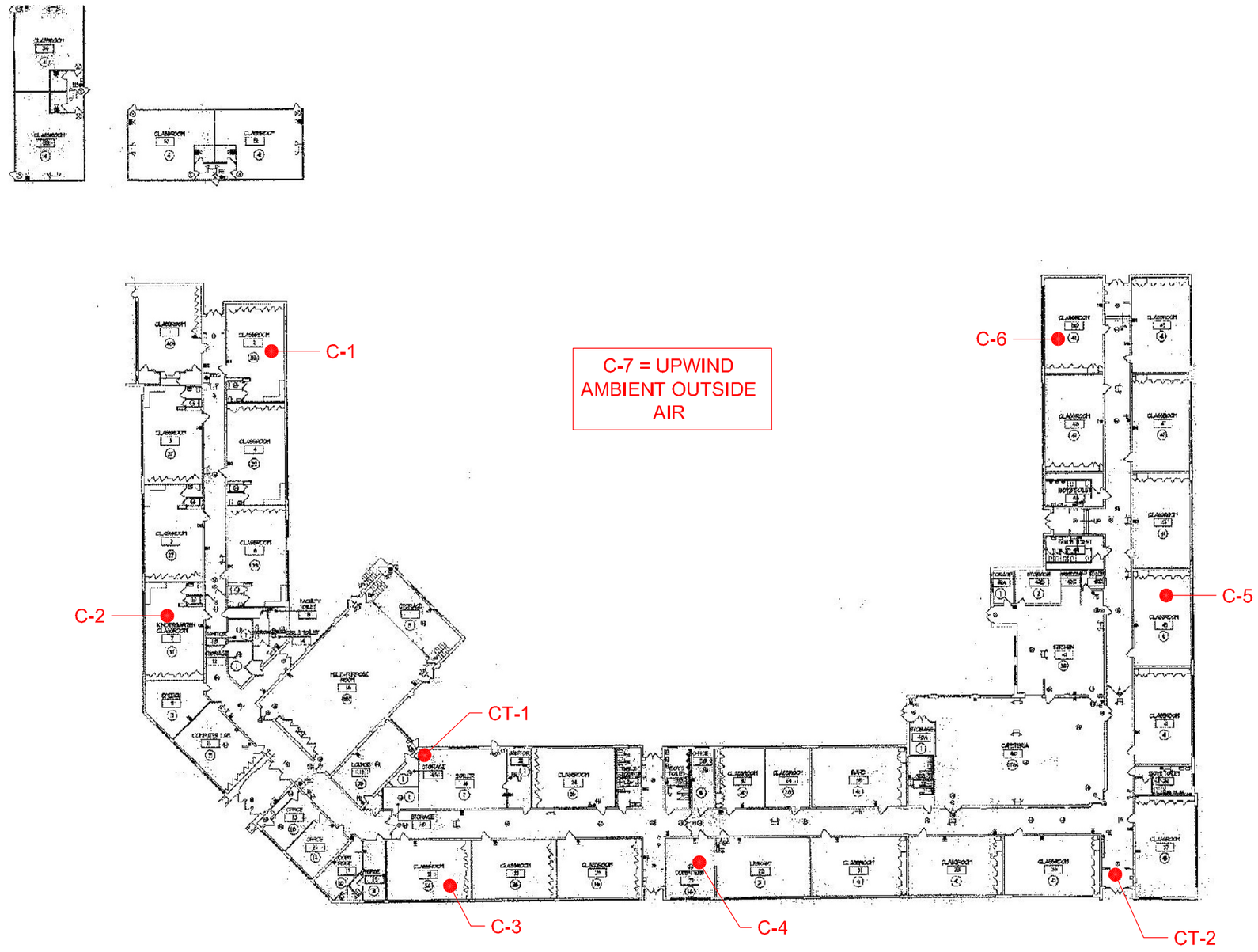
ROXANA SCHOOL DISTRICT

FIGURE 2

JR. / SR. HIGH SCHOOL
AIR SAMPLING LOCATION PLAN

SCALE: N.T.S.	DRAWN BY: JMO
PROJECT: 12-18782	DATE: 6.6.12



C-7 = UPWIND AMBIENT OUTSIDE AIR

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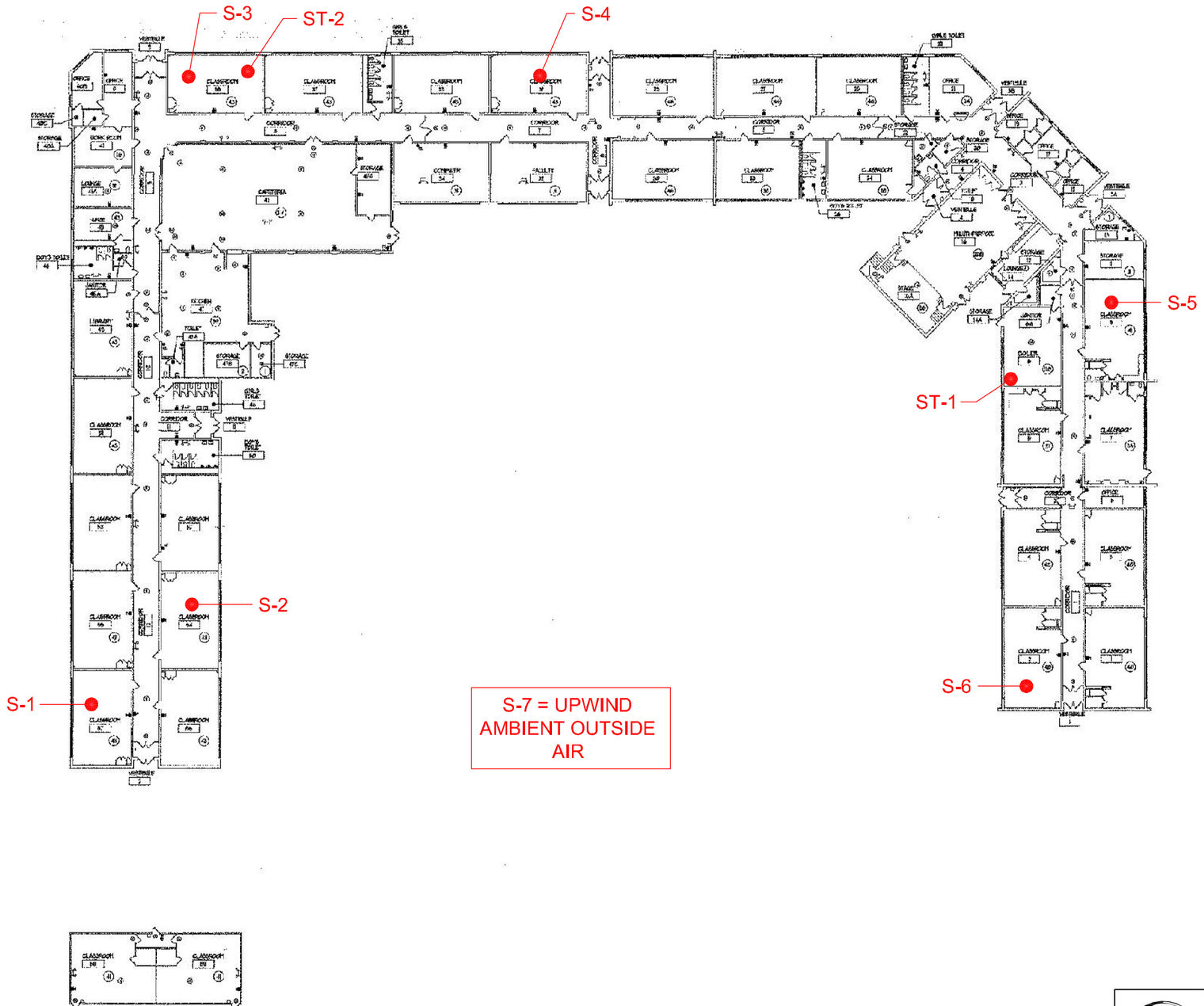
ROXANA SCHOOL DISTRICT

FIGURE 3

CENTRAL ELEMENTARY
AIR SAMPLING LOCATION PLAN

SCALE: N.T.S.	DRAWN BY: JMO
PROJECT: 12-18782	DATE: 6.6.12



S-7 = UPWIND AMBIENT OUTSIDE AIR

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ROXANA SCHOOL DISTRICT

FIGURE 4

SOUTH ROXANA
AIR SAMPLING LOCATION PLAN

SCALE: N.T.S.	DRAWN BY: JMO
PROJECT: 12-18782	DATE: 6.6.12

APPENDIX I I

Analyte	Units	Minimum Reporting Limit
Acetone	ppbv	2
Benzene	ppbv	0.05
Benzyl chloride	ppbv	0.05
Bromodichloromethane	ppbv	0.05
Bromoform	ppbv	0.05
Bromomethane	ppbv	0.05
1,3-Butadiene	ppbv	0.05
2-Butanone (MEK)	ppbv	2
Carbon Disulfide	ppbv	0.5
Carbon Tetrachloride	ppbv	0.05
Chlorobenzene	ppbv	0.05
Chloroethane	ppbv	0.05
Chloroform	ppbv	0.05
Chloromethane	ppbv	0.05
Cyclohexane	ppbv	0.05
Dibromochloromethane	ppbv	0.05
1,2-Dibromoethane (EDB)	ppbv	0.05
1,2-Dichlorobenzene	ppbv	0.05
1,3-Dichlorobenzene	ppbv	0.05
1,4-Dichlorobenzene	ppbv	0.05
Dichlorodifluoromethane (Freon 12)	ppbv	0.05
1,1-Dichloroethane	ppbv	0.05
1,2-Dichloroethane	ppbv	0.05
1,1-Dichloroethylene	ppbv	0.05
cis-1,2-Dichloroethylene	ppbv	0.05
trans-1,2-Dichloroethylene	ppbv	0.05
1,2-Dichloropropane	ppbv	0.05
cis-1,3-Dichloropropene	ppbv	0.05
trans-1,3-Dichloropropene	ppbv	0.05
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ppbv	0.05
1,4-Dioxane	ppbv	0.05
Ethanol	ppbv	2
Ethyl Acetate	ppbv	0.05
Ethylbenzene	ppbv	0.05
4-Ethyltoluene	ppbv	0.05
Heptane	ppbv	0.05
Hexachlorobutadiene	ppbv	0.05
Hexane	ppbv	2
2-Hexanone (MBK)	ppbv	0.05

Analyte	Units	Minimum Reporting Limit
Isopropanol	ppbv	2
Methyl tert-Butyl Ether (MTBE)	ppbv	0.05
Methylene Chloride	ppbv	0.5
4-Methyl-2-pentanone (MIBK)	ppbv	0.05
Naphthalene	ppbv	0.05
Propene	ppbv	2
Styrene	ppbv	0.05
1,1,2,2-Tetrachloroethane	ppbv	0.05
Tetrachloroethylene	ppbv	0.05
Tetrahydrofuran	ppbv	0.05
Toluene	ppbv	0.05
1,2,4-Trichlorobenzene	ppbv	0.1
1,1,1-Trichloroethane	ppbv	0.05
1,1,2-Trichloroethane	ppbv	0.05
Trichloroethylene	ppbv	0.05
Trichlorofluoromethane (Freon 11)	ppbv	0.05
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ppbv	0.05
1,2,4-Trimethylbenzene	ppbv	0.05
1,3,5-Trimethylbenzene	ppbv	0.05
Vinyl Acetate	ppbv	0.1
Vinyl Chloride	ppbv	0.05
m&p-Xylene	ppbv	0.1
o-Xylene	ppbv	0.05