Tyree Environmental Technologies

PRELIMINARY SITE ASSESSMENT
WORK PLAN

RON HILL CLEANERS
71 FOREST AVENUE
GLEN COVE, NEW YORK
NASSAU COUNTY
SITE #1-30-071

JANUARY 1994
REVISED APRIL 1994
REVISED JUNE 1994

PREPARED BY:

Dawn M. Medaglia
DAWN M. MEDAGLIA
HYDROGEOLOGIST/PROJECT MANAGER

TYREE BROTHERS ENVIRONMENTAL SERVICES, INC.
208 ROUTE 109
FARMINGDALE, NEW YORK 11735
(516) 249-3150

Tyree Environmental Technologies

TABLE OF CONTENTS

Tyree Environmental Technologies

INTRODUCTION

Tyree Brothers Environmental Services, Inc. (TBES) has been contracted by Bedford Affiliates to perform the required environmental work specified in the Order on Consent for the subject property. This report supplies the Preliminary Site Assessment (PSA) Work Plan requested in section II of the Order of Consent.

The subject property has been utilized as a dry cleaning establishment. Recent soil samples taken from in and around the building on site indicated substantial concentrations of tetrachloroethylene and trichloroethylene. An inside trough located along the northern and western walls of the building seems to be the main point source of the contamination. All background information related to the site was previously submitted to the NYSDEC.

OBJECTIVE

The objective of this Preliminary Site Assessment is to determine whether conditions at the subject site constitute a significant threat to the public health or the environment as a result of hazardous waste disposal. The following tasks will be performed in order to reach the above objective:

1. Borings will be drilled, and split spoon soil samples will be obtained. The soil samples will be screened with a photoionization detector (PID) and submitted for laboratory analysis of Volatile Organics.

2. Groundwater monitoring wells will be installed, and split spoon soil samples will be obtained during drilling. The soil samples will be screened with a PID and submitted for laboratory analysis of Volatile Organics.

3. The wells will be developed and sampled for laboratory analysis of Volatile Organics.

4. The wells will be monitored and surveyed in order to determine a site specific groundwater flow direction.

5. A report will be prepared summarizing all findings and recommendations.

SITE RECONNAISSANCE

The subject property consists of a one-story concrete block building with no basement. There are asphalt paved areas to the south, east, and west of the building. A grass area is located behind (north of) this building. The site is generally flat with no restrictive fencing (please see the Site Map in Appendix 1 for site and well/boring location information). The location of the site is indicated on the USGS Topographic Map in Appendix 1.

FIELD INVESTIGATIONS

Tyree Brothers Environmental Services, Inc. (TBES) proposes to perform the following field investigations at the subject property:

1. Five (5) soil borings will be drilled to twenty (20) feet utilizing a CME-75 hollow stem auger drilling rig in the areas to the north, east, and west of the building (see Appendix 1 - Site Map). The locations of these borings were based upon preliminary sampling and analysis performed previously by another contractor (see enclosed Surface and Subsurface Soil Contamination Maps in the Appendix).

   The borings will be continuously split spoon sampled in order to determine exact lithology, especially the presence and locations of clay layers. All samples will be screened with a Photovac Microtip photoionization detector (PID) for the presence of volatile organics. The sample from the bottom of each borehole (18 to 20 feet) and the sample with the highest PID reading will be submitted to H2M Labs, Inc. (H2M). The soil samples will be analyzed by GC/MS for Volatile Organics via NYSDEC ASP 91-1. All augers and sampling equipment will be steam cleaned between boreholes. All borings will be grouted after completion. Drilling activities and sampling will be supervised by a hydrogeologist.

2. A groundwater monitoring well will be installed in three (3) of the boreholes with the highest degree of contamination at depth. This determination will be based upon PID readings, odors, and visual observations. The wells will be installed to approximately ninety-five (95) feet (ten (10) feet into groundwater).

   During drilling, split spoon samples will be obtained every five (5) feet starting at a depth of twenty (20) feet. All soil samples will be screened with a PID meter. The soil sample with the highest PID reading will be submitted to H2M for analysis by GC/MS of Volatile Organics via NYSDEC ASP 91-1.

In addition, a fourth monitoring well will be installed upgradient (to the east) of the building on site in order to ascertain the groundwater quality coming onto the site. No soil samples will be obtained from this well during drilling. However, this well will be incorporated into the groundwater sampling and well surveying plan described subsequently.

The monitoring wells will consist of twenty (20) feet of four-inch, thread-coupled, schedule 40 PVC screen and approximately seventy-five (75) feet of solid four-inch, thread-coupled, schedule 40 PVC casing. Machine-slotted screens with .020 inch openings will be placed at the bottom of each borehole.

The well annuli around the screens will be gravel packed with #2 Morie sand to one (1) foot above the top of the screens. Bentonite seals approximately two (2) feet thick will be placed in the annular spaces above the Morie sand. The bentonite pellets will be hydrated continuously for thirty (30) to sixty (60) minutes after installation. The annular space above the bentonite seal will then be filled to the surface with a cement/bentonite slurry pumped through a tremie pipe and finished at grade with Emco-Wheaton locking caps and manhole covers cemented flush with the surface. A concrete pad will be installed around each manhole cover (see Appendix 2 - Typical Monitoring Well Detail).

3. The groundwater monitoring wells will be developed with a submersible pump and/or by air jetting in order to remove fine particles and insure a good hydraulic contact with the surrounding aquifer. After at least twenty-four (24) hours after well development, a hydrogeologist will return to the site and purge and sample the groundwater. Prior to sampling, a minimum of three (3) well casing volumes of water will be removed by hand bailing. A sample will then be obtained from each well and submitted to H2M for analysis by GC/MS of Volatile Organics via NYSDEC ASP 91-1. All development and purging water will be discharged to positive drainage.

4. The elevations of the tops of the monitoring wells' casings will be surveyed with elevations referenced to an arbitrary one hundred (100) foot datum. The monitoring wells will also be gauged in order to determine depth to the water table. The depth to water readings and the surveying data will be utilized to produce a Water Table Contour Map. Groundwater flow direction and hydraulic gradient will be determined.

5. After all results are received and reviewed, a Preliminary Site Assessment report will be written. All data generated and all other information obtained will be incorporated into the report. Recommendations for further investigations, additional data that must be collected, and/or remediation will be included in the report. A certification will be provided stating that all activities were performed in full accordance with the approved PSA Work Plan.

An outline of the above-mentioned tasks is included as Table 1 in Appendix 3.

It should be noted that one (1) drywell or leching pool is currently located on the property. Sludge from the bottom of this drywell was sampled using a dredge sampler by Richard D. Galli personnel for their initial Environmental Assessment conducted in September 1990. In response to the fourth comment of the NYSDEC February 24, 1994 letter, the PSA report will incorporate the findings of the previous investigation of the leaching basin.

The following is a schedule for the anticipated performance of the above-mentioned proposed work (all time periods are measured from the date written approval is received from the NYSDEC by Bedford Affiliates and TBES):

1.	Drilling and soil sampling	-	within 90 days
2.	Well installation and soil sampling	-	within 90 days
3.	Well development and sampling	-	within 105 days
4.	Well surveying	-	within 105 days
5.	PSA preparation	-	within 180 days

SAMPLING AND ANALYSIS PLAN

Field Sampling Plan

1. Soil Sampling Protocol

Split spoon samples will be obtained during drilling. Prior to sampling, the stainless steel samplers will be hand scrubbed with a laboratory detergent (Microwash) mixed with clean water in an adequately sized basin. After cleaning, the samples will be scrubbed with clean water to remove all residue detergent. The samplers will then receive a final double rinse with distilled water. After rinsing, the sampling equipment will be steam cleaned and then allowed to air dry.

When the desired sampling depth is reached, the split spoon sampler will be threaded onto steel rods and lowered to the sampling horizon. A 140-pound hammer will then repeatedly drop onto a collar on the rods a distance of thirty (30) inches. Hammering will continue until the sample has been driven two (2) feet into the soil. The sampler will then be retrieved from the borehole and disconnected from the rods.

The sampler will be opened, and the soil lithologies present will be visually noted and logged. Following visual examination, each sample will be placed in two (2) pre-cleaned (laboratory supplied) 2-ounce containers that have a teflon lined cover. The soil will be settled and capped to insure that little or no headpsace is present within the sample. Sample containers will then be placed on blue ice until brought to the laboratory. All samples will be uniquely identified, and all information associated with the samples will be recorded on a chain of custody document.

2. Photoionization Meter Screening Procedures

After sampling, a portion of each soil sample will be placed in clean airtight containers and set aside in order to allow volatilization from the soil. The samples will be kept out of direct sunlight in order to inhibit excessive moisture accumulation. Also, the samples will be protected from excessively cold conditions to enhance volatilization.

After being allowed to volatilize, the samples will be screened with a Photovac Microtip photoionization meter using headspace analysis. This meter measures the concentrations of organic vapors in air as they evolve from the sediment sample. The numerical readouts are not exact determinations of true volatile contents of the samples, but instead provide qualitative indications of the degree of volatile organic contamination. The photoionization meter will be calibrated to a standard gas prior to screening the samples.

The probe of the meter will be inserted into the sample headspace, and the meter will be allowed to come to equilibrium with the sample concentrations. The meter furnishes direct readings of volatile concentrations in parts per million on a liquid crystal display. The individual reading for each sample will be indicated on the boring logs.

3. Monitoring Well Development and Sampling Protocol

The wells will be developed after installation with a submersible pump and/or by air jetting. Each well will be developed to the point that the turbidity of the recovered well water is 50 Nephelometric Turbidity units (NTu) or less. A portable nephelometric turbidity meter will be brought to the field for making this measurement.

The submersible pump and associated hosing and/or air jetting equipment will be decontaminated between each well. The exterior of the pump and hose and/or air jetting piping will be steam cleaned. An adequately sized basin will then be filled with potable water and a laboratory detergent (Microwash). The detergent will be pumped through the pump and hose. After the detergent wash, potable water will be pumped through the pump and hose from another basin in order to remove all residue detergent.

After waiting at least twenty-four (24) hours, groundwater samples will be obtained from all monitoring wells. The depth to water and the depth to the bottom of each well will be measured with a tape in order to determine the height of standing water in each well. The tape will be decontaminated between each well. The volume of water in each well will be calculated. Prior to sampling, a minimum of three (3) well casing volumes will be removed by hand bailing.

After a minimum of three (3) well casing volumes is removed, a dedicated polyethylene bailer will be utilized to obtain each groundwater sample. Each sample will be placed in a pre-cleaned (laboratory supplied) 40 ml voa vial that has a teflon lined cover. No headspace will be present within the sample. Sample containers will then be placed on blue ice until brought to the laboratory. All samples will be uniquely identified, and all information associated with the samples will be recorded on a chain of custody document. A copy of an H2M chain of custody is included as Appendix 3.

Quality Assurance/Quality Control Protocol

In addition to the above-mentioned procedures, the following measures will be taken to avoid cross contamination of samples:

1. Any pumps or bailers exposed to free product are never used for either purging or sampling of monitoring wells.

2. If two or more wells are being sampled, the wells anticipated to be less contaminated are sampled first. All equipment is always cleaned and decontaminated between well samplings.

3. Upon completion of sampling the monitoring wells, all purging and sampling equipment is cleaned and decontaminated on site prior to returning to TBES's headquarters.

All samples will be uniquely identified, and information associated with each sample will be recorded on container labels and the chain of custody document. The sample containers slated for laboratory analysis will be immediately placed on ice and kept refrigerated until hand delivered to the laboratory. Chain of custody documents will be kept with all samples at all times.

Trip and field blanks will also be obtained. Trip blanks will be supplied by the laboratory. The laboratory will also supply deionized water for the field blanks. The deionized water will be poured through a disposable bailer before the bailer is utilized for well sampling or over a split spoon sampler prior to use. QA/QC samples will be analyzed for all parameters to check for possible cross contamination due to sampling equipment or transport. It should also be noted that H2M will perform all internal laboratory QA/QC as specified for CLP analyses. NYSDEC ASP category B will be followed by the laboratory for data validation.

The following table is a summary of the sampling parameters and protocols to be utilized for sampling and analysis:

NYSDEC Method	Matrix	Sample Container	Sample Preservation	Maximum Holding Time
ASP 91-1	Soil	2 oz. glass jar with teflon septum	4°C, no headspace	7 days
ASP 91-1	Liquid	40 ml glass vial with teflon septum	4°C, no headspace	7 days

Based upon the proposed work, the following number and types of samples will be obtained:

Type	NYSDEC Method	Number	Location
Soil	ASP 91-1	13	2 from 0 - 20 feet in each of 5 borings 1 from 20 - 85 feet in each of 3 wells
Groundwater	ASP 91-1	4	1 from each of 4 wells
Blanks:			
Trip Blank	ASP 91-1	4	1 for each drilling and sampling event 1 for groundwater sampling event
Field Blank	ASP 91-1	3	2 for drilling events 1 for groundwater sampling event

Ms. Marybeth Puckace will be utilized as a data validation expert. Ms. Puckace's qualifications and experience were previously submitted to the NYSDEC. Another copy is included as Appendix 4. In addition, Ms. Patricia Patak will be utilized as the project quality assurance officer. Ms. Patak's resume is also included in Appendix 4.

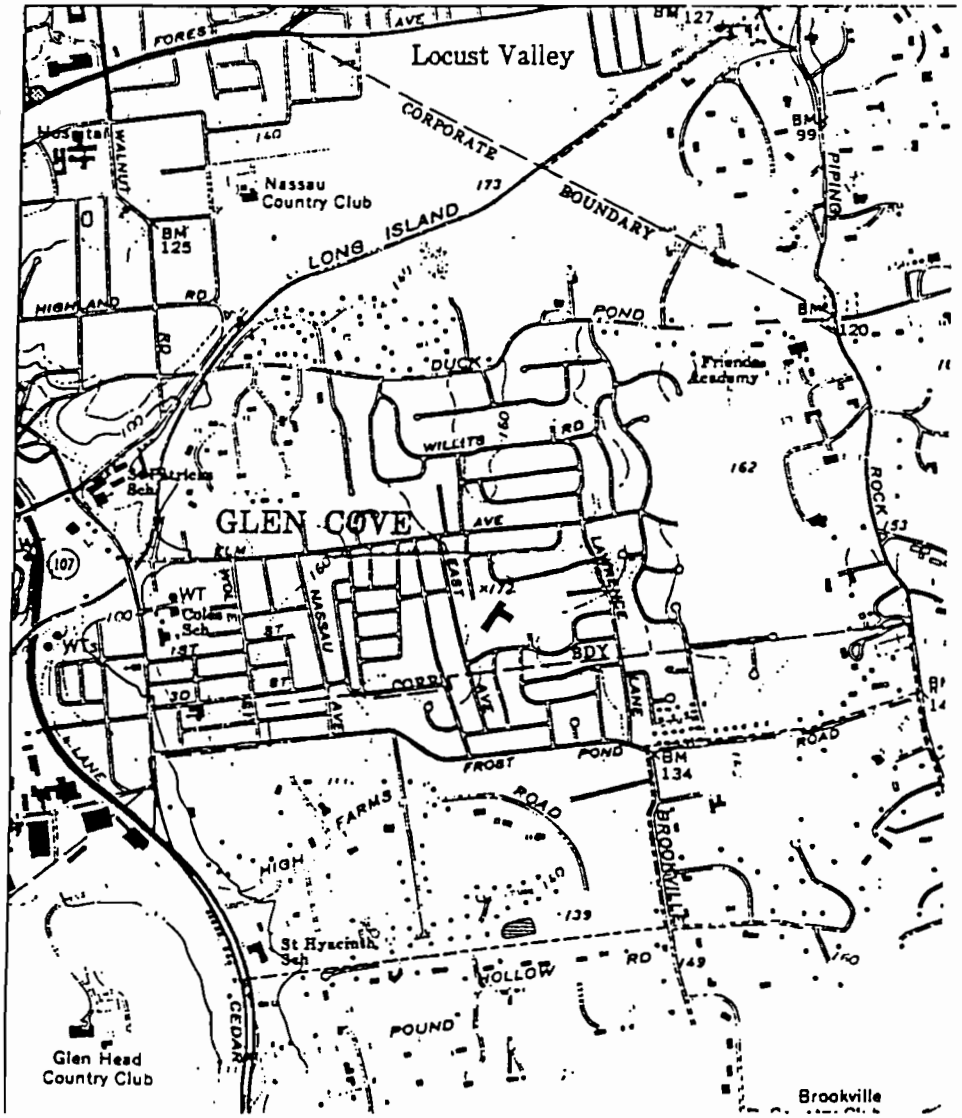
HEALTH AND SAFETY PLAN

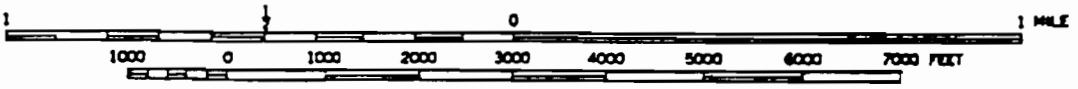
Attached as Appendix 5 is the Health and Safety Plan as approved by Mr. Joe Mazzurco, a certified health and safety professional.

APPENDIX 1

MAPS

Site

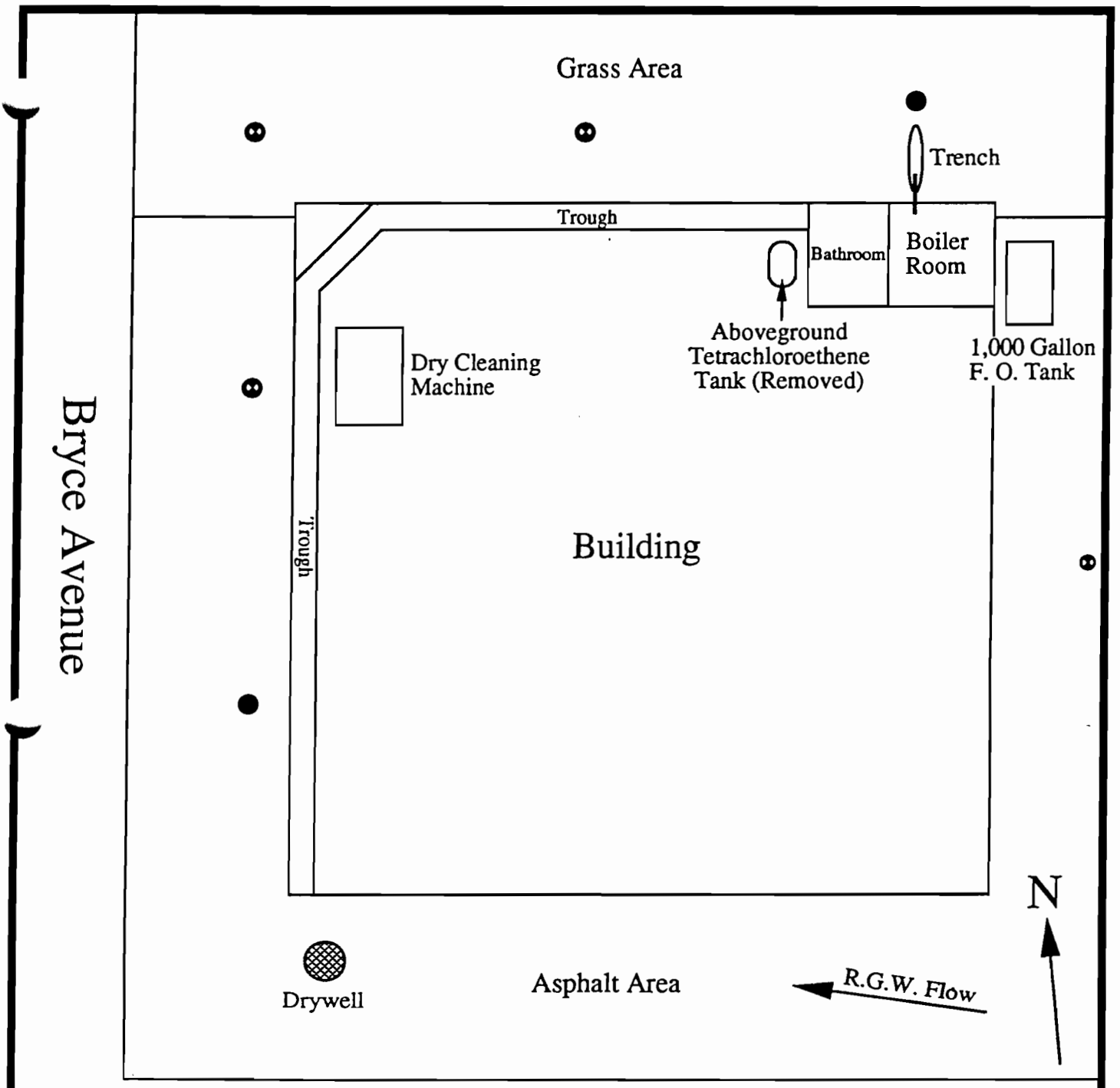




Scale: 1" = 2,000'

Source: U. S. Geological Survey Topographic Map, Hicksville, N. Y. Quadrangle, 1979.

Tyree Brothers Environmental Services, Inc. 208 Route 109 Farmingdale, New York 11735	*TITLE:* **Ron Hill Cleaners** 71 Forest Avenue Glen Cove, New York	**Figure: Topographic Map**



Forest Avenue

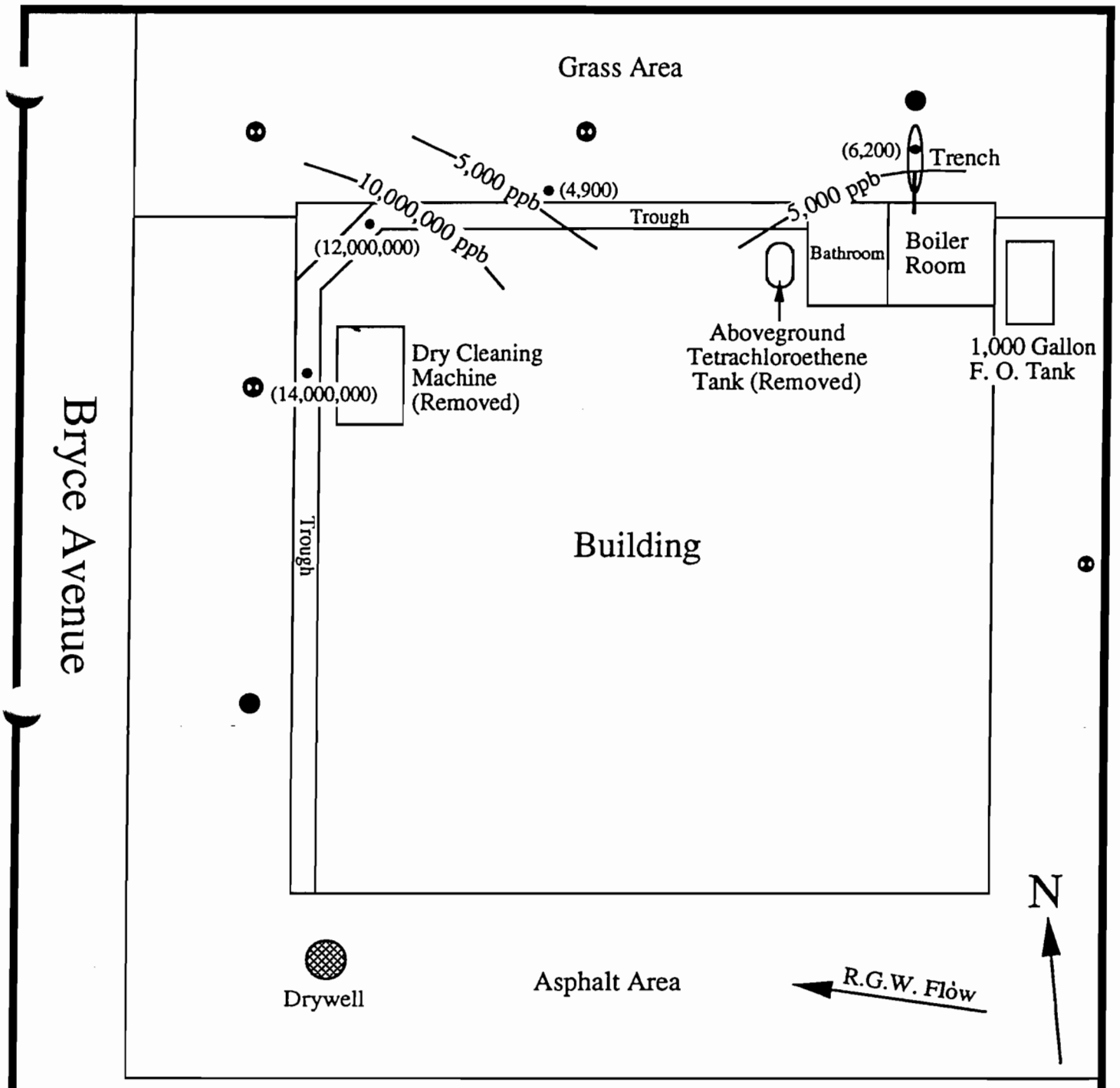
Note: Well locations will be based upon field conditions and are subject to change.

Map Not to Scale

Legend:

- Proposed Boring Location
- Potential Boring/ Well Location

Tyree Brothers Environmental Services, Inc. 208 Route 109 Farmingdale, New York 11735	*TITLE:* **Ron Hill Cleaners** 71 Forest Avenue Glen Cove, New York	**Figure: Site Map**



Legend:

Note: Well locations will be based upon field conditions and are subject to change.

- Previous Sampling Point (Surface)
- Proposed Boring Location
- (4,900) Tetrachloroethene Concentrations (ppb)
- Potential Boring/ Well Location

Map Not to Scale

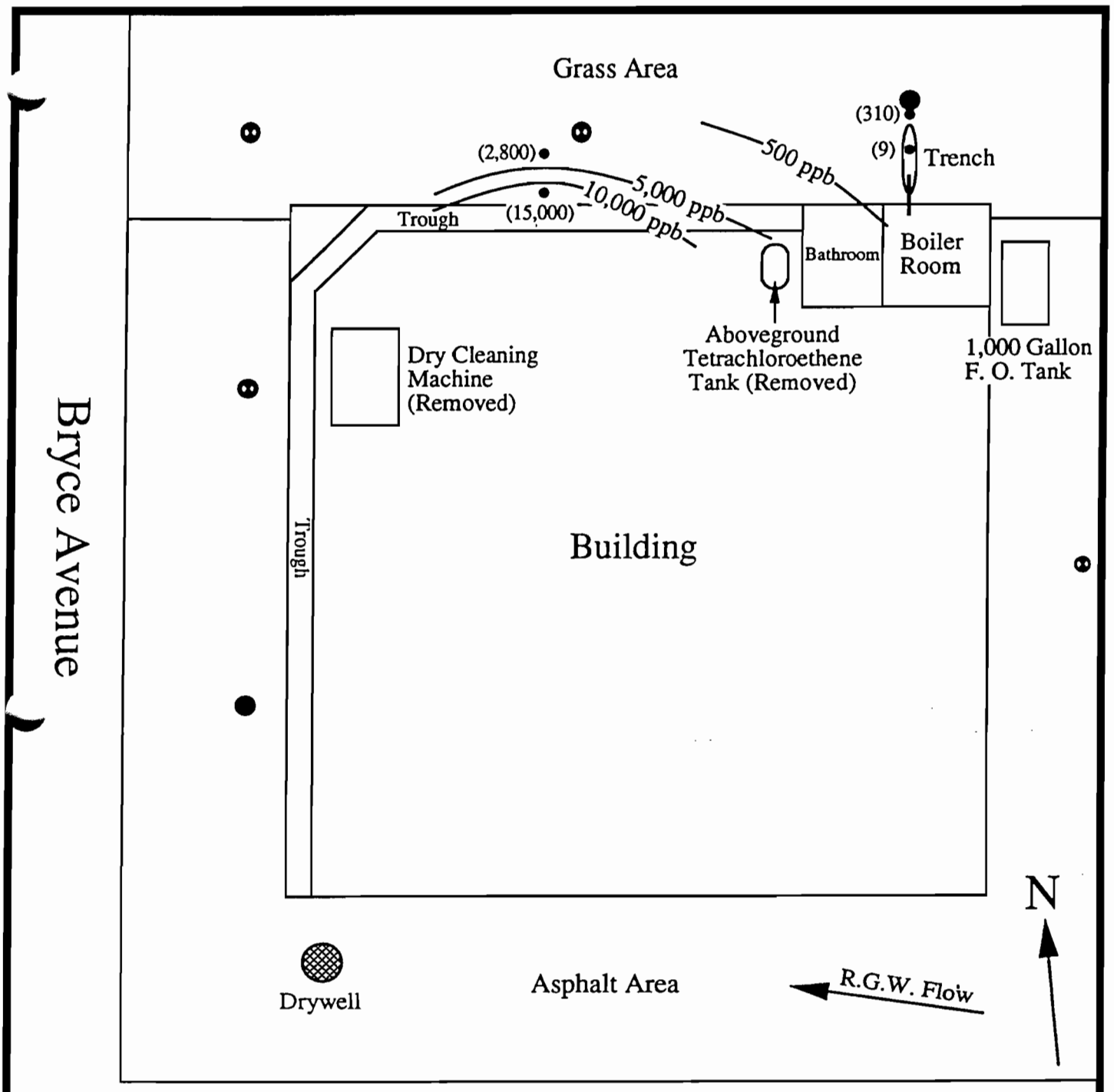
Tyree Brothers Environmental Services, Inc.

208 Route 109
Farmingdale, New York 11735

TITLE:

Ron Hill Cleaners
71 Forest Avenue
Glen Cove, New York

Figure 2: Surface Soil Contamination



Forest Avenue

Note: Well locations will be based upon field conditions and are subject to change.

Map Not to Scale

Legend:

- Previous Sampling Point (6' Depth)
- (2,800) Tetrachloroethene Concentrations (ppb)
- Proposed Boring Location
- Potential Boring/ Well Location

Tyree Brothers Environmental Services, Inc. 208 Route 109 Farmingdale, New York 11735	TITLE: **Ron Hill Cleaners** 71 Forest Avenue Glen Cove, New York	**Figure 3: Subsurface Soil Contamination**

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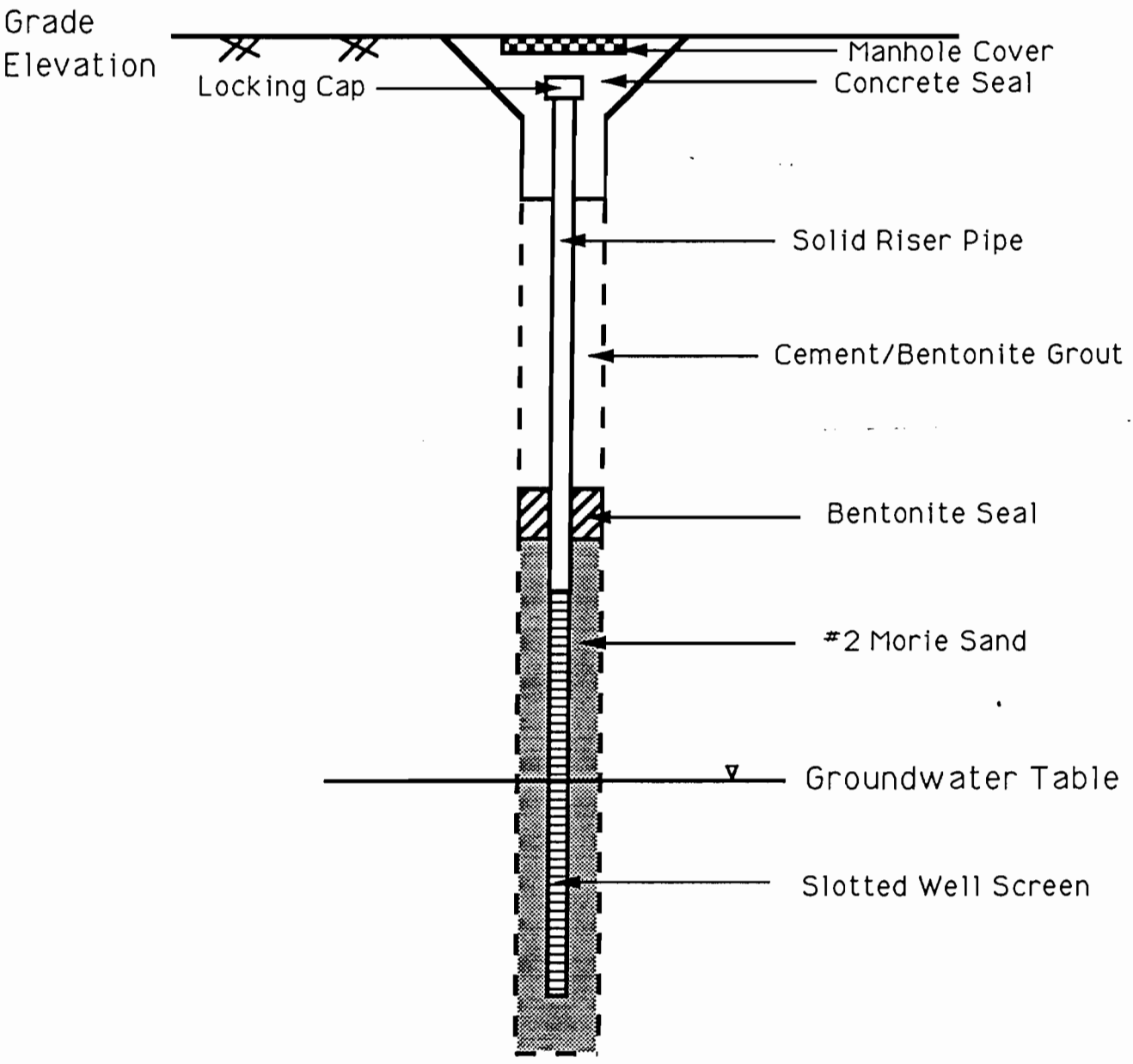
APPENDIX 2

TYPICAL MONITORING WELL DETAIL

TYPICAL MONITORING WELL DETAIL



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APPENDIX 3

TABLE 1 - TASK OUTLINE

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TABLE 1 - TASK OUTLINE

PROPOSED TASK	DESCRIPTION
1. Boring drilling/soil sampling	Drill five soil borings to 20 feet; collect continuous split spoon samples; screen soil samples with PID; submit 18-20 foot soil sample and soil sample with highest PID reading from each boring to laboratory for volatile organics analysis.
2. Well drilling/soil sampling	Drill four wells 10 feet into groundwater (to approximately 95 feet); collect split spoon samples in three wells every 5 feet from 20 to 85 feet; screen soil samples from three wells with PID; submit sample with highest PID reading from three well borings to laboratory for volatile organics analysis.
3. Groundwater sampling	Develop, purge and sample four wells; analyze one groundwater sample from each well for volatile organics.
4. Well surveying/groundwater monitoring	Survey well casings and monitor four wells to produce a site specific groundwater flow map.
5. Report preparation	Provide all data and information obtained during PSA, including recommendations.

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APPENDIX 4

H2M LABORATORIES CHAIN OF CUSTODY

H2M LABS, INC.
Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, N.Y. 11747-5076
(516) 694-3040
FAX: 516-694-4122

EXTERNAL CHAIN OF CUSTODY

PROJ. NO.	PROJECT NAME	Refrigerator #										NOTES:	
SAMPLERS: (Signature)/Client		SAMPLE CONTAINER DESCRIPTION →											
DELIVERABLES:		TOTAL NO. OF CONTAINERS ↓	ANALYSIS REQUESTED										
			ORGANIC							INORG.			
DATE	TIME	MATRIX	FIELD I.D.		VOA	BNA	Pest/PCB					Metal	CN	LAB I.D. No.	REMARKS

Relinquished by: (Signature)	Date	time	Received by: (Signature)	Date	time
Relinquished by: (Signature)	Date	time	Received by: (Signature)	Date	time
Relinquished by: (Signature)	Date	time	Received for Laboratory by: (Signature)	Date	time

PROJECT CONTACT:

PHONE NUMBER:

Discrepancies Between Sample Labels and COC Record? Y or N
NOTES:

LABORATORY USE ONLY

Samples were:
1) Shipped____ or Hand Delivered__
Airbill #_____
2) Ambient or Chilled
3) Recieved in Good Condition Y or N
4) Properly Preserved Y or N
5) Samples returned to lab.____ hours from Collection

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) COC Record Present and Complete Upon Sample Rec't. Y or N

APPENDIX 5

DATA VALIDATOR'S/QUALITY ASSURANCE OFFICER'S QUALIFICATIONS

PROFESSIONAL PROFILE

MARYBETH PUCKACE
72 Three Brooks Road
Freehold, NJ 07728
201-780-7984 (Home) 201-370-1360 (Work)

Work Experience

Lockheed Environmental Systems and Technologies; Edison, NJ; Scientific Supervisor (4/92 -Present).

Assistant Team Manager for Environmental Service Assistance Team (ESAT) which supports the USEPA through technical consulting services. Responsible for managing both the Inorganic and Organic data validation groups, QA group and the Regional Sample Control group (20-25 people). Also, responsible for the review of QA Project Plans for compliance with the Region 2 CERCLA QA Program.

Review analytical data generated within the region for overall quality and adherence to functional guidelines.

Keep all documentation of guidelines current with implementation of new analytical methods.

Other duties include the tracking, prioritization, and follow up of work assignments; writing weekly and monthly productivity reports for submission to the EPA and other supervisory tasks.

Roy F. Weston; Edison, NJ; Chemist; (10/89 -4/92)

Functioned as a Data Validator for Technical Assistance Team (TAT) and Emergency Response Team (ERT) contract and the Environmental Service Assistant Team (ESAT) contract for the USEPA.

Validated organic and inorganic analytical data for compliance with the Region 2 functional guidelines. Worked on a variety of water, soil air and ash sample matrices.

Provided support to the agencies in developing data quality objectives for various projects.

EMS Laboratory INC.; Lakewood, NJ 08701; Organics Manager (12/88-10/89)

Manager of three groups, Organic Preparation, GC and GC/MS. Duties includes prioritizing and assigning work for 6-8 technicians/analysts, data review, and various other supervisory responsibilities. Other activities included identifying any relevant changes in the Governing Regulations (ECRA, RCRA, etc.) and implementing them into operating procedures, interfacing with clients, and maintaining the proper level capital equipment for the laboratory.

Environmental Testing and Technology Corporation (ETTC); Edison, NJ 08817; Analytical Chemist; Senior Analyst-Gas Chromatography/Special Projects (5/87-11/88).

Conducted the analysis of organic compounds using USEPA, NJ TASK, or 600 Series Federal Registry contract lab protocols, CLP. Also, routinely selected for participation in Government Agency Performance Evaluations.

Functioned as a project supervisor. Responsibilities included coordinating work schedules, providing technical training, managing data acquisition, and performing data review. Also, directed the maintenance and repair of several HP 5880 and 5890 GCs equipped with various columns and detectors.

Doble Engineering; Watertown, MA 0127; Analytical Chemist; PCB and Dissolved Gas Analysis (1/83-5/86).

Performed all aspects of the analysis of dielectric insulating fluids and environmental soil and water samples for PCB content using Gas Chromatography. All analysis required proficiency in ASTM preparative methods.

Conducted head space analysis of transformer oils by temperature programmed Gas Chromatography in order to diagnose the "state" of customers transformers.

Mobil Oil Corporation; Princeton NJ 08534; Lab Technician; EMPA Division (6/81-9/81) and Physical Testing Lab (6/80-9/80 Summer Co-Ops.).

Characterized the condition of new and used oils by the following techniques: AES and IR, Sediment Content, Kinematic and Brookfield Viscosity, Pour Points, Refractive Index and Oxidation measurements.

Education

B.S. Trenton State College: Trenton NJ; May 1982.
Field: Chemistry major / Physics minor.

Continuing Education

M.S. Northeastern University: Boston MA 02115;
Field: Analytical Chemistry
Courses: Separation Science, Advanced Organic I, and Electrochemistry.

Short Courses: ECRA Update 89. Conference (9/89).
Project Management. Fred Prior-Princeton (7/89).
Finnigan Users Course for INCOS 50 GC/MSs (5/89).
Capillary Gas Chromatography. Hewlett-Packard (5/88).

United States Environmental Protection Agency

This certifies that

Marybeth Puckace

has satisfactorily completed a training program in

Organic Data Validation

at

Edison, New Jersey

from to

January 26, 1990

Leon Lazarus

Patricia Werner Patak
1085 Martinstein Avenue
Bay Shore, New York 11706

Objective:
Long term career growth opportunities in Environmental Services Management.

Education:
Fairleigh Dickinson University
285 Madison Avenue
Madison, NJ
Bachelors Degree Geology, June 1983

Work History:
Environmental Testing Labs, Inc., Farmingdale, New York
May 1993- Present
Quality Assurance Officer
Responsibilities include establishing and maintaining certification with various states. Organize the analysis of all proficiency rounds. Inform all personnel of their quality control responsibilities while keeping up to date with revisions of protocols. Submit blind samples to insure laboratory performance. Perform audits in house to maintain laboratory compliance.

September 1991- May 1993
Technical Specialist.
Project management entailed performing as a liaison between the lab and all outside agencies. Communicated special requirements from client to lab, deciphered regulatory agency requirements. Clarified laboratory requirements and analytical results for clients. Provided Quality Control packages when necessary for specific clients.
Sample management responsibilities included monitoring all samples from their arrival in the lab to the final analytical report. Determined sample analyses, custody "correctness", and client specific turnaround times to keep the laboratory production at its highest.
Purchasing responsibilities included supplying the laboratory and satellite offices with all necessary items, while keeping the cost to a minimum.

August 1990-September 1991
Inorganic Supervisor.
Responsibilities included managing the daily operations of the Inorganic Chemistry Department. Expanded the testing abilities of the department and refined the quality of the testing performed.

H2M Labs. Inc.
August 1985-August 1990

July 1988 - August 1990
Responsibilities include the quality control and quality assurance of wet chemistry and metals data for Contract Laboratory Protocol (CLP) work. Organization of USEPA Lead studies, and writing proposals for protocol work. Institution of CLP packages through Telecation Associates software. Generate and review finished data. In charge of all laboratory supplies through numerous vendors.

August 1985 - June 1988
Technician in the inorganic and metals department. Responsible for the operation of the ARL 3410 Inductively Coupled Plasma Spectrophotometer, the Perkin Elmer 5100 Graphite furnace and the Varian GT 96 Graphite Furnace. Duties also included the analysis of waste water for Phenols, Cyanide, Total Kjeldahl Nitrogen, Ammonia, Total Alkalinity, Hexavalent Chromium, MBAS, and Solids.

References: Available upon request

APPENDIX 6

HEALTH AND SAFETY PLAN

SITE SPECIFIC SAFETY AND HEALTH PLAN
For Other Than Gasoline

SECTION 1: GENERAL INFORMATION & ACKNOWLEDGMENTS

CLIENT NAME: Bedford Affiliates PROJECT NAME: Ron Hill Cleaners

PROJECT MANAGER: Dawn Medaglia JOB NUMBER: 934002

SITE SUPERINTENDENT: Ken Watson/Rick Doxey REVISION: _____

SITE HEALTH & SAFETY OFFICER: Ken Watson / Rick Doxey

PREPARED BY: Dawn Medaglia DATE: 1-5-94

SHORT FORM APPROVED BY: DATE:

Health & Safety Manager: _____ 1-5-94

Project Manager: _____ 1-5-94

Site Superintendent: _____ 1-5-94 1-5-94.

SECTION 2: PROJECT INFORMATION

1. WILL POTENTIAL HAZARDS TO ON-SITE PERSONNEL EXIST? (YES OR NO)

   Physical: Yes (If yes, see Section 3)

   Chemical: Yes (If yes, see Section 4)

   Confined Space Entry: No (If yes, see Section 6)

2. SITE INFORMATION:

   Site Name: Ron Hill Cleaners Site Contact: Bedford Affiliates

   Address: 71 Forest Avenue Telephone: (516) 829-9520

   Glen Cove, N.Y.

3. SITE CLASSIFICATION: (Check all that apply)

____	Hazardous (RCRA)	____	Hazardous (CERCLA)	✓	Other
____	Construction	____	UST/LUST	____	Active
____	Sanitary Landfill	____	Manufacturing	✓	Inactive

4. PURPOSE AND DATE(S) OF FIELD VISIT(S): ~~Drilling, sampling, surveying~~ Environmental Assessment - 1994: pending approval of NYSDEC

5. TASKS: Drilling, well installation, sampling, surveying

6. ON-SITE ORGANIZATION: Subject to change

Tyree Personnel	Responsibilities
Ken Watson*/Rick Doxey*	Driller
Dawn Medaglia	Hydrogeologist

NOTE: Identify on-site Supervisor with an asterisk (*).

NOTE: This Site Safety Plan has been prepared for use by Tyree employees. Tyree claims no responsibility for its use by others. The plan is written for the specific site conditions, purposes, dates and personnel specified and must be amended if these conditions change.

Contractors and subcontractors whose work will be performed on-site, or who otherwise could be exposed to health and safety hazards, will be advised of known hazards through distribution of site information obtained by Tyree from others and this Site Safety Plan (SSP). They shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations. All contractors and subcontractors are responsible for: 1) Providing their own personal protective equipment; 2) Training their employees in accordance with applicable Federal, State and local laws; 3) Providing medical surveillance and obtaining medical approvals for their employees; 4) Ensuring their employees are advised of and meet the minimum requirements of this SSP and any other additional measures required by their site activities and 5) Designating their own Site Safety Officer.

7. BACKGROUND INFORMATION: (Attach existing description and map, if available)

Tetrachloroethylene and trichloroethylene contaminated soil present within building and in shallow soil behind building.

SECTION 3: PHYSICAL HAZARDS INFORMATION

1. IDENTIFY POTENTIAL PHYSICAL HAZARDS TO WORKERS:

___ Confined Space	___ Steep/Uneven Terrain	___ Surface Waters
✓ Heavy Equipment	___ Heat Stress	✓ Drum Handling
✓ Moving Parts	___ Extreme Cold	✓ Noise

Describe other unsafe environments ___

2. PROTECTIVE EQUIPMENT REQUIRED? Yes (✓) No ( )

If yes, complete Section 8.

3. SAFETY EQUIPMENT REQUIRED:

___ Harnesses	___ Stretcher	___ Lights
___ Explosimeter	✓ Eye Wash	___ Lights - Emergency
___ Blower	___ Shower	✓ Safety Cones
___ Lifeline	✓ Barrier Tape	___ Communications: On-site
___ Ladder	___ Fire Extinguisher	___ Communications: Off-site
✓ First Aid Kit	___ Emergency Air Horn	___ Traffic Vest
___ SCBA	___ Full Body Harness	

Describe other Hardhat, work boots, gloves

4. See Section 9 for additional safe work practices.

SECTION 4: CHEMICAL HAZARDS INFORMATION

1. IDENTIFIED CONTAMINANTS:

Known or suspected hazardous/toxic materials (Attach tabulated data, if available).

Media	Substances Involved	Characteristics	Estimated Concentrations
SL	Tetrachloroethylene	VO	0-14,000,000 ppb
SL	Trichloroethylene	VO	0-1,000 ppb

Media Types: GW (ground water), SW (surface water), WW (wastewater), AI (air), SL (soil), SD (sediment), LE (leachate), WA (waste), OT (other), WL (waste, liquid), WS (waste, solid), WD (waste, sludge), WG (waste, gas)

Characteristics: CA (corrosive, acid), CC (corrosive, caustic), IG (ignitable), RA (radioactive), VO (volatile), TO (toxic), RE (reactive), UN (unknown), OT (other, describe)

2. DESCRIBE POTENTIAL HAZARDS FOR EACH MEDIA TYPE:

Exceeding TWA for referenced substances

3. OVERALL SITE HAZARD LEVEL:

___ Serious ___ Moderate ✓ Low ___ Unknown

5. SITE MONITORING REQUIRED? Yes (✓) No ( )

If yes, identify monitoring equipment below:

____ HNU Meter (Lamp ____ eV)	____ Geiger Counter
____ Explosimeter	____ Respirable Dust Monitor
____ Organic Vapor Analyzer (OVA)	✓ Other

Describe Other PID

Monitoring equipment is to be calibrated according to manufacturer's instructions. Record measured levels in log book.

Describe method of surveillance (e.g., continuous, periodic, etc.). Indicate action levels and PPE required (total vapors, oxygen, LEL, radiation, other).

Periodic monitoring
PPE will be enforced if levels are exceeded as per MSDS information

6. PROTECTIVE CLOTHING REQUIRED? Yes (✓) No ( )

If yes, complete protective equipment form (Section 8).

7. RESPIRATORS REQUIRED? Yes ( ) No ( ) Pending actual levels

If yes, complete Section 8 and respirator log (Attachment 2).

SECTION 5: HAZARD COMMUNICATION PROGRAM

Each chemical used at the site shall have a Material Safety Data Sheet (MSDS) and be available for review by all field personnel. The company's written HAZCOM Program shall be available at all times with the MSDS. Training shall be performed whenever a new chemical is introduced at the site. Signatures for the training shall be documented on the Daily Toolbox Meeting form.

SECTION 6: CONFINED SPACE ENTRY

1. WILL CONFINED SPACE ENTRY TAKE PLACE? Yes ( ) No (✓)

If yes, complete Attachment 1, the Confined Space Entry Permit, prior to entering each confined space, each work shift. The Confined Space Permit must be posted outside the confined space. A copy of the company's written Confined Space Procedure is on-site with the written HAZCOM Program. (See Site Supervisor.)

SECTION 7: SITE EMERGENCY PLAN

Your Location Address: 71 Forest Avenue
Glen Cove, New York

Telephone Located at: Friendly's - south side of Forest Avenue

Emergency Phone Numbers:

Ambulance: (911) _____
Fire: (911) _____
Police: (911) _____

Poison Control: 676-5000

Hospital: 676-5000 Community Hospital of Glen Cove

Directions: Go east on Forest Avenue. Make first right onto Walnut Road. Hospital on right one block south.

FIRST AID

Ingestions: Give water if patient is conscious. Call Poison Control and follow instructions. Administer CPR, if necessary. Seek medical attention.

Inhalation: Remove person from contaminated environment. Administer CPR, if necessary. Seek medical attention.

Skin Contact: Brush off dry material and remove contaminated clothing. Wash skin with soap and water. Seek medical attention if irritation develops.

Eye Contact: Flush eyes and surrounding tissue with water for 15 minutes. Seek medical attention.

* Exposure Symptoms: Headache, dizziness, nausea, drowsiness, irritation of eyes, nose, throat and breathing difficulties.

Report incident to Project Manager and Regional Health and Safety Manager after emergency procedures have been implemented.

THE HOME OFFICE:

The following person(s) is/are available for assistance or guidance at all times and can be contacted at the Home Office during working hours at (516) 249-3150; after 5:00 p.m. as follows:

J. P. Mazzurco, Safety Manager - (914) 469-9386

Sky Pager
Numeric Message

- Dial 1-800-SKY-PAGE
  1-800-759-7243

- Enter PIN 279-9817, press #

- Enter numeric message or telephone number, press #

- Confirm message, press #

- Cancel message, press #

- For help, call SkyTel
  1-800-SKY-USER

SECTION 8: PROTECTIVE EQUIPMENT LIST

NAME Pending/Subject to change	MEDICAL CURRENT (DATE)	40 HR/8 HR TRAINING (DATE)	CONSTR. TRAINING (DATE)	FIT TEST CURRENT (INCLUDE TYPE & DATE)
Ken Watson	Feb 1993	Oct. 1993	Oct. 1993	Smoke Test - Oct. 1993
Rick Doxey	Feb. 1993	Oct. 1993	Oct. 1993	Smoke Test - Oct. 1993
Dawn Medaglia	Feb. 1993	Oct. 1993	Oct. 1993	Smoke Test - Oct. 1993

TASK	RESPIRATORS & CARTRIDGE*	CLOTHING	GLOVES	BOOTS	OTHER
Drilling	C - O		V, L		H
Well Installation	C - O		V, L		H
Sampling	D		V, L		
Surveying	D		V, L		

RESPIRATORS	CARTRIDGE	CLOTHING	GLOVES	BOOTS	OTHER
B = SCBA	O = Organic Vapor	T = Tyvek	B = Butyl	F = Firemans	F = Face Shield
C = Resp.	G = Organic Vapor & Acid Gas	P = PE Tyvek	L = Latex	L = Latex	G = Goggles
D = N/A	A = Asbestos (HEPA)	S = Saranex	N = Neoprene	N = Neoprene	L = Glasses
E = Escape	P = Particulate	C = Coveralls	T = Nitrile	S = Safety	H = Hard Hat
	C = Combination Organic Vapor & Particulate		V = Viton		

*Action levels for upgrade/downgrade < 200 ppm (STEL), no respirator

SECTION 9: SAFE WORK PRACTICES

THE FOLLOWING WORK PRACTICES MUST BE FOLLOWED BY PERSONNEL ON-SITE:

1. Smoking, eating or drinking are forbidden.
2. Ignition of flammable liquids within or through improvised heating devices (e.g., barrels) is forbidden.
3. Contact with samples, excavated materials or other contaminated materials must be minimized.
4. Do not kneel on the ground when collecting samples.
5. If drilling equipment is involved, know where the "kill switch" is.
6. All electrical equipment must be plugged into ground fault interrupter (GFI) protected outlets.

SECTION 10: EMPLOYEE ACKNOWLEDGMENTS

I acknowledge that I have reviewed the information of this Site Safety Plan. I understand the site hazards as described and agree to comply with the contents of this plan.

EMPLOYEE (print)	SIGNATURE	DATE

Confined Space Entry Permit

Space Name: _____ Entry #: _____

Purpose of Entry: _____

Entry Date(s): _____ Entry Time(s): _____ Permit Expires: _____

Attendant(s): _____ Entrants: _____ Rescue Information: _____

_____ _____ Phone #: _____

Exit Time(s):

Hazards Identified	yes	no
Oxygen deficiency (less than 19.5% at sea level)		
Flammable gases or vapors (greater than 10% of the lower flammable limit, or greater than 23.5% oxygen at sea level)		
Toxic gases or vapors (greater than the permissable exposure limit)		
Mechanical hazards		
Electrical shock		
Materials harmful to the skin		
Engulfment		
Configuration		

Equipment (specify)	required yes	required no	check when provided
1. Respiratory Protection _____			
2. Protective Clothing/Equipment _____			
3. Communication Equipment _____			
4. Rescue Equipment _____			
5. Ventilation _____			
6. Electrical Equipment _____			

Hazard Controls (specify)	required yes	required no	check when provided
1. Isolate The Space _____			
2. Lockout _____			
3. Clean/Purge _____			
4. Ventilate _____			
5. Barriers _____			
6. Other _____			

Air Monitoring Results

Air Monitoring Equipment Used: _____

			Time: ____ AM PM	Time: ____ AM PM	Time: ____ AM PM	Time: ____ AM PM	Time: ____ AM PM	Time: ____ AM PM	Time: ____ AM PM	Time: ____ AM PM
Oxygen level	min	19.5%								
	max	23.5%								
Flammability		10% LEL								
H_2S		10 ppm								
CO		25 ppm								
SO_2		2 ppm								
Other (specify)		_____								

Authorization of Entry Supervisor

Name: _____ Date: _____ Phone #: _____

Additional Instructions?

yes _____ no _____

If yes, list on back

Additional Permits?

yes _____ no _____

If yes, attach

EXHIBIT I

CONFINED SPACE SURVEY

(Prior to entering a confined space refer to 1910.146.)

GENERAL

Confined Space Location _____

No. of workers to enter _____

Expected duration of Entry _____ Actual _____

Type of work _____

TESTING

Atmospheric Testing	Level
Oxygen Def.	_____
LFL	_____
Hydrogen Sulfide	_____
Other	_____

Continuous Atmospheric Testing

Equipment _____

Tester _____

Hazard	Freq.
1. _____	
2. _____	
3. _____	
4. _____	

HAZARDS

No.

1	Explosive/Flam. Gases	9	Burns
2	Oxygen Deficiency	10	Noise
3	Toxic Gases	11	Slipping
4	Electrical Shock	12	Fire
5	Temperature	13	Biological
6	Contamination	14	Ergonomic
7	Energy Release	15	Engulfment
8	Radiation	16	Compression

No.	Control Methods
___	_____
___	_____
___	_____
___	_____
___	_____

Surrounding Area Survey

	Hazard	Control
1.	_____	_____
2.	_____	_____
3.	_____	_____

REQUIRED PPE

Respirator	[ ]
Glasses	[ ]
Face Shield	[ ]
Shoes	[ ]
Gloves	[ ]
Apron	[ ]
Earplugs	[ ]

Confined Space Permit Issued [ ] Yes [ ] No

Explain _____

Signature _____ Date _____

Tyree Environmental Technologies

DAILY TOOLBOX SAFETY MEETING

Date: _____ Weather/Temp: _____

Foreman: _____ Jobsite Location: _____

Topics of Safety Meeting:

[ ] Hardhats & Safety Shoes
[ ] Eye & Ear Protection
[ ] Work Zones & Site Control
[ ] Heat & Cold Stress
[ ] Designated Smoking Zone
[ ] Previously Occurring Accidents
[ ] Accident Reporting
[ ] Ladders for Excavations
[ ] Entering Excavations
[ ] Confined Space Entry
[ ] Ground Fault Interrupters
[ ] Location of First Aid Kit Fire Extinguishers & Phone Numbers
[ ] HAZCOM Training
[ ] Other _____

Signatures:

Tyree Employees	Subcontractors & Visitors

Notes From Daily Activities: _____

Superintendent Signature _____

PERCHLOROETHYLENE

MATERIAL SAFETY DATA SHEET FOR U.S.A. AND CANADA

SECTION 1 -- PRODUCT INFORMATION

Safety-Kleen Corp. - 777 Big Timber Road - Elgin, IL, U.S.A. 60123
Safety-Kleen Canada Inc. - 3090 Blvd. Le Carrefour - Suite 300 - Chomedy Laval Quebec, Canada H7T 2J7
For Product Technical Information Call 312-694-2700 (U.S.A.);
800-363-2260 (Eastern Canada); 514-686-2040 (Western Provinces/Call Collect)

24-HOUR EMERGENCY TELEPHONE	*MEDICAL:*	*TRANSPORTATION:*
These numbers are for emergency use only. If you desire non-emergency information about this product, please call a telephone number listed above.	800-752-7869 (U.S.A.) 312-942-5969 (CANADA) RUSH POISON CONTROL CENTER CHICAGO, ILLINOIS, U.S.A.	708-888-4660 (U.S.A.) SAFETY-KLEEN ENVIRONMENT, HEALTH AND SAFETY DEPARTMENT 613-996-6666 (CANADA) CANUTEC

IDENTITY (TRADE NAME): PERCHLOROETHYLENE

SYNONYMS: TETRACHLOROETHYLENE

SK PART NUMBER: 775, 10778, 30778

FAMILY/CHEMICAL NAME: CHLORINATED HYDROCARBON

PRODUCT USAGE: DRY CLEANING SOLVENT

MSDS FORM PART NO.: 82342

SECTION 2 -- HAZARDOUS COMPONENTS

NAME	SYNONYM	Wt. %	CAS NO.	OSHA PEL TWA ppm	OSHA PEL STEL ppm	ACGIH TLV TWA ppm	ACGIH TLV STEL ppm	LD50[a]	LC50[b]
*Perchloroethylene	Tetrachloroethylene	99.5-100	127-18-4	25	N.Av.	50	200	2629	34200

N.Av. = Not Available
*See Section 10-Other Regulatory Information
[a]Oral-Rat LD50 (mg/kg)
[b]Inhalation-Rat LC50 (mg/m^3/8 hours)

SECTION 3 -- PHYSICAL DATA

PHYSICAL STATE, APPEARANCE AND ODOR: Clear, colorless, liquid with a mild ether-like odor.

ODOR THRESHOLD: 50ppm (For Perchloroethylene).

BOILING POINT: 250°F (121°C) (For Perchloroethylene).

VAPOR PRESSURE: 14mm Hg at 68°F (20°C) (For Perchloroethylene).

FREEZING POINT: -7.6°F (-22°C) (For Perchloroethylene).

EVAPORATION RATE: 2.8 (Butyl Acetate = 1) (For Perchloroethylene).

VOLATILE: 100%

VOLATILE ORGANIC COMPOUNDS: 13.5 lbs/gal; 1623 g/l

DENSITY: 13.5 lbs/gal (For Perchloroethylene).

VAPOR DENSITY:	5.7 (Air = 1) (For Perchloroethylene).
SOLUBILITY IN WATER:	Slight (For Perchloroethylene).
pH	7-10
SPECIFIC GRAVITY:	1.623 (Water = 1) (For Perchloroethylene).
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available.
MOLECULAR WEIGHT:	165.8 (For Perchloroethylene).

SECTION 4 – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not applicable.
AUTOIGNITION TEMPERATURE:	Not applicable.
CONDITIONS OF FLAMMABILITY:	Heat, sparks and flame.
FLAMMABLE LIMITS IN AIR:	*LOWER:* Not applicable. *UPPER:* Not applicable.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Decomposition and combustion products may be toxic. Heated containers may rupture, explode or be thrown into the air. Not sensitive to mechanical impact or static discharge.
EXTINGUISHING MEDIA:	Carbon dioxide, dry chemical.
FIRE FIGHTING PROCEDURES – SPECIAL:	Perchloroethylene NFPA 704 Rating 2-0-0 Keep storage containers cool with water spray. Use self-contained breathing apparatus (SCBA).
HAZARDOUS COMBUSTION PRODUCTS:	Thermal decomposition and burning may produce phosgene, chloride fumes and carbon monoxide.

SECTION 5 – REACTIVITY DATA

STABILITY:	Stable under normal temperatures and pressures, and not reactive with water.
INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):	Avoid alkalies. May form explosive mixtures with metals and alkaline materials.
HAZARDOUS POLYMERIZATION:	Not known to occur under normal temperatures and pressures.
HAZARDOUS DECOMPOSITION PRODUCTS:	None under normal temperatures and pressures. However, thermal decomposition may produce phosgene chloride fumes and carbon monoxide.

SECTION 6 – HEALTH HAZARD DATA AND TOXICOLOGICAL PROPERTIES

PRIMARY ROUTES OF EXPOSURE: Eye and skin contact; inhalation.

EXPOSURE LIMITS: See Section 2.

SIGNS AND SYMPTOMS OF EXPOSURE:

ACUTE: *Eyes:* Contact may cause slight to moderate irritation.

Skin: Prolonged or repeated contact tends to remove skin oils, possibly leading to irritation and dermatitis. No significant skin absorption hazard.

Inhalation (Breathing): High concentrations of vapor or mist may be irritating to the respiratory tract, cause headaches, dizziness, nausea, impaired coordination, anesthesia and may have other central nervous system effects.

safety-kleen®

Material Safety Data Sheet

Perchloroethylene

Part #'s 775, 10778, 30778

Ingestion (Swallowing): May cause irritation of the throat, nausea, vomiting and symptoms of central nervous system depression. Aspiration into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

CHRONIC: Repeated or prolonged exposure may cause conjunctivitis. Prolonged and/or repeated skin contact may cause drying and cracking or dermatitis. Repeated inhalation may cause respiratory tract irritation, central nervous system depression, liver and kidney damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing skin, eye, liver, kidney, cardiovascular or central nervous system dysfunction may have increased susceptibility to the effects of exposure. Contact with skin may aggravate pre-existing dermatitis.

CARCINOGENICITY: IARC classifies chemicals by their carcinogenic risk, including agents that are known, probable or possible carcinogens. NTP classifies chemicals as either known carcinogens or for which there is a limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

Perchloroethylene is listed by IARC as a possible carcinogen. Perchloroethylene is classified by NTP as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

Also see Section 10.

OTHER POTENTIAL HEALTH HAZARDS: The following information is required by Canadian WHMIS regulations. Irritancy is covered in Signs and Symptoms of Exposure in Section 6. There is no known human sensitization, toxicologically synergistic product, reproductive toxicity, mutagenicity, or teratogenicity associated with this product.

SECTION 7 – EMERGENCY AND FIRST AID PROCEDURES

EYES: For direct contact, flush eyes with water for 15 minutes lifting upper and lower lids occasionally. If irritation or redness from exposure to vapors or mists develops, move victim away from exposure into fresh air. Consult physician if irritation or pain persists.

SKIN: Remove contaminated clothing and shoes. Wash skin twice with soap and water. Consult physician if irritation or pain persists.

INHALATION: (Breathing) Remove to fresh air immediately. Use oxygen if there is difficulty breathing or artificial respiration if breathing has stopped. Do not leave victim unattended. Seek immediate medical attention if necessary.

INGESTION: (Swallowing) If conscious, drink 4 to 8 ounces of water and seek immediate medical attention. DO NOT induce vomiting.

SECTION 8 – PRECAUTIONS FOR SAFE USE AND HANDLING AND PREVENTIVE MEASURES

SPILL PROCEDURES: Remove all ignition sources. Ventilate area and avoid breathing vapors. For large spills, isolate area and deny entry. If possible, contain as a liquid for possible re-refining. Absorb with compatible absorbent material. Shovel into closable container for disposal. Wear protective equipment specified in Section 9. Contain away from surface waters and sewers.

WASTE DISPOSAL METHODS: Dispose in accordance with federal, state, provincial and local regulations. Contact Safety-Kleen regarding recycling or proper disposal.

HANDLING PRECAUTIONS: Avoid contact with eyes, skin, clothing or shoes. Use in well ventilated area and avoid breathing vapors or mists. Keep away from heat, sparks and flames.

SHIPPING AND STORING PRECAUTIONS: Keep container tightly closed when not in use and during transport. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, grind or expose containers to flame or other sources of ignition. See Section 10 for Packing Group information.

PERSONAL HYGIENE: Use good personal hygiene. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco products. Clean contaminated clothing, shoes and protective equipment before reuse.

SECTION 9 -- CONTROL MEASURES AND OTHER PREVENTIVE MEASURES

EYE PROTECTION:	Where there is likelihood of spill or splash, wear chemical goggles and faceshield. Contact lenses should not be worn.
PROTECTIVE GLOVES:	Use polyvinyl alcohol, Teflon or Viton® gloves to prevent contact with skin.
RESPIRATORY PROTECTION:	Use NIOSH/MSHA-approved respiratory protective equipment when concentration of vapors or mists exceeds applicable exposure limit. Depending on the airborne concentration, use a full-face respirator or gas mask with appropriate cartridges and canisters. A self-contained breathing apparatus (SCBA) is required for large spills and emergencies. Selection and use of respiratory protective equipment should be in accordance in the U.S.A. with OSHA General Industry Standard 29 CFR 1910.134 and in Canada with CSA Standard Z94.4-M1982.
ENGINEERING CONTROLS:	Provide local exhaust or general dilution ventilation needed to maintain concentrations of vapors or mists below applicable exposure limits. Where explosive mixtures may be present, systems safe for such locations should be used.
OTHER PROTECTIVE EQUIPMENT:	Wear appropriate solvent-resistant boots, apron or other protective clothing where spills and splashes are possible. A source of clean water should be available in work areas for flushing the eyes and skin.

SECTION 10 -- OTHER REGULATORY INFORMATION

DOT PROPER SHIPPING NAME:	TETRACHLOROETHYLENE
DOT CLASS:	Class 6.1
DOT ID NUMBER:	UN1897, Packing Group III (Reportable Quantity = 100 lbs/container)
SARA TITLE III:	Product contains a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Toxic constituent is listed with an asterisk in Section 2 of this Material Safety Data Sheet. Product poses the following physical and/or health hazards as defined in 40 CFR 370.3 (Sections 311, 312 of SARA Title III): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard
CALIFORNIA:	This product contains detectable amounts of Perchloroethylene CAS No. 127-18-4 and Trichloroethylene CAS No. 79-01-6. These materials are listed by the State of California as known carcinogens.
TDGA:	Tetrachloroethylene, Class 6.1, UN1897, Packing Group III
WHMIS CLASSIFICATION:	D1B (Poisonous and Infectious Materials, Immediate and Serious Toxic Effects, Toxic Material); D2A (Poisonous and Infectious Materials, Other Toxic Effects, Very Toxic Material); D2B (Poisonous and Infectious Materials, Other Toxic Effects, Toxic Material)

SECTION 11 -- PREPARATION INFORMATION

PREPARED BY: Product MSDS Coordinator

REVISED: March 20, 1991

ORIGINAL ISSUE DATE: July 20, 1989

SUPERSEDES: December 1, 1989

PPG INDUSTRIES, INC. ONE PPG PLACE PITTSBURGH, PA 15272

* * * TRICHLOROETHYLENE

MSDS NUMBER:	0085
DATE:	07/31/90
EDITION:	011
TRADE NAME:	TRICHLOROETHYLENE
CHEMICAL NAME/SYNONYMS:	TRICHLOROETHENE, TRICHLORETHYLENE, TRICHLOR
CHEMICAL FAMILY:	HALOGENATED HYDROCARBONS
FORMULA:	CHCL=CCL2 CAS NUMBER: 000079 01 6
U.S. DOT SHIPPING NAME:	TRICHLOROETHYLENE
U.S. DOT HAZARD CLASS:	ORM-A
SUBSIDIARY RISK:	N/A
I.D. NUMBER:	UN1710
REPORTABLE QUANTITY:	100 LBS/45.4 KG

SECTION 1 * PHYSICAL DATA

BOILING POINT @ 760 MM HG:	86-88 C
VAPOR DENSITY (AIR=1):	4.54
SPECIFIC GRAVITY (H20=1):	1.465 @ 20/20 C
PH OF SOLUTIONS:	6.7 TO 7.5
FREEZING/MELTING POINT:	-86.4 C
SOLUBILITY (WEIGHT % IN WATER):	0.11
BULK DENSITY:	12.2 LBS/GAL @ 20 C
VOLUME % VOLATILE:	100
VAPOR PRESSURE:	57.8 MM HG @ 20 C
EVAPORATION RATE:	(ETHYL ETHER=1): 0.28
HEAT OF SOLUTION:	N/A

APPEARANCE AND ODOR:
CLEAR, COLORLESS LIQUID WITH ETHER-LIKE ODOR.

SECTION 2 * INGREDIENTS

MATERIAL	PERCENT
TRICHLOROETHYLENE (STABILIZED)	> 99

NOTE: TESTED MIXTURE

SECTION 3.* FIRE/EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED):
NONE WHEN TESTED IN ACCORD.WITH DOT REQ.

PPG INDUSTRIES, INC. ONE PPG PLACE PITTSBURGH, PA 15272

FLAMMABLE LIMITS IN AIR (% BY VOLUME)
LEL: 7.8%
UEL: 52%

EXTINGUISHING MEDIA:
WATER, DRY CHEMICALS OR CARBON DIOXIDE

SPECIAL FIRE FIGHTING PROCEDURES:
FIRE FIGHTERS SHOULD WEAR NIOSH/MSHA APPROVED PRESSURE DEMAND, SELF-CONTAINED BREATHING APPARATUS FOR POSSIBLE EXPOSURE TO HYDROGEN CHLORIDE AND POSSIBLE TRACES OF PHOSGENE.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
VAPORS CONCENTRATED IN A CONFINED OR POORLY VENTILATED AREA CAN BE IGNITED UPON CONTACT WITH A HIGH ENERGY SPARK,FLAME,OR HIGH INTENSITY SOURCE OF HEAT. THIS CAN OCCUR AT CONCENTRATIONS RANGING BETWEEN 7.8-52% BY VOL. DECOMPOSITION OR BURNING CAN PRODUCE HYDROGEN CHLORIDE OR POSSIBLE TRACES OF PHOSGENE.

SECTION 4 * HEALTH HAZARD DATA

TOXICITY DATA:

LC50 INHALATION:	LCLO(RATS) 8000 PPM/4 HOUR
LD50 DERMAL:	NOT DETERMINED
SKIN/EYE IRRITATION:	SEE SECTION 5
LD50 INGESTION:	(RAT) 4900-7000 MG/KG
FISH,LC50 (LETHAL CONCENTRATION):	SEE SECTION 5

CLASSIFICATION: (POISON, IRRITANT, ETC.)

INHALATION:	SLIGHTLY TOXIC
SKIN:	NOT DETERMINED
SKIN/EYE:	SKIN-MILDLY IRRITATING/EYE-IRRITANT
INGESTION:	SLIGHTLY TO MODERATELY TOXIC
AQUATIC:	SEE SECTION 5

SECTION 5 * EFFECTS OF OVEREXPOSURE

THIS SECTION COVERS EFFECTS OF OVEREXPOSURE FOR INHALATION, EYE/SKIN CONTACT, INGESTION AND OTHER TYPES OF OVEREXPOSURE INFORMATION IN THE ORDER OF THE MOST HAZARDOUS AND THE MOST LIKELY ROUTE OF OVEREXPOSURE.

PPG INDUSTRIES, INC. ONE PPG PLACE PITTSBURGH, PA 15272

S CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?
ITP - NO IARC - NO OSHA - NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
NONE KNOWN

PERMISSIBLE EXPOSURE LIMITS:
OSHA: 50 PPM, 8-HOUR TWA (TIME WEIGHTED AVERAGE); 200 PPM, 15-MINUTE STEL (SHORT-TERM EXPOSURE LIMIT); 29 CFR 1910.1000, TABLE Z.2, REV. 3/1/89.

ACUTE:

INHALATION: TRICHLOROETHYLENE IS A CENTRAL NERVOUS SYSTEM DEPRESSANT WHICH CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT, DIZZINESS, NAUSEA, HEADACHE, LOSS OF COORDINATION AND EQUILIBRIUM, POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE, UNCONSCIOUSNESS AND DEATH IN CONFINED OR POORLY VENTILATED AREAS. FATALITIES FOLLOWING SEVERE ACUTE EXPOSURE HAVE BEEN ATTRIBUTED TO VENTRICULAR FIBRILLATION RESULTING IN CARDIAC FAILURES.

EYE/SKIN: LIQUID SPLASHED IN THE EYE CAN RESULT IN DISCOMFORT, PAIN AND IRRITATION. PROLONGED OR REPEATED CONTACT WITH LIQUID ON THE SKIN CAN CAUSE IRRITATION AND DERMATITIS. THE PROBLEM MAY BE ACCENTUATED BY LIQUID BECOMING TRAPPED AGAINST THE SKIN BY CONTAMINATED CLOTHING AND SHOES, AND SKIN ABSORPTION CAN OCCUR.

INGESTION: SWALLOWING OF THIS MATERIAL MAY RESULT IN IRRITATION OF THE MOUTH AND GI TRACT ALONG WITH OTHER EFFECTS AS LISTED ABOVE FOR INHALATION. VOMITING AND SUBSEQUENT ASPIRATION INTO THE LUNGS MAY LEAD TO CHEMICAL PNEUMONIA AND PULMONARY EDEMA WHICH IS A POTENTIALLY FATAL CONDITION.

CHRONIC:
PROLONGED EXPOSURE ABOVE THE OSHA PERMISSIBLE LIMITS MAY RESULT IN LIVER AND KIDNEY DAMAGE. TRICHLOROETHYLENE HAS BEEN EXTENSIVELY STUDIED FOR CHRONIC EFFECTS IN ANIMALS. WHILE THERE ARE STUDIES IN WHICH TUMORS WERE INDUCED IN MICE, THERE IS NO EVIDENCE THAT TRICHLOROETHYLENE POSES A CARCINOGENIC RISK TO HUMANS. TRICHLOROETHYLENE IS LISTED IN GROUP 3 BY IARC AND IS NOT LISTED BY NTP OR OSHA.

TOXICITY DATA - AQUATIC DATA:
SHEEPSHEAD MINNOWS - 96-HOUR LC50 - 52 MG/L - SLIGHTLY TOXIC
MYSID SHRIMP - 96-HOUR LC50 - 14 MG/L - SLIGHTLY TOXIC
MARINE ALGA - 96-HOUR EC50 - 95 MG/L -SLIGHTLY TOXIC

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* EMERGENCY AND FIRST AID PROCEDURES

INHALATION:
REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

EYE OR SKIN CONTACT:
FLUSH EYES AND SKIN WITH PLENTY OF WATER (SOAP AND WATER FOR SKIN) FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. IF IRRITATION OCCURS, CONSULT A PHYSICIAN. THOROUGHLY CLEAN CONTAMINATED CLOTHING AND SHOES BEFORE REUSE OR DISCARD.

INGESTION:
IF CONSCIOUS: DRINK LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING. TAKE IMMEDIATELY TO A HOSPITAL OR PHYSICIAN.
IF UNCONSCIOUS: OR IN CONVULSIONS, TAKE IMMEDIATELY TO A HOSPITAL. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIAN (INCLUDING ANTIDOTES):
NEVER ADMINISTER ADRENALINE FOLLOWING TRICHLOROETHYLENE OVEREXPOSURE. INCREASED SENSITIVITY OF THE HEART TO ADRENALINE MAY BE CAUSED BY OVEREXPOSURE TO TRICHLOROETHYLENE.

SECTION 6 * REACTIVITY DATA

STABILITY: STABLE.
CONDITIONS TO AVOID: AVOID OPEN FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.
CONDITIONS TO AVOID: NONE.

INCOMPATIBILITY (MATERIALS TO AVOID):
AVOID CONTAMINATION WITH CAUSTIC SODA, CAUSTIC POTASH OR OXIDIZING MATERIALS. SHOCK SENSITIVE COMPOUNDS MAY BE FORMED.

HAZARDOUS DECOMPOSITION PRODUCTS:
HYDROGEN CHLORIDE AND POSSIBLE TRACES OF PHOSGENE.

SECTION 7 * SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED:
IMMEDIATELY EVACUATE THE AREA AND PROVIDE MAXIMUM VENTILATION. UNPROTECTED

PPG INDUSTRIES, INC. ONE PPG PLACE PITTSBURGH, PA 15272

PERSONNEL SHOULD MOVE UPWIND OF SPILL. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN/EYE PROTECTION (SEE SECTION 8) SHOULD BE PERMITTED IN AREA. DIKE AREA TO CONTAIN SPILL. TAKE PRECAUTIONS AS NECESSARY TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS. RECOVER SPILLED MATERIALS ON ADSORBENTS, SUCH AS SAWDUST OR VERMICULITE, AND SWEEP INTO CLOSED CONTAINERS FOR DISPOSAL. AFTER ALL VISIBLE TRACES, INCLUDING IGNITABLE VAPORS, HAVE BEEN REMOVED, THOROUGHLY WET VACUUM THE AREA. DO NOT FLUSH TO SEWER. IF AREA OF SPILL IS POROUS, REMOVE AS MUCH CONTAMINATED EARTH, GRAVEL, ETC. AS NECESSARY AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

ASTE DISPOSAL METHOD:

CONTAMINATED SAWDUST, VERMICULITE OR POROUS SURFACE MUST BE DISPOSED OF IN A PERMITTED HAZARDOUS WASTE MANAGEMENT FACILITY. RECOVERED LIQUIDS MAY BE REPROCESSED OR INCINERATED OR MUST BE TREATED IN A PERMITTED HAZARDOUS WASTE MANAGEMENT FACILITY. CARE MUST BE TAKEN WHEN USING OR DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO PREVENT ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE CHEMICAL MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR ACT, THE CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT, AS WELL AS ANY OTHER RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING DISPOSAL.

SECTION 8 * SPECIAL PROTECTION INFORMATION

ESPIRATORY PROTECTION:

USE A HALF OR FULL FACEPIECE ORGANIC VAPOR CHEMICAL CARTRIDGE OR CANISTER RESPIRATOR WHEN CONCENTRATIONS EXCEED THE PERMISSIBLE LIMITS. USE SELF-CONTAINED BREATHING APPARATUS (SCBA) OR FULL FACEPIECE AIRLINE RESPIRATOR WITH AUXILIARY SCBA OPERATED IN THE PRESSURE-DEMAND MODE FOR EMERGENCIES AND FOR ALL WORK PERFORMED IN STORAGE VESSELS, POORLY VENTILATED ROOMS, AND OTHER CONFINED AREAS. RESPIRATORS MUST BE APPROVED BY NIOSH/MSHA. THE RESPIRATOR USE LIMITATIONS MADE BY NIOSH/MSHA AND BY THE MANUFACTURER MUST BE OBSERVED. RESPIRATORY PROTECTION PROGRAMS MUST BE IN ACCORDANCE WITH 29 CFR 1910.134.

ENTILATION(TYPE):

USE LOCAL EXHAUST OR DILUTION VENTILATION AS APPROPRIATE TO CONTROL EXPOSURES TO BELOW PERMISSIBLE LIMITS.

YE PROTECTION:

SPLASHPROOF GOGGLES

LOVES:

VITON(R), SILVER SHIELD(R),
POLYVINYL ALCOHOL (DEGRADES IN WATER).

THER PROTECTIVE EQUIPMENT:

BOOTS, APRONS, OR CHEMICAL SUITS SHOULD BE USED WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE CLOTHING AND USE OF EQUIPMENT MUST BE IN

PPG INDUSTRIES, INC. ONE PPG PLACE PITTSBURGH, PA 15272

SARA TITLE III - A) 311/312 CATEGORIES - ACUTE AND CHRONIC, B) LISTED IN SECTION 313 UNDER TRICHLOROETHYLENE, C) NOT LISTED AS AN "EXTREMELY HAZARDOUS SUBSTANCE" IN SECTION 302.

CERCLA - LISTED IN TABLE 302.4 OF 40 CFR PART 302 AS A HAZARDOUS SUBSTANCE WITH A REPORTABLE QUANTITY OF 100 POUNDS. RELEASES TO AIR, LAND OR WATER WHICH EXCEED THE RQ MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

RCRA - WASTE TRICHLOR AND CONTAMINATED SOILS/MATERIALS FROM SPILL CLEANUP AND U228 HAZARDOUS WASTE AS PER 40 CFR 261.33 AND MUST BE DISPOSED OF ACCORDINGLY UNDER RCRA. SEE 40 CFR 261.33(C) AND 261.7(B)(3) FOR CLEANING REQUIREMENTS FOR EMPTY CONTAINERS.

CALIFORNIA PROP. 65 - THIS PRODUCT IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

NEW JERSEY RIGHT-TO-KNOW - ALSO CONTAINS BUTYLENE OXIDE (CAS NO. 106-88-7)

CANADIAN WHMIS - A) SENSITIZATION TO PRODUCT: NONE KNOWN, B) REPRODUCTIVE TOXICITY: NONE KNOWN, C) ODOR THRESHOLD: NOT KNOWN, D) PRODUCT USE: DEGREASING SOLVENT, E) REQUIRES POISON SYMBOL (CLASS D.1), PLUS ST. ANDREW'S CROSS.

R. KENNETH LEE
MANAGER, PRODUCT SAFETY