The electronic version of this file/report should have the file name:

Site Plan. HW. 932052. 1990-01-26. GW_Monitoring_Plan.pdf

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example: *letter . Year-Month . File Year-Year . pdf*

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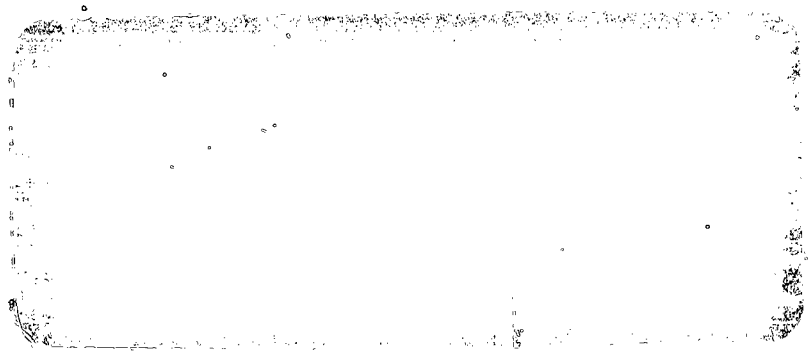
Project Site numbers will be proceeded by the following:

Municipal Brownfields - B
Superfund - HW
Spills - SP
ERP - E
VCP - V
BCP - C

BEL-1990-7-124



Golder Associates Inc.
CONSULTING ENGINEERS

FINAL REPORT

GROUNDWATER MONITORING PLAN
BELL AEROSPACE TEXTRON
WHEATFIELD PLANT
NIAGARA, NEW YORK

Submitted to:

Bell Aerospace Textron
2221 Niagara Falls Blvd.
Niagara, New York

DISTRIBUTION:

5 copies - Bell Aerospace Textron
2 copy - Golder Associates Inc.

January 1990

893-6262

Golder Associates Inc.
CONSULTING ENGINEERS

January 26, 1990 Project No. 893-6262

Bell Aerospace Textron
2221 Niagara Falls Blvd.
Niagara, NY 14304

Attn: Mr. Brian Smith

RE: FINAL, GROUNDWATER MONITORING PLAN, BELL AEROSPACE TEXTRON WHEATFIELD PLANT, NIAGARA, NEW YORK

Gentlemen:

Please find enclosed the Final Groundwater Monitoring Plan for the Bell Aerospace Textron, Wheatfield Plant, Niagara, New York.

If you have any questions, please call.

Very truly yours,

GOLDER ASSOCIATES INC.

Richard C. F. King, P.Eng.
Associate

FG/RCFK/pab
A:6262JCL

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1.0 INTRODUCTION

The Bell Aerospace Textron (BAT) Wheatfield Plant has a Groundwater Monitoring Plan approved by the New York State Department of Environmental Conservations (NYSDEC). This monitoring plan was revised to include several of the Phase IV and Phase V monitoring wells. The revised Groundwater Monitoring Plan includes seven overburden wells, twenty-four Zone 1 bedrock wells and two Zone 3 bedrock wells, and one sewer trench well, totaling thirty-four wells in all.

The samples collected from these wells will be analyzed for volatile organics, pH and specific conductance. Volatile organic analyses will be performed in accordance with EPA method 624 and 524.2. Field measurements will be made of pH, specific conductance and temperature.

2.0 SAMPLING OBJECTIVES

The results of samples collected and analyzed in accordance with this groundwater monitoring plan will be used to:

- further define the nature and extent of contamination;
- assess the changes with time in the groundwater chemistry;
- to monitor the possible plume expansion;

3.0 SAMPLE LOCATION AND FREQUENCY

Table 1 and Figure 1 present the sample location, the analytical methods to be used, and the sampling frequency.

For the first quarter 1990 (see Golder Associates, 1990, "Sampling and Analysis Plan, RCRA Facility Investigation"), a total of 85 wells will be sampled and analyzed for the TCL volatiles (85 samples), TCL semi-volatiles (44 samples), and TCL PCBs (41 samples). For the 2nd, 3rd, and 4th quarters 1990, another 51 samples will be collected from 17 wells proposed to be sampled quarterly (see Tables 1 and 2), and analyzed using EPA method 524.2.

For 1991, 17 wells will be sampled quarterly (68 wells) using EPA method 524.2 and 17 wells will be sampled annually (17 samples) using EPA method 624 (Tables 1 and 2).

4.0 SAMPLE DESIGNATION

Currently, the samples collected from the Bell site are identified by the site code, the well designation, and sampling data.

The site code is "BAT", which stands for Bell Aerospace Textron.

The well designation will be used in accordance with the list of wells included in the Groundwater Monitoring Plan (Table 1) and the map with the well location (Figure 1).

Sampling date is a code consisting of 6 characters with the following structure:

yymmdd

where: yy = year
mm = month
dd = day

5.0 SAMPLING EQUIPMENT AND PROCEDURES

The protocols for sampling have been developed to minimize contamination of aquifer water samples during sampling and to minimize sample degradation prior to analytical testing.

The following is a step-by-step listing of the procedures for obtaining groundwater quality samples from the wells.

1. Inspect the well for damage or inadvertent entry. Note any such evidence on the Sample Collection Form.

2. Before and after use, triple rinse the water level sounding probe and the bottom two feet or more of cable with distilled water.

3. Measure and record the depth to the water surface in the well from the top of the riser pipe.

4. Calculate the volume of water in each well. Purge each well by removing about 3 to 5 times this volume, or if the well yield is low, by removing water to within six inches of the bottom of the well (purged "dry").

5. A vacuum dewatering system (peristaltic pump) will be used to purge the wells. The dewatering system will consist of a polyethylene tube connected to two 5-gallon bottles in series and a portable vacuum pump. Each well will have a dedicated length of tubing to prevent cross-contamination between the wells. The lower end of the tube will be positioned just below the water surface and lowered as necessary during pumping. This process will allow stagnant water to be removed from the well and allow representative formation water to flow into the well. The volume of water removed from each well will be measured and recorded and the purge water will be placed in a 55-gallon drum at BAT for proper disposal.

6. Immediately after purging, the wells will be sampled. Wells with slow recovery will be sampled for volatile organics within 3 hours of purging, if possible. Recovery of the low yield wells will be monitored so that sampling for volatiles can be done as quickly as practicable.

Proper documentation of the delay will be provided.

7. Groundwater samples for analysis will be obtained from the wells by bailing. Bailers used to obtain samples from more than one well will be decontaminated. New polypropylene rope will be used for each well.

8. When sampling, the bailer will be lowered slowly into the well to minimize disturbance of the water in the well. The bailer will be used to obtain samples from the bottom of the well. The initial sample could have been subject to some degassing, so this sample will not be used for volatile organic analyses. The first bailer volume removed will be used for field measurements of pH, specific conductance and temperature.

9. A glass beaker will be filled with water from the well for measuring temperature, pH and specific conductance. The pH and specific conductance meters' probes will be triple rinsed with distilled water before and after use. A minimum of four measurements shall be made for each parameter. The temperature data will be used to correct specific conductance data to the 25 degree centigrade standard condition.

10. Temperature, pH and specific conductance measurements will be recorded on the Sample Collection Form.

11. After obtaining the field measurement samples, the required volume of water for the volatile organic samples (about 40 ml) will be bailed from the well. The laboratory-prepared container will be filled to overflowing and covered with a Teflon septa and capped so that no air bubbles will be present in the sample. If air bubbles are encountered, the container will be refilled and recapped until bubbles are removed.

12. Sample container labels will be affixed to the sample container and the samples will be placed in an insulated container so that they can be kept cool, but not frozen (approximately 4°C).

13. Chain-of-Custody documentation will be completed.

14. Samples kept in a cooler will be shipped to the laboratory by courier service on the day of sampling. Analyses will be carried out within the specified holding time. The laboratory involved will be notified by the Sampling Team Project Manager prior to sampling to ensure capability of the laboratory to meet all holding times.

5.1 Sample Custody

The Field Survey Form will be filled out by the sample collector for each sample point. The Field Survey Forms will be provided as an appendix in the Sampling Report. The following information is to be documented:

1. Site name (BAT), sample ID, and other identifiers;
2. Date, time and elapsed hours from sample start to sample finish;
3. Information regarding purging the well prior to sampling;
4. Field test results including pH, temperature and specific conductance;
5. Sampling method used, such as bailer, vacuum pump, etc. Note the construction material of equipment in margin;
6. Type of sample and information which appears significant (i.e., sampled in conjunction with regulatory authorities or auditing personnel);
7. Field observations/sampling conditions (e.g., weather);
8. Appearance of sample, such as color, turbidity, sediment, oil on surface, DNAPL, etc.;
9. Sampler's identity and signature.

In order to maintain the legal integrity of the groundwater samples, strict chain-of-custody procedures will be followed. To ensure that the samples have not been altered from the time the sample is collected until the sample is

in the custody of the analytical laboratory, the samples will be:

1. In the sampler's possession,
2. In the sampler's view, after being in his possession,
3. In the sampler's possession and is then locked in a designated, secure area to prevent tampering, or
4. In a sample shuttle sealed with a tamper proof chain-of-custody seal.

A written Chain-of-Custody Record of the transference of samples will be maintained.

The Chain-of-Custody Record will be attached to the sample container at the time the sample is collected. All sample bottles will be properly labeled. When transferring the possession of samples, the person making the transference will sign and record the date and time on the record. The number of custodians in the chain of possession will be as few as possible.

The Chain-of-Custody Record form will be sealed in the sample chest and transported to the laboratory. Upon receipt by the lab, the seal is broken, and the condition of the samples, temperature of the chest, date and time are recorded on the form by the person receiving the sample.

The Chain-of-Custody Record form will be included in the technical analytical report prepared by the laboratory.

5.2 Health and Safety

Personnel performing the sampling will adhere to all safety requirements for contractors and/or visitors of the BAT facility. Personnel performing the sampling will, at a

minimum, wear suitable field boots, hard hat, and protective gloves and goggles. Other safety equipment which is deemed necessary as the program progresses will be used by sampling personnel (see attached Health and Safety Procedures, Appendix I).

5.3 Reporting

The Field Sampling subcontractor will prepare a daily field report regarding work completed, weather conditions, delays, problems, and personnel involved during the days work, within two weeks after completion of the sampling program. The Field Sampling subcontractor will complete and submit 10 copies of the written report to Bell Aerospace Textron (Mr. Brian Smith) regarding the sampling program. This report will provide a brief narrative of the sampling program, define all samples taken, shipping dates, Chain-of-Custody Reports, Field Survey Forms, groundwater elevations prior to purging the wells, and any comments pertaining to this Groundwater Sampling Plan.

The analytical laboratory will report the results of chemical analysis to the contractor within 6 weeks after the completion of the field sampling program. The analytical results will be compiled in report form by the sampling subcontractor. Ten copies of this report will be sent to Bell Aerospace Textron.

GOLDER ASSOCIATES INC.

Floring Gheorghiu
Senior Engineering Geologist

Richard C. F. King, P.Eng.
Associate

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TABLE 1

MONITORING WELLS INCLUDED IN
GROUNDWATER MONITORING PLAN

Well Designation	*Well Depth	ANALYTICAL METHOD EPA 524.2 QUARTERLY	ANALYTICAL METHOD EPA 624 ANNUALLY
OVERBURDEN WELLS			
B-8	19.60	x	
87-10(0)	18.50		x
87-19(0)	13.50	x	
87-22(0)	12.00	x	
87-23(0)	17.00	x	
89-13(0)	16.00	x	
89-14(0)	NA	x	
TOTAL SAMPLES PER SAMPLING EVENT		6	1
TOTAL SAMPLES PER YEAR		24	1
SEWER TRENCH WELLS			
8W89-1	15.5		x
TOTAL SAMPLES PER SAMPLING EVENT		0	1
TOTAL SAMPLES PER YEAR		0	1
ZONE 1 WELLS			
B-15	28.77		x
87-9(1)	34.70		x
87-12(1)	33.20		x
87-18(1)	33.20		x
87-19(1)	34.80		x
87-20(1)	31.40		x
87-21(1)	34.00		x
87-22(1)	33.00		x
89-1(1)	35.00		x
89-3(1)	35.60	x	
89-4(1)	31.70		x
89-5(1A)	42.33		x
89-5(1B)	29.00		x
89-6(1)	51.20	x	
89-7(1A)	55.90	x	
89-7(1B)	32.30	x	
89-8(1)	52.60	x	
89-11(1)	NA		x
89-13(1)	NA	x	
89-14(1)	NA	x	
89-15(1)	NA	x	
89-16(1)	NA	x	
89-17(1)	NA	x	
89-18(1)	NA	x	
TOTAL SAMPLES PER SAMPLING EVENT		11	13
TOTAL SAMPLES PER YEAR		44	13

TABLE 1 (continued)

Well Designation	*Well Depth	ANALYTICAL METHOD EPA 524.2 QUARTERLY	ANALYTICAL METHOD EPA 624 ANNUALLY
ZONE 3 WELLS			
87-13(3)	57.70		x
89-20(3)	NA		x
TOTAL SAMPLES PER SAMPLING EVENT		0	2
TOTAL SAMPLES PER YEAR		0	2
TOTAL SAMPLES PER SAMPLING EVENT		**17**	**17**
TOTAL SAMPLES PER YEAR		**68**	**17**

Note:
* Well depth considered from the top of the internal casing.

A:\6262\TBLE1

TABLE 2

SAMPLE FREQUENCY

Well Designation	ANALYTICAL METHOD EPA 524.2 QUARTERLY	ANALYTICAL METHOD EPA 624 ANNUALLY
OVERBURDEN WELLS	6	1
SEWER TRENCH WELLS	0	1
ZONE 1 WELLS	11	13
ZONE 3 WELLS	0	2
TOTAL WELLS	**17**	**17**
TOTAL SAMPLES FOR 2ND, 3RD & 4TH QUARTERS 1990	**51**	**0**
TOTAL SAMPLES FOR 1991	**68**	**17**

A:\6262\TBLE2

68,000 m E

69,000 m E

70,000 m E

74,000 m N

73,000 m N

72,000 m N

WALMORE ROAD

NIAGARA ROAD

BELL AEROSPACE TEXTRON
WHEATFIELD PLANT

NEUTRALIZATION POND

STATE RTE. 62
(NIAGARA FALLS BLVD.)

OLD FALLS BLVD.

NIAGARA FALLS BLVD.

NIAGARA STREET

BERGHOLTZ CREEK

CAYUGA DR. EXT.

DRAINAGE DITCH

WALMORE ROAD

CAYUGA DR. EXT.

CONRAIL-PENN CENTRAL RAILROAD

SAWYER CREEK

NIAGARA MOHAWK POWER CORP.

S.T. ROAD

NEW HOUSING
DEVELOPMENT
(NO WELLS)

JAGOW ROAD

DRAINAGE DITCH

B-8
B-15
87-13(3)
87-9(1)
87-10(0)
87-23(0)
89-1(1)
89-11(1)
89-20(1)
87-22(0)
87-22(1)
87-18(1)
87-12(1)
87-20(1)
87-19(0)
87-19(1)
87-21(1)
89-3(1)
89-5(1B)
89-5(1A)
89-6(1)
89-7(1B)
89-7(1A)
89-13(0)
89-13(1)
89-14(0)
89-14(1)
89-15(1)
89-16(1)
89-4(1)
89-17(1)
89-18(1)
89-2(1)

LEGEND

- ◆ WELLS TO BE ANALYSED QUARTERLY USING EPA METHOD 524.2
- ⌖ WELLS TO BE ANALYSED ANNUALLY USING EPA METHOD 624

NOTES

1.) GRID SYSTEM SHOWN IS 1000-METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 17, 1927 NORTH AMERICAN DATUM.

2.) REFERENCE: U.S. GEOLOGICAL SURVEY, TONAWANDA WEST NEW YORK 7.5' QUADRANGLE, DATED 1980.

3.) WELL LOCATIONS SHOWN ARE APPROXIMATE.

Well Designation	ANALYTICAL METHOD EPA 524.2 QUARTERLY	ANALYTICAL METHOD EPA 624 ANNUALLY
OVERBURDEN WELLS		
~~B-8~~	x	
87-10(0)		x
~~B-15(2)~~	x	
~~B-22(0)~~	x	
~~87-23(0)~~	x	
89-13(0)	x	
~~89-14(0)~~	x	
TOTAL SAMPLES PER SAMPLING EVENT	6	1
TOTAL SAMPLES PER YEAR	24	1
SEWER TRENCH WELLS		
SW89-1		x
TOTAL SAMPLES PER SAMPLING EVENT	0	1
TOTAL SAMPLES PER YEAR	0	1
ZONE 1 WELLS		
B-15		x
87-9(1)		x
87-12(1)		x
87-18(1)		x
87-19(1)		x
87-20(1)		x
87-21(1)		x
87-22(1) (87-22-1 ?)		x
89-1(1)		x
89-3(1)	x	
89-4(1)		x
89-5(1A)		x
89-5(1B)		x
89-6(1)	x	
89-7(1A)	x	
89-7(1B)	x	
89-8(1)	x	
89-11(1)		x
89-13(1)	x	
89-14(1)	x	
89-15(1)	x	
89-16(1)	x	
89-17(1)	x	
89-18(1)	x	
TOTAL SAMPLES PER SAMPLING EVENT	11	13
TOTAL SAMPLES PER YEAR	44	13
ZONE 3 WELLS		
87-17(3)		x
89-20(3)		x
TOTAL SAMPLES PER SAMPLING EVENT	0	2
TOTAL SAMPLES PER YEAR	0	2
TOTAL SAMPLES PER SAMPLING EVENT	**17**	**17**
TOTAL SAMPLES PER YEAR	**68**	**17**

300 0 300 600
scale feet

FEB 1 4 1990

REV.	DATE	DESCRIPTION	DR BY	RVW BY

SCALE: 1"=300'
PROJECT No. 893-6262

DES BY	FG	01/19/90
DR BY	MRM	01/19/90
CHK BY	FG	1/26/90
RVW BY	RGK	1/26/90

PROJECT: Bell Aerospace TEXTRON
NIAGARA FALLS, NEW YORK

SHEET TITLE: GROUNDWATER MONITORING PLAN
SAMPLE LOCATIONS, ANALYTICAL METHOD AND SAMPLE FREQUENCY

Golder Associates
Mt. Laurel, New Jersey

SHEET OF
DRAWING NO.: NY01-074

FIGURE 1

APPENDIX I

Health and Safety Plan

Golder Associates Inc.
CONSULTING ENGINEERS

REVISED
HEALTH AND SAFETY PROGRAM FOR
PHASE V HYDROGEOLOGIC INVESTIGATIONS
BELL AEROSPACE WHEATFIELD PLANT
NIAGARA FALLS, NEW YORK

Submitted to:

Bell Aerospace Textron Inc.
Niagara Falls, New York

APPROVED BY:

Richard C. F. King, P.Eng.
Associate

Robert M. Glazier
Health and Safety Officer

November 1989

893-6262

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1.0 GENERAL

This document describes the Health and Safety Program for the Phase V Hydrogeological Investigation at Bell Aerospace Textron's (BAT) Wheatfield Plant. It includes precautionary procedures to be followed during the work, protective equipment to be worn and/or to be available during the work, emergency equipment to be available at the drilling site and site security. A Golder Associates' representative shall be on-site during all times when sampling, well installation, and pump testing is in progress. The Golder site supervisor shall be the Safety Officer responsible to see that the following safety plan is carried out, however, they shall liaise with and will be directed by the BAT Health and Safety Officer. All personnel who work on the site will have received 40 hours of initial training and, as appropriate, 8 hours of refresher training.

1.1 Safety Officer

The Golder Associates Project Hydrogeologist will be responsible for carrying out the investigation and will act as the site Health and Safety Coordinator. He shall have a sound working knowledge of Federal Occupational Safety and Health Regulations by Golder Associates corporate training program. He will be responsible for on-site safety briefings, obtaining acknowledgement of the training and day to day implementation, field re-evaluation of and compliance with this Safety Plan. He shall assure that all site personnel are made aware of the provisions of this Safety Plan and have been informed of the nature of the risk of chemical exposure associated with the investigation and are trained in the proper use of safety equipment and protective clothing to protect against such exposure. He will have the authority to order work to be suspended in

case of imminent threat to the safety of workers or to the environment.

1.2 Emergency Response

All health, fire or utility emergency involving on-site BAT or off-site municipal emergency organizations (fire, police, ambulance) experienced during the course of the investigations will be handled in accordance with the BAT Contingency Plan and Emergency Procedures Manual which is included as Appendix C of the Work Plan. In the case of such emergencies, the Golder Safety Officer, the drilling contractor, or groundwater treatment contractor will immediately contact the BAT Safety Department who will then relay the emergency to the appropriate party.

The Contractor is expected to be familiar with this manual and sign the attached acknowledgement form to ensure that the necessary health and safety requirements are complied with.

Telephone numbers of the BAT Emergency Coordinators are given in Appendix C. These numbers should be posted at the work site and in all site vehicles. All contractor personnel should be familiar with the location and use of all on-site safety equipment.

1.3 Medical Examination

All personnel employed at the site shall receive a medial examination prior to the commencement of the work on at least an annual basis. A registry of medical examination dates shall be established and maintained on site. Information shall include, name of the person, address, age, social security number, and name and address of the examining physician. Copies of this registry shall be available to NYSDEC.

1.4 Description of Site Tasks

The tasks to be implemented are described in the Neutralization Pond Study, Pump-out and Pump-In Testing Work Plan, Zone 1 Aquifer, Bell Aerospace Textron, Niagara Falls, New York.

2.0 SITE SECURITY

The BAT plant is a secure facility surrounded by a chain-link fence topped with barbed wire. Thus, the drilling equipment and tools etc. should be secure at all times; provision of any additional security measures should be determined by the Contractor in consultation with BAT.

3.0 PROTECTIVE EQUIPMENT

All contractor personnel protective equipment shall be supplied by the Contractor.

Previous groundwater monitoring programs have shown that volatile organics constitute the major source of groundwater contamination at the BAT site. Low levels of PCB's and polycyclicaromatic compounds have also been detected. Based on the results of a recent (September 1989) groundwater monitoring investigation, the major contaminants (and maximum concentrations) detected in the groundwater below the site were Trichloroethylene (877 ppm), Methylene chloride (2,400 ppm), Trans 1,2-Dichloroethene (68 ppm), Trichlorofluoromethane (7 ppm), Chloroform (1.4 ppm), Vinyl chloride (3.7 ppm), PCB's (12 ppb) and small quantities of several semivolatile organic compounds. Dense non-aqueous phase liquids (DNAPLs) are known to be present in the subsurface are composed of up to 95% Trichloroethylene, Methylene chloride, PCB's (300 ppm), and small quantities of semivolatile organic compounds.

The available groundwater and soil chemistry analytical data suggest that personal protective equipment is necessary. Previous experience during drilling and well development indicate that Level D or Level C protection should be adequate.

The previous monitoring also indicates that some areas of greater hazard may exist therefore, Level C personal protection should be available. Level C requirements will be determined from air monitoring and in the event such conditions are encountered, the appropriate protection and air monitoring will be used. An exclusion zone will be established around work areas designated as Level C.
Level D personal protection includes the following:

- Coveralls (Tyvek coveralls for well drilling and sampling).
- Boots/Shoes - safety or chemical-resistant steel-toe boots.
  OR
- Boots - outer, chemical-protective heavy rubber throwaway type.
- Safety glasses or safety goggles.
- Hard hat - face shield (optional).
- Gloves, inner latex.
- Gloves - outer, chemically resistant (nitrire for groundwater and short-term DNAPL exposure).

In addition to the above, Level C personal protection will include:

- Fullface, air-purifying respirator (MSHA/NIOSH approved) with acid gas/organic vapor cartridges.
- Chemical-resistant clothing.
- Gloves - outer, chemical-protective.
- Tyvek coveralls.
- Boots - outer, chemical-protective heavy rubber throwaways.
- Boots - inner, chemical-protective, steel toe and shank.
- Hard hat.
- Safety glasses.

During drilling, pump testing, groundwater treatment, and sampling, air quality shall be monitored continuously with an OVA or HNu Photoionizer (calibrated using 100 ppm Isobutylene). It is contemplated that work will continue with only Level D personal protection although at times, Level C personal protection may be required. The total

atmospheric concentrations of unidentified vapors or gases determine the level of respiratory personnel protection. Personnel will upgrade to Level C if monitoring with an organic vapor detector reveals airborne contamination levels that exceed the established upwind background by 5 ppm for more than a brief peak but less than 5 minutes.

3.1 Level C Conditions

Work will temporarily cease if readings consistently exceed background by more than 5 ppm or if peak concentrations exceed 25 ppm. Monitoring should continue from a safe distance until the elevated readings subside below 5 ppm. If levels do not subside, contact the project manager for further instructions.

The vapors will then be identified or Level B respiration protection shall be used. Between vapor readings, levels of 5 ppm and 10 ppm, at the breathing zone of the workers, could be resumed with required safety protection at Level C if the vapors have been identified and Level C is appropriate protection for the compounds identified.

If the vapor readings are above 10 ppm at the breathing zone, all work will be immediately suspended and the conditions monitored from a safe distance. If the condition does not subside, contact the project manager.

Flammability will be regularly monitored at the work site during drilling and at the well head by use of a combustible vapor analyzer. Drilling activity will be stopped when combustible vapor concentrations exceed 25 percent of the lower explosive limit (LEL). Conditions will be monitored from a safe distance. If the condition does not subside, contact the project manager for further instructions.

A log recording all air monitoring results will be maintained by the person operating the air monitoring equipment. The log will be reviewed regularly by the Safety Officer who may recommend changes in the air monitoring program and level of protection required.

4.0 PRECAUTIONARY PROCEDURES

In addition to the personal protective equipment, safe operations require responsibility and common sense on the part of everyone. Normal safe working practices should be adhered to and the following special safety procedures will be observed.

a. Personnel in the working area, handling drilling or sampling equipment, handling samples, or handling cuttings, shall wear hard hat, rubber gloves and steel-toe rubber boots as a minimum at all times.

b. No smoking, eating, drinking, chewing gum or tobacco is permitted during drilling, sampling, or handling samples and cuttings.

c. Upon leaving the work area, coveralls and protective clothing will be removed and personnel will thoroughly wash their face and hands.

d. Avoid contact with suspected potentially contaminated materials. Do not unnecessarily walk through puddles, pools or mud. Do not lean, site or place equipment on drums of unknown or hazardous substances.

e. Beards or mustaches which interfere with satisfactory fitting of respiratory equipment are prohibited.

f. Visitors are not allowed within 50 feet of the working area unless they are authorized representatives of BAT, Golder Associates, the drilling contractor, or the regulatory agencies. Any such visitors are responsible for their own personal protective equipment and shall be informed that such equipment is required. Visitor's names and company or agency affiliation shall be noted in the daily records.

g. No gloves or boots worn in the work area shall be removed without being cleaned, unless they are disposed of in a drum which will then be stored with the drill cuttings.

h. During active drilling operations, at least two people shall be present at the drill rig.

5.0 DECONTAMINATION AND WASTE DISPOSAL

A de-con facility shall be established for equipment used during the investigation. Adequate water supply shall be available for the decontamination of equipment, tools, personnel footwear, etc. The wash water and the rinse water shall be collected and stored in the water storage tanks for subsequent treatment.

The personnel protective gear and clothing that is disposed of shall be kept in closed waste containers for future disposal by BAT.

6.0 EMERGENCY SAFETY EQUIPMENT

Emergency safety equipment is available on-site at all times as detailed in Appendix C. However, the Contractor shall ensure that the following items are available as a minimum:

1. A first aid kit (Johnson and Johnson Standard Industrial First Aid Kit) or equivalent.
2. Emergency Eyewash Station.
3. Washing facilities for routine decontamination and emergency showers.
4. Fully charged Halon fire extinguisher.

Items 1, 2 and 4 shall be stored at the work site. Item 3 is standard emergency safety equipment at the plant site and the Contractor should determine where the stations are in relation to the work locations and ensure that the equipment is functioning properly.

All safety equipment will be maintained in a clean and workable condition.

7.0 Calibration

When an instrument is used to monitor airborne concentrations of a known substance, the instrument should (ideally) be calibrated to that specific substance at a concentration comparable to the action level(s) or concentrations anticipated in the field. Since this is rarely the case, an instrument is typically calibrated in the field to a gas that is representative of the instrument's response to the widest variety of substances. In the case of the MSA 361, this is pentane. In the case of PIDs, this is typically isobutylene and for the Foxboro OVA, this is methane.

The response of combustible gas indicators to methane differs considerably from other flammable gases and vapors and requires some special consideration. If a CGI is to be used on a site where methane is the primary concern (e.g., a sanitary landfill), it should be calibrated directly to methane gas. When a CGI is used to monitor areas where methane may be present, but other organic vapors (e.g., hexane, gasoline, etc.) are the primary concern, the instrument should be calibrated relative to pentane, using methane calibration gases. When the instrument is used to monitor areas where leaks/spills/disposal of gasoline or organic solvents are the primary concern and the presence of methane in explosive concentrations is unlikely, the instrument should be calibrated directly to pentane (See Table 1).

Every direct reading air monitoring instrument must be bench calibrated and checked out in the lab or office at least once every three months. The calibration must be checked in the field daily to establish a frame of reference and to verify that the instrument is working properly. Unless otherwise specified in the Task-Specific Health and Safety Plan, instruments shall be field calibrated as shown in Table 1 below.

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TABLE 1

FIELD CALIBRATION

Instruction	Conditions	Calibration Gas	Span Setting	Instrument Should Read:
MSA 361 Combustible Gas Indicator	Monitoring for methane (re. methane)	2.5% methane in air or 15-17% O_2 balance N_2	N/A	47%-55% LEL
	Monitoring for all gases/vapors (re. pentane)	2.5% methane in air or 15-17% O_2 balance N_2	N/A	72%-88% LEL
	Monitoring for all gases/vapors other than methane (re. pentane)	.75% pentane in air or 15-17% O_2 balance N_2	N/A	45%-55% LEL
MSA 361 H_2S Detector		10 ppm H_2S balance N_2	N/A	9-11 ppm tox
MSA 361 O_2 Detector		Ambient air	N/A	21% O_2
OVM 580A		100 ppm isobutylene	RF-1.0	98ppm-102ppm
HNU PI-101	10.2 eV lampq (re. benzene)	100 ppm isobutylene	9.8	50ppm-60ppm
	11.7 eV lamp (re. benzene)	100 ppm isobutylene	5.0	60ppm-70ppm
	9.5 eV lamp (re. benzene)	100 ppm isobutylene	1.0	50ppm-60ppm
Photovac TIP II		100 ppm isobutylene	As Required	90ppm-110ppm
Foxboro OVA		9 ppm methane in air	3.0	8ppm-10ppm
		90 ppm methane in air	3.0	80ppm-100ppm

A:TBL1

Job No. _____ Short Title: _____

ACKNOWLEDGEMENT OF SAFETY BRIEFING

I hereby acknowledge that I have been given a safety briefing on the work I am to do the above-referenced site. I understand that the sit may contain materials classified by EPA or others as potentially hazardous. I have read and understand the safety plans for this project and will adhere to the procedures contained therein. I have been instructed in and understand the use of the safety equipment for this project. I understand that failure to follow the safety plan may result in dismissal from employment.

Employee

DATE _____

PRINT NAME _____

SIGNED _____

Project Manager or Representative

DATE _____

PRINT NAME _____

SIGNED _____

Original - Job File
1 Copy - Personnel File
1 Copy - Safety File

Golder Associates Inc.

AIR MONITORING DATA SHEET

Date _____ Sheet ____ of ____

Job Name _____ Job Number _____

Location _____

Time In _____ Time Out _____ Weather _____ Temp. _____ Wind D. _____ V _____

Instrument Type _____ Serial No. _____

Calibration Gas and Concentration _____ Instrument Reading _____ Span/Gain/RF Setting _____

* *If more than one instrument is used, document calibration procedures and results for each additional instrument in recommendations section below and indicate the instrument used (eg. OVA, 361, OVM, etc.) for each observation.*

Time	Station	Instr.*	Reading	Procedure/Observations/Comments

Recommendations

_____

_____

_____

_____

_____

_____ _____

Printed Name Signature