Privileged and Confidential

FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

SUPPLEMENTAL INVESTIGATION WORK PLAN (ADDENDUM I - REVISED)

SITE #: V00380-2

Prepared For
Fyn Paint & Lacquer Co., Inc.
November 2004
Revised : April 2005

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694-5711

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

Page

LIST OF TABLE
(at end of report)

Table

LIST OF FIGURES
(at end of report)

Figure

FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

SUPPLEMENTAL INVESTIGATION WORK PLAN (ADDENDUM I - REVISED) SITE #: V00380-2

1.0 INTRODUCTION

The Fyn Paint & Lacquer Co., Inc. (Fyn) is the subject of a Voluntary Cleanup Program (VCP), Index Number W2-0873-00-10 pursuant to the New York State Department of Environmental Conservation (NYSDEC) VCP. Fyn has entered into the VCP with the NYSDEC and is listed as the volunteer for Site ID V00380-2, Index No. W2-0873-00-10. Leggette, Brashears & Graham, Inc. (LBG) on behalf of Fyn, has developed the following Revised Supplemental Investigation Work Plan (Addendum I - Revised). This Work Plan was developed based on the results of the September 2003 SRI Report, Supplemental Remedial Investigation Work Plan (Addendum I) submitted on November 2004 and the proceedings of the December 7, 2004 meeting between the NYSDEC, Fyn Paint and LBG, and in response to December 16, 2004 letter from NYSDEC. The purpose of this Work Plan is to define the methods by which the following tasks will be accomplished:

- remove free-phase product from the subsurface;
- define the extent of free-phase product beneath the Con Edison parking lot south of the Con Edison control building and near MW-9A;
- define the downgradient extent of dissolved compounds near the intersection of River Street and Metropolitan Avenue;
- define the vertical extent of dissolved compounds beneath the Con Edison parking lot;
- conduct an extensive soil-vapor investigation beneath sidewalks along Kent Avenue, North First Street, River Street and Metropolitan Avenue;
- conduct an environmental audit, site inspection providing an inventory of chemicals used by Fyn as well as the production technology;

- conduct a site safety assessment; and,
- prepare an interim remedial measure work plan; and,
- conduct biannual ground-water monitoring.

This SIWP (Addendum I – Revised) was also prepared in accordance with the NYSDEC Brownfields Cleanup Program – Part 2 (NYSDEC letter December 2, 2003).

2.0 AREA DESCRIPTION

The Fyn Paint & Lacquer Co., Inc. is located in an industrial/commercial area at the intersection of Kent Avenue and North Street in the Borough of Brooklyn, New York City. The Fyn Paint site consists of a one story industrial/warehouse building. The facility is currently utilized as a paint and lacquer factory. The vicinity of the property consists of industrial, commercial and residential properties.

The footprint of the building is approximately 5,000 ft^2 (square feet) on the first floor and approximately 3,500 ft^2 on the balcony. The building's heating system is provided by steam heat and the electrical service enters the building from Kent Avenue. A small basement is used for the heating oil tank, furnace and controls for the sprinkler system and air compressor. The site is connected to the New York City municipal sewer system.

The Site is located in the Atlantic Coastal Plain physiographic province. The geology of this province is comprised of interbedded layers of sand, clay and marl. In Long Island the marine deposits are overlain by drift. The marine deposits are Cretaceous and Quaternary. The drift deposits are derived from glacial activity that occurred during the Pleistocene. The total thickness of the marine and glacial deposits in Kings County ranges from 0 foot in northwest Brooklyn to 1,100 feet thick in northeastern Brooklyn.

The ground-water resources that underlie western Long Island are composed of a series of unconsolidated deposits of sand, gravel and clay of late Cretaceous and Pleistocene age. The principal water-bearing units that provide usable quantities of water are the Upper Glacial Aquifer, the Jameco Aquifer, the Magothy Aquifer and the Lloyd Aquifer. Except for the Upper Glacial Aquifer and Jameco Aquifer, these units are vertically separated from each other by confining clay units.

The topography of the area is generally level. The vicinity of the Site is approximately 11 to 15 ft msl (feet above mean sea level). The ground surface at the Site consists of poured concrete and asphalt pavement. The shallow sediments beneath the Site consist of medium and coarse grained brown sand with some silt and trace gravel. In general, the subsurface beneath the area consisted of interbedded layers of sand, gravel, clay and silt to approximately 75 feet below ground surface. Bedrock beneath the Site is approximately 75 feet below ground surface. The regional direction of ground-water flow beneath the property is toward the west.

3.0 INVESTIGATION SUMMARY

The two facilities in the vicinity of the contaminant source area are Con Edison property located at 214 Kent Avenue and Fyn Paint property located at 230 Kent Avenue. A site map is shown on figure 1.

3.1 Con Edison Property Historical Investigations

Con Edison North First Street Terminal (NFST), located at 214 Kent Avenue, occupies an area between East River, North Third Street, Grand Street and Kent Avenue. The facility was used until April 1, 1998 for storage and distribution via pipeline of oil #6. A total of over 31 million gallons of #6 oil was stored in six (6) above-ground storage tanks (ASTs) and in one 10,000-gallon underground storage tank (UST).

Information provided by Con Edison has shown that product containing volatile organics was encountered in soil borings advanced for the cathodic protection installation associated with the Con Edison 10,000-gallon UST. The volatile organic compounds (VOCs) detected included toluene, ethylbenzene and xylenes totaling 876,000 mg/l (milligrams per liter) [Con Edison, no date]. The NYSDEC spill number associated with these results is 96-04977. The source of these compounds was not identified, but was suspected by Con Edison to be Fyn Paint to the south. To confirm these results, borings were proposed to be advanced in the vicinity of the UST to characterize the subsurface conditions in the area.

A Phase II ESA, performed by Lawler, Matusky & Skelly Engineers, LLP (LMS), was completed on January 14, 2000. This investigation covered the NFST and the former Pfizer property.

Previous Phase I ESAs performed for the two properties identified a number of Recognized Environmental Conditions (REC). These RECs included above ground storage tanks and underground storage tanks; areas where mycelium was disposed; buried heating coils from a sulfuric acid barge; a lead lined containment basin; ground water, subsurface and shallow soil conditions as well as toxic or hazardous material containers.

A storm drain outside one building and a manhole within the building were sampled. The results of both these samples showed that six semivolatile organic compounds (SVOCs) and eleven metals were detected above the soil cleanup objectives. There were no exceedances of the maximum concentrations for toxicity characterization for Toxicity Characteristic Leaching Procedure (TCLP) metals.

Soil borings were advanced into the water table at the former oil storage area and former Pfizer site. Laboratory analysis of the soil sample indicated VOCs concentrations above the New York State Department of Environmental Conservation (NYSDEC) Soil Cleanup Objectives. Results for the metal analyses identified ten metals with concentrations above soil cleanup objectives.

Ground-water samples were collected from four monitoring wells which previously existed onsite in addition to the thirteen soil borings. Of the four monitoring wells only one, MW-4, contained VOCs (thirteen [13] compounds) in concentrations exceeding the NYSDEC Class GA standards. Seven metals were detected above their respective ground-water standards while no SVOCs or polychlorinated biphenols (PCBs) were detected in the four monitoring wells. Ground-water samples collected from the soil borings were generally consistent with the soil samples collected from the same location.

LMS proposed several conceptual remediation alternatives for this site, all of which rely on various assumptions regarding the extent of contamination. The primary recommendation is to further delineate the contamination onsite. Other proposed remediation alternatives include "hot spot" soil excavation, no action/natural attenuation, an air sparging/soil-vapor extraction/vapor treatment.

3.2 Fyn Paint Property (230 Kent Avenue) Property Historical Investigations

Fyn Paint is a facility for the production of paints and lacquers and is a NYSDEC registered Chemical Bulk Facility (ID #2-000151).

In January 1999, Fenley & Nicol performed the closure of three, 550-gallon; four, 1,100-gallon; and one, 1,500-gallon steel USTs at the Fyn Paint & Lacquer Co., Inc.

Following the tank abandonment in February 1999, 8 soil borings were drilled inside of the Fyn Paint building. Selected soil samples were analyzed in laboratory. The laboratory analysis indicated the presence of ethylbenzene, toluene, o-xylene, m/p xylene and acetone. A report regarding the UST closure was prepared by Fenley & Nicol Environmental on March 23, 1999. The report concluded that additional investigation will be necessary in order to define the extent of soil and ground-water contamination at the Fyn Paint site.

Con Edison reported NYSDEC Spill # 96-04977 in 1996 for subsurface contamination discovered associated with the Con Edison 10,000-gallon UST. Although this contamination was discovered in 1996 and Con Edison informed NYSDEC it believed Fyn Paint was the potential contaminant source, the owner of Fyn Paint was not notified of the spill and their potential involvement by NYSDEC or Con Edison.

In November and December 2000, Fenley & Nicol conducted a limited subsurface investigation in order to determine the ground-water quality beneath the Fyn Paint building. Three temporary ground-water sampling wells were installed in the vicinity of the former USTs.

3.3 Combined Fyn Paint and Con Edison Investigation

In the spring of 2001 and summer of 2003, LBG conducted additional subsurface investigations at the site to further delineate the contamination. The activities performed as part of the additional subsurface investigations included drilling of soil borings, installation of ground water monitor wells, subsurface soil sampling, ground water sampling, ambient air sampling and soil vapor sampling.

The results of the additional subsurface investigations indicated that soil, ground water and soil vapor in the area have been impacted by VOCs and SVOCs.

In the spring of 2001 soil impacted by VOCs including acetone, ethylbenzene, isopropylbenzene, toluene and xylenes was encountered beneath the Con Edison and the adjacent Fyn property. These compounds were detected in soil samples collected from CE-1, CE-2 and CE-3 drilled on Con Edison parking lot and GP-3 and GP-4 drilled inside of Fyn Paint building (see figure 2 for past sampling locations). In the summer of 2003, laboratory analysis of soil samples collected indicated the presence of VOCs including xylenes, toluene, ethylbenzene, acetone and methyl isobutyl ketone. The impacted soil exists at and below the water table.

The analysis of soil samples collected indicated the presence of naphthalene which is a specific chemical compound present in oil No. 6. This compound was detected in soil samples collected from CE-1 (760 ug/kg) and CE-2 (180 ug/kg) which are located on Con Ed property. LMS also detected naphthalene in soil during the January 2000 subsurface investigation (S-02D 134 ug/kg; S-04D 439 ug/kg).

It should be noted that as recorded in NYSDEC file, nine releases of fuel oil were reported by Con Edison at the North First Street facility from 1985 to the present.

Chlorinated solvents were detected at concentrations significantly above NYSDEC guidelines in soil samples collected during the drilling of CE-1 and CE-2. The primary solvent of concern is tetrachloroethene (PCE).

Laboratory analysis of soil samples for SVOCs showed the presence of several components in concentrations above NYSDEC Alternative Guidance Values (AGVs). These compounds which were detected only in soil samples collected during the drilling of CE-1 and CE-2 (in the vicinity of the 10,000-gallon UST) located in Con Edison's parking lot are naphthalene, phenanthrene, fluoranthene, pyrene, chrysene and several benzo compounds.

Ground water impacted by dissolved VOCs was detected beneath the Fyn Paint and Con Edison properties located between Kent Avenue and River Street. The dissolved VOCs in ground water extend downgradient to the west of these facilities. Ground water near MW-4 has been significantly impacted and CE-4, MW-1 and MW-2 ground-water samples contain several VOCs at concentrations slightly above Ground Water Quality Standards. The primary VOCs of concern are acetone, toluene, ethylbenzene and xylenes. Free-phase product was present in

CE–1 and CE–2. Fingerprint analysis was not capable of detecting the origin of the free-phase product.

In the spring 2001, dissolved concentrations of the VOCs toluene, ethylbenzene and xylenes were found in ground water sampled from under Con Ed property (CE-1 and CE–2) and Fyn Paint (TW-1, TW–2 and TW–3). Also, the solvent methylene chloride was detected in CE–1 and CE–2 (CE–2, 17,000 ug/l) and in the Fyn Paint temporary wells (TW–1, 7,784 ug/l). In the summer 2003, analysis of ground water samples indicated that twelve wells contained dissolved VOCs at concentrations above NYSDEC GWQS. Greatest VOC impact to ground water exists in the region of MW-4, MW-9A, MW-11, MW-12, MW-15, MW-16 and CE-1.

Acetone was detected in the ground water on the Fyn property (TW-2, 10,558,250 ug/l) and in ground water on Con Ed property (CE–2, 120,000 ug/l).

Dissolved PCE was detected in ground water samples collected from MW-6, MW-5, MW–4, CE–1 and CE–2. PCE concentrations of 960 ug/l (CE-1), 1,400 ug/l (CE-2) and methylene chloride of 14,000 ug/l (CE-1) and 17,000 ug/l (CE-2) are well above the NYSDEC standards which are 5 ug/l (NYSDEC Water Quality Regulations Surface and Ground Water Classifications, June 1998). The dissolved VOC plume extends to the northwest to MW-4 and MW-12 but not as far as CE-4, GP-2 or MW-1. Its lateral limit to the west is defined by low levels or no VOCs in MW-8, MW-10 and MW-14.

In addition, other chlorinated solvents such as trichloroethene (TCE) and 1,1,1 trichloroethane were detected in ground water samples collected from MW-4, MW-5 and MW-6. The source of the chlorinated solvents in ground water could not be identified during the subsurface investigation; however the highest concentration of PCE in soil and ground water was found in CE-1 and CE–2 located on Con Edison property.

In the summer of 2003, free-phase product was observed in MW-15, CE-1 and MW-9A and has been observed in CE-2 in the past. The greatest thickness is near MW-15. The product appears to be confined to the area beneath the north wall of the Fyn building and an unknown portion of the Con Edison parking lot north of Fyn. Since the subsurface investigation was completed, the free-phase product was bailed from the effected wells and

stored temporarily inside the Fyn building pending offsite disposal. As of the winter 2004, no additional free-phase product has been detected in the above listed wells.

VOCs were detected in soil-gas samples collected from both the perimeter and interior of the Fyn building. Additionally, an ambient air sample was collected from inside the Fyn building. A summary of the laboratory results is shown on table 1.

4.0 PROPOSED SUPPLEMENTAL REMEDIAL INVESTIGATION

4.1 Free-Phase Product Extent

Free-phase product has been measured in Monitor Wells CE-1, CE-2, MW-15 and MW-9A. All existing monitor wells are shown on figure 2. The full extent of free-phase product to the west and north of MW-15 and CE-2 is not yet defined due to the limited number and depth of monitor wells there.

In order to define the extent of free-phase product, a total of 8 monitor wells would be installed, four monitor wells in the Con Edison parking lot, one well on the east side of River Street, two wells on the south side of North First Street, and one well on the northwest corner of North First Street and Kent Avenue. The proposed well locations are shown on figure 3. The wells would be constructed of 4-inch diameter galvanized steel well screen and galvanized steel riser pipe. The well screen would extend 3 to 5 feet above the static ground-water or product level. Monitor Wells CE-1, CE-2, CE-3 and GP-3 will be abandoned after they are superseded by newer monitor wells.

While drilling the soil borings for the new monitor wells, soil samples would be collected at 5-foot intervals to the water table and below the water table to the completion depth or to a point where sample integrity is no longer possible due to geology. The samples would be described on a geologic log and screened for VOCs in the headspace vapor using a photoionization detector (PID). The soil sample exhibiting the highest VOC concentration would be packaged for laboratory analysis of VOCs by EPA Method 8260. Laboratory results will be reported with ASP Category A deliverables. Drilling cuttings will be contained and stored onsite pending offsite disposal.

Based on the results of the product thicknesses obtained from these newly installed wells, LBG will be able to determine the extent of the free-phase contamination beneath the site.

4.2 Dissolved-Phase Compound Extent

The 2001 and 2003 subsurface investigations have served to define the extent of dissolved-phase contamination as occupying an area beneath the Fyn building, the south side of North First Street, the Con Edison parking lot adjacent to the control building and the east and west sides of River Street between North First Street and Metropolitan Avenue.

Monitor well installation to the west of MW-4, MW-12 and MW-14 is impossible due to the presence of Con Edison above-ground storage tanks. The wells MW-1, MW-2, MW-3 and CE-4 farthest downgradient of Fyn (see figure 2) did not contain VOCs at concentrations above NYSDEC Ground Water Quality Standards (GWQS) in August 2003. Therefore, the only location where ground-water quality remains to be evaluated is the area between MW-12 and MW-5. Extensive subsurface utilities at the intersection of River Street and Metropolitan Avenue prevent drilling directly north of MW-12. A viable drilling location is the northwest corner of River Street and Metropolitan Avenue. The proposed well location is shown on figure 3. A 4-inch PVC monitor well will be installed at the indicated location. Construction and soil sampling will be the same as for those wells discussed in a previous section. Drill cuttings will be contained and stored onsite pending offsite disposal.

Additionally, a deep monitor well will be installed at the west end of the Con Edison parking lot, south of the control building to determine the vertical extent of dissolved VOCs. The well will consist of a 10-foot section of 2-inch diameter PVC well screen set approximately 45 feet below the water table (approximately 60 to 70 feet below grade). A 2-inch diameter riser pipe would extend to grade level. The annular space around the riser pipe would be filled with a bentonite grout. The proposed well location is shown on figure 3.

The installation of these two additional monitoring wells will provide information needed to evaluate the dissolved-phase compound concentrations in the area between MW-12 and MW-5 as well as determine the vertical extent of dissolved VOCs in the source area.

4.3 Proposed Soil Vapor Investigation Work Plan

A preliminary soil vapor investigation was conducted on July 2003 from 5 points beneath the sidewalk adjacent to the east, south and west sides of the Fyn Paint building. Soil vapor samples were collected from each location at depths between 3.5 and 4 ft bg (feet below grade). Each sample was analyzed for volatile organic compounds (VOCs) by EPA Method TO-15. Laboratory results of the soil vapor samples showed the presence of VOCs in samples collected from inside and from outside of the north corner of the Fyn building. The results of the soil vapor investigation were submitted in the Leggette, Brashears & Graham, Inc. (LBG) report titled: "Supplemental Remedial Investigation Report, Fyn Paint & Lacquer Co., Inc., 230 Kent Avenue, Brooklyn, New York, VCP VV00380-2", dated September 2003.

In a letter dated February 24, 2004, NYSDEC required a more extensive soil vapor investigation with particular concern across the intersection of Kent Avenue and North First Street from the site. The letter also indicated that the Supplemental Remedial Investigation Report (SRIR) was approved under several conditions. One of the conditions was the soil vapor investigation at the intersection of Kent Avenue and North First Street. On March 23, 2004 a letter from NYSDEC indicated that at a minimum, two soil vapor samples must be collected in Summa canister and analyzed for VOCs from the location at the intersection of Kent Street and North First Street.

A NYSDEC letter dated December 10, 2004 indicated that Fyn Paint must implement the NYSDOH requirement regarding the collection of soil gas samples. The letter identifies the depth of the soil vapor borings and the pumping rate.

The following soil vapor investigation work plan was prepared in response to the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) request, and in accordance with the NYSDEC letter dated December16, 2004.

The work plan was prepared using the NYSDOH Center for Environmental Health, Bureau of Environmental Exposure Investigation Guidance for Evaluating Soil Vapor Intrusion in the State of New York Draft for Public Comment, February 2005.

4.3.1 Work Scope

The subsurface investigation will consist of collecting soil vapor samples at eight locations in the area. The purpose of soil vapor is to determine the following:

1. potential for current human exposure;
2. potential for future human exposure; and,
3. measure to be implemented for removal of vapors from the subsurface.

During the soil vapor investigation one round of soil vapor samples will be collected from the locations shown on figure 4. The vapor sampling will also be used to obtain the following information.

- potential for offsite soil vapor contamination;
- determine any offsite preferential migration pathways;
- characterize the vapors in the vadose zone; and,
- investigate the relationship between contaminated ground water and soil vapor.

In order to avoid any infiltration of outdoor air the soil sample will be collected at a depth greater than 5 ft bg (feet below grade).

4.3.2 Sampling Procedure (Protocol

Eight temporary soil vapor probes will be used to collect samples from the area. The following procedure will be used for the installation of temporary points:

- a 1-inch diameter probe will be installed at 8 locations to approximately 6 ft bg using Geoprobe direct push technologies;
- the probe will be fitted with inert tubing of polyethylene of 1/8 inch to 1/4 inch in diameter from the sampling zone to the surface; and,
- soil vapor probes will be sealed above the sampling zone with a bentonite slurry for a minimum of 3 feet to avoid outdoor air infiltration and the remainder of the borehole backfilled with clean material.

Soil vapor samples will be collected from all 8 locations using the following procedures.

- a soil vapor sample will be collected from the temporary probe after one to three volumes of the sample probe and the tube are purged using a peristaltic pump;
- flow rates for both purging and sampling will not exceed 0.2 liters per minute;
- each sample will be collected using the above low-flow rate method in a Summa canister;
- the soil vapor sample will be analyzed by a NYSDOH ELAP certified laboratory by EPA Method TO-15; and,
- laboratory results will be reported with ASP Category A deliverables.

During the sampling the following conditions should be documented:

- weather conditions (precipitation, outdoor temperature, barometric pressure, wind speeds and direction);
- any odor in the area; and,
- any use of VOCs in the adjacent buildings.

The sampling will be conducted by experienced technicians and a sampling log sheet summarizing the following will be prepared:

- sample identification;
- date and time of sample collection;
- sampling depth;
- identity of samplers;
- sampling method and equipment;
- purge volumes;
- volume of soil vapor extracted;

- apparent moisture content; and,
- chain of custody.

Figure 4 shows the locations of the proposed sampling probes. In addition, figure 4 shows the location of previous soil vapor sampling points listed as AS-1 through AS-6. The results of laboratory analysis for the previous sampling points are shown on table 1.

4.3.3 Quality Assurance/Quality Control (QA/QC)

During sample collection, extreme care should be taken in order to ensure that high quality data are obtained. The sampling team should avoid fueling vehicles, using permanent marking pens or any other materials containing VOC which can cause sample interference in the field.

The QA/QC protocol for sampling collection and laboratory analysis should be followed. All sampling devices should be clean, the sampling holding time should be met and a chain of custody should be maintained. Field blanks and trip blanks should be used.

As previously indicated the samples should be analyzed by an NYSDOH laboratory and also a current Environmental Laboratory Approval Program (ELA) certification for the appropriate analyte and other environmental matrix.

The name of the laboratory that was used should be included in the report of the sampling results.

4.3.4 Analytical Method

As previously indicated, sampling results for VOCs should identify the reporting limits. In addition, sampling results for VOCs will be compared with background concentrations in the area. The proposed method for the project is EPA Method TO-15 for VOCs and NYSDOH Method 311-9 for tetrachloroethene, if feasible.

4.3.5 Data Evaluation

The results of soil vapor investigation should include the following:

- nature of contamination;
- factors which may affect migration;
- source of VOC;
- background levels;
- applicable standards, if available; and,
- proposed remedial action.

4.4 Ground-Water Monitoring and Sampling

Ground-water samples will be collected from all existing and newly installed monitor wells following the installation of the new monitor wells. It is anticipated that ground-water sampling activities would require 7 to 8 days to sample 19 existing and 10 proposed monitor wells. Following the first round of ground-water sampling, a well subset will be selected to represent ground-water conditions for long-term monitoring. Details of sampling and analysis are as follows.

4.4.1 Well Measurement

Immediately upon opening each well cap, the headspace VOC concentration will be measured with a PID. Depth to water and total depth of each well will be measured with an electronic interface meter and/or a weighted steel tape. Wells containing free-phase product will not be sampled.

4.4.2 Well Sampling

In the interest of minimizing the purge-water volume generated, a low-volume sample technique will be used. Four-inch diameter monitor wells will be purged and sampled using a 2-inch submersible, environmental sampling pump. A peristaltic pump will be used to purge the 1-inch and 2-inch monitor wells and they will be sampled with a bailer.

The pump intake will be placed at predetermined positions within each well and, if necessary, lowered as pumping progresses. The pump intake positions within each well will be determined from geologic logs.

Field parameters of pH, temperature, dissolved oxygen, conductivity, turbidity and oxygen-reduction potential will be measured during purging using a multiparameter meter and flow-through cell. The field parameters will be monitored for stabilization prior to sampling. Additionally, the purge rate and depth to water within the well will be monitored.

Based on field parameters, the onsite LBG hydrogeologist will determine when a ground-water sample will be collected from each well. Laboratory-supplied sample bottles will be filled from the pump discharge line. One sample will be collected from each well. Purge water will be contained and stored onsite pending offsite disposal.

4.4.3 Ground-Water Analysis

Ground-water samples will be analyzed for VOCs by EPA Method 8260 modified to include methyl tertiary-butyl ether (MTBE). Ground-water samples from Monitor Wells CE-4, MW-11 and MW-12 will also be analyzed for SVOCs by EPA Method 8270 as these were the only wells found to contain SVOCs in concentrations exceeding NYSDEC GWQS during the August 2003 sampling event. Ground-water samples from Monitor Wells MW-4, MW-9A and MW-12 will be analyzed for dissolved TAL (Total Analyte List) metals. Laboratory results will be reported with ASP Category A deliverables.

4.4.4 Quality Assurance/Quality Control (QA/QC)

Ground-water samples will be collected with dedicated sample tubing and a precleaned sample pump and appropriate laboratory containers will be used. Soil samples will be collected with a precleaned split-spoon type sampling device. During sampling, latex gloves will be worn and changed between sampling locations. All of the samples will be preserved for holding time and properly labeled in the field. This includes the following:

- name of collector;
- date and time of collection;
- place of collection; and,
- sample identification and/or number.

Chain-of-Custody Record will be completely filled out for every shipment and every sample to trace sample possession including:

- sample number and/or identification;
- signature of sample collector;
- date and time of sample collection;
- place of sample collection;
- sample type (water, soil, etc.);
- sample preservatives;
- sample container;
- requested analysis;
- signature of person involved with sample possession;
- inclusive dates of sample possession; and,
- pertinent comments and/or notes.

The laboratory portion of the Chain-of-Custody Form will be completed by the designated analytical laboratory person and contain the following information:

- name of person receiving the sample;
- laboratory sample number;
- date of sample receipt;
- analysis requested; and,
- sample condition and temperature.

Detailed field records for all site activities will be kept by the personnel performing or supervising the work. Recordkeeping will be completed in a field

notebook and/or preprinted date sheets used by LBG. The field notebook and/or preprinted date sheets will be used to record pertinent observations (odors, visual observation, matters of interest, weather), all field measurements (water levels, pH, specific conductance) and any irregularities or deviations from the prescribed sampling procedures. All entries into the field book and/or preprinted date sheets will be with waterproof ink pen, initialed by the person completing the measurements/observations, and the pages of the field book numbered.

Analytical data control checks will be established by utilizing transport/trip blanks, field blanks and matrix spikes. Trip blanks will be prepared in the laboratory using organic free water. Trip blanks will accompany a batch of samples from the start of sampling to delivery of samples to the laboratory for analysis, remaining unopened. The purpose of the trip blank is to measure possible cross contamination of samples during the shipping and handling stages. The Field Blank is prepared in the field by passing the analyte-free water from the full bottle to the empty Field Blank container. The purpose of the Field Blank is to demonstrate ambient field conditions and/or equipment conditions that may potentially affect the quality of the samples.

Sample storage should be in an appropriate shipping container such as a cooler. The sample storage container should be secured to ensure that the samples have not been disturbed during transport.

4.5 Reporting

4.5.1 Supplemental Remedial Investigation Report

Details of field work and results of laboratory analysis of soil and ground-water samples will be submitted to the NYSDEC upon completion of all tasks outlined above. The report will include a narrative, summary tables, figures, geologic logs, well construction diagrams and copies of laboratory reports. The report will also include an evaluation of potential remedial measures for removal of dissolved contaminants from ground water and, if necessary, automated removal of free-phase product.

4.5.2 Ground-Water Monitoring Reports

The results of ground-water sampling and analysis will be summarized in a report submitted to the NYSDEC approximately 1 month after LBG's receipt of all final laboratory reports. The report will include historic laboratory and field data in tabular format, ground-water elevation contour maps, product recovery amounts and product thickness observed in each well, and copies of laboratory reports.

5.0 ENVIRONMENTAL AUDIT

5.1 Site Inspection

On May 27, 2004, LBG conducted a site inspection of the Fyn Paint facility. The purpose of the inspection was the following:

- conduct an inventory of the materials used for preparing paint at the time of the inspection;
- obtain data regarding the paint preparation process; and,
- determine the presence of potential leaks or spills related to the storage of chemicals and manufacturing of paint and pathways for such materials to reach the environment.

The site visit and inventory indicated the following:

1. First Floor
   - first floor is used for storage of processed chemicals and finished products;
   - no underground storage tanks are in use at the site; the USTs were abandoned in place in 1999; all fill boxes were sealed at the same time;
   - no drainage or other pathway for leaks of chemicals to underground were observed at the first floor; and,
   - the first floor appears to be generally well kept.

2. Balcony
   - this floor is used for paint manufacturing;
   - the floor, drums and mixing basins are splashed with paint; and,

- there is no pathway or potential for chemicals from this floor impacting the environment.

A copy of the Site Inspection Report (November 2004) is included in Appendix I.

5.2 Supplementary Environmental Site Audit

On January 26, 2005, an environmental audit was performed at the site. The environmental audit included the following:

- A list of all the material stored in the 55-gallon drums located in the factory building;
- Inspection of drains and pipes; and,
- Exposure and inspection of all piping located on first and balcony and basement.

An inventory of all chemicals and materials stored in 55-gallon drums at the facility was provided by Mr. William Feinstein, owner of Fyn Paint and Mr. Howard Simka, chemist.

A list of these chemicals and materials is presented below:

- ***Solvents/Lacquer Thinner***; Acetone, Toluol, Methanol, Iso propyl Acetate, Butyl Cellusolve, Xylol, VM&P Naptha, Mineral Spirits, Solvent 100 (Hi Flash), Normal Butyl Acetate and Oxsol 100 Solvent;
- ***Resins;*** Alkyd Resin, Nitrucello Lose Resin, Acrylic Emulsions Resin and Acrylic Resin;
- ***Pigments;*** Titanium Dioxide, Chome Yellow, Red Oxide, Yellow Oxide, Thalu Blue and Organic Red;
- ***Inert Dry Fillers***; Talc, Malais Resin, Calcium Carbonate, Zinc Stearate;
- ***Plasticizers;*** Dioctyl Phthlate; and,
- ***Miscellaneous Chemicals;*** Phosphoric Acid (85%) and Ammonia (14%)

During the audit, the floors at the first floor and balcony were inspected for drains, cracks or other openings related to present or past operations at the site. As a result of inspection no floor drains or cracks were identified on the first floor and balcony of the facility.

The inspection of pipes, tanks and other equipment was also conducted during the site visit. Prior to inspection, Fyn Paint hired an outside contractor to cut open or open the existing valves of all pipes located on the first floor and balcony. No liquids or water was observed flowing from any of these pipes.

Based on the site inspection, the following conclusions are presented for evaluation to Fyn Paint.

1. The piping system used in the past for various operations is presently discontinued.
2. All the existing valves were open and previously closed pipes were cut and inspected. No liquids were observed in these pipes.
3. The facility floors were inspected twice and no drains or cracks in the concrete floor were observed. It is our conclusion that there are no pathways for materials from the factory to enter the soil or ground water beneath the building.

A copy of the Environmental Site Audit (March 7, 2005) is included in Appendix I.

6.0 SITE SAFETY ASSESSMENT

Due to the high levels of soil vapors in the adjacent community, a site safety assessment was performed by LBG on December 28, 2004. This safety assessment consisted of screening the air quality at fifteen (15) locations at the site. The locations are all within a two block radius of the site and consisted of storm-water catch basins and utility and/or sewer vaults. Air quality was screened at all locations for the presence of VOCs, lower exposure limit (LEL) and oxygen percentage. The VOCs were screened using a PID calibrated at 100 ppm (parts per million) per calibration gas equivalent (isobutylene). The LEL and oxygen percentage were measured using a multi-gas meter (MGM) calibrated with a standard calibration gas for the parameters chosen. The air quality screening was conducted by inserting a dedicated length of tubing approximately four feet below grade into the sample location, connecting it to the operating monitor's vacuum pump and observing each unit's response (PID and MGM) for approximately five to ten minutes, after which the average reading for each parameter was recorded. A letter submitted to the NYSDEC on January 4, 2005, including a sample location map and a summary of the results for the air quality screening, is included in Appendix II.

7.0 INTERIM REMEDIAL MEASURES WORK PLAN

7.1 Interim Remedial Action Objectives

The above listed sections have summarized the nature of the site, including the presence of VOCs, SVOCs, the distribution and types of contamination and the basis for an interim remedial action at the site.

The following remedial action objectives are presented as follows:

1. Where technically practicable, remove the free-phase product from the subsurface to eliminate the source of dissolved phase contamination;
2. Where technically practicable, reduce the concentrations of contaminants in the ground water beneath the site to the NYSDEC Technical and Operational Guidance Series (TOGS) ground water quality standard (GWQS) levels;
3. In areas of ground water where attainment of NYSDEC TOGS GWQS levels are not technically practicable, contain contaminants within their current lateral extent and depth;
4. Where technically practicable, reduce the concentrations of contaminants in the subsurface soils beneath the site to the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) recommended soil cleanup objective (RSCO) levels,
5. In areas of ground water where attainment of NYSDEC TAGM RSCO levels are not technically practicable, contain contaminants within their current lateral extent and depth;
6. Prevent lateral and vertical migration of dissolved phase contaminants at concentrations greater that NYSDEC TOGS GWQS levels to areas where currently they are not present or are below NYSDEC TOGS GWQS levels

7.2 Product Recovery

The primary goal of the IRM is the removal of free-phase product from the subsurface in the area of greatest product thickness. This free-phase product is a source of dissolved VOCs in ground water and its removal should precede the implementation of any extensive dissolved-phase remedial efforts.

As an interim remedial measure, free-phase product measured in any monitor well has been removed by bailing on a regular basis. The work has been done by LBG and Fyn employees. The bailing frequency has been adjusted based on the product recovery. As such, there is currently no product in the onsite wells. As of August 2004, there had been only trace amounts of product in the onsite monitor wells CE-1, CE-2, MW-15 and MW-9A where product has historically been recovered. Product has been and will continue to be stored temporarily inside the Fyn building pending offsite disposal. As of March 25, 2005, approximately 220-gallons of a mixture of ground water and product have been removed from the monitor wells.

7.3 Remedial Technology Alternatives Analysis

This section lists several potential remedial technologies available for the remediation of contaminated ground water and soil at the site.

7.3.1 Alternative 1 - No Action

Alternative 1 leaves the site as it is. No action is used as a baseline option for all sites. Under this alternative, the site would undertake no activity toward cleanup or risk mitigation. CERCLA guidance requires that the No Action alternative always be considered as a baseline alternative.

7.3.2 Alternative 2 - Physical Barrier Installation

Alternative 2 uses the installation of a physical barrier to prevent further migration of subsurface contaminants. Two physical barrier options consisting of a slurry wall and steel shoring were evaluated.

7.3.3 Alternative 3 - Natural Attenuation/Bioremediation/Monitoring

Alternative 3 uses institutional controls to restrict access to contaminated ground water and allows contaminant concentrations to naturally attenuate. This option includes monitoring to evaluate the effect of natural attenuation on contaminants in ground water. Additionally, this option may include the introduction of compounds to accelerate the rate of natural attenuation. Monitoring would be used to track the decline in concentrations resulting from natural attenuation processes.

7.3.4 Alternative 4 - Extraction, Treatment, and Discharge/Monitoring

Alternative 4 uses extraction with different types of treatment. Alternative 4 addresses the contamination by extracting contaminated ground water and then treating to comply with regulations for discharge of water. The treatment options include: air stripping and activated carbon. Extraction, treatment, discharge and monitoring processes are summarized below.

It is assumed treated ground water would be discharged directly to the sanitary sewer meeting NYCDEP limits. This action would be performed during the ongoing ground water removal actions. A monitoring program will be conducted to confirm the stability of impacted ground water and to track the decline in concentrations resulting from the active remediation processes.

7.3.5 Summary of Comparative Analysis of Alternatives

This section summarizes the evaluation of the four remedial alternatives (Alternative 1 - No Action, Alternative 2 – Physical Barrier, Alternative 3 - Natural Attenuation/Monitoring, and Alternative 4 - Extraction, Treatment, and Discharge).

Alternative 1 (No Action) would not be protective because people and the environment could be exposed, or potentially exposed, to ground water. Without monitoring, LBG and regulatory agencies could not assess natural attenuation of the ground water and the subsequent rate of risk reduction. Alternative 1 will not comply with applicable or relevant and appropriate requirements (ARARs) for ground water, and without monitoring there would be no way to determine when or if ground water

cleanup levels had been achieved. Additionally, affected ground water would have the potential to discharge to the East River. Alternative 1 would be the least effective remedial alternative in the long-term since no steps are taken to reduce risks, or monitor the reduction in risks. Alternative 1 would not reduce contaminant toxicity, mobility, and/or volume since it does not include active treatment. Alternative 1 would be easily implemented since no actions would be involved.

Alternative 2 (Physical Barrier) would be protective of human health and the environment by impeding the migration of the contaminant plume. Although Alternative 2 would provide no active remedial benefit, the interim action using this alternative will reduce the potential risk of further migration of the contamination. As such, Alternative 2 appears to meet ARARs. Alternative 2 would be effective in reducing the potential for contaminant migration however will not contribute to the removal of the contamination. Alternative 2 would be an effective short-term option to reduce the contaminant mobility however this option would not reduce contaminant toxicity or volume since it does not include active treatment. Alternative 2 would be implementable, however additional equipment would be required. The slurry wall and/or shoring would be difficult to install based on the proximity to and volume of utilities in the area. Additionally, the slurry wall would not be feasible because no identified clay layer is present in the area of the site, which is necessary for setting the slurry wall.

Alternative 3 (Natural Attenuation/Monitoring) would be protective of human health and the environment if natural attenuation is taking place and there is no pathway to receptors such as using ground water for drinking water. If natural attenuation is taking place and the plume is stable or decreasing in size at the site where LBG implements this alternative, then Alternative 3 will meet ARARs. Alternative 3 may be effective if natural attenuation is taking place at the selected sites. Additionally, accelerating compounds may be introduced to assist and speed up the remedial process. Alternative 3 may reduce contaminant toxicity, mobility, and volume although at a slower rate than active remediation. Alternative 3 is not as effective in the short-term. This alternative is expected to take longer than Alternative 4 to reach cleanup levels

since it does not actively extract or treat ground water. Alternative 3 would be easily implementable as only additional monitoring would be required.

Alternative 4 (Extraction, Treatment, and Discharge) would provide the greatest protection of human health and the environment since the contaminants would be removed by extraction. This alternative would achieve compliance with ARARs. The interim actions using Alternative 4 will reduce contamination and potential risk. The data obtained from monitoring this remedial alternative will permit to allow for selection of final cleanup levels and technically and economically feasible long-term remedial actions. Alternative 4 would be the most effective remedial alternative for removing contamination from the ground water. Of the alternatives proposed, only Alternative 4 would incorporate active treatment. Therefore it would reduce the contaminant volume, and to some degree, contaminant mobility through hydraulic containment. Alternative 4 would remove contaminated ground water, control the further spread of ground water contamination and would be the most effective alternative in the short-term. Alternative 4 would use available technology such as treatment equipment and recovery wells, but it would take time to design and install all of the required equipment. Included in this would be the completion of a pumping test, determination of subsurface hydraulic characteristics and system design.

7.3.6 Cost

Actual remediation costs vary significantly and will be determined in the remedial design phase. Prior to a detailed cost evaluation, the following is a costs comparison for Alternatives 1-4. The treatment alternative with the lowest cost (no cost) is Alternative 1 (No Action). Alternative 2 has a high cost since it relies on initial labor and material costs associated with the installation of a physical barrier in an area of numerous utilities. Alternative 3 has a low cost since it relies on labor and analytical costs associated with the ground water monitoring program, and requires little additional equipment. The cost of Alternatives 4 depends on the treatment technology utilized as well as the type, volume, and concentrations of the contaminated ground

water. It is believed that this option will be the highest cost both in equipment required, installation costs, and comparatively high operation & maintenance costs.

7.3.7 Modifying Criteria

7.3.7.1 State Acceptance

The proposed methodology for stopping the migration of contamination from the site is subject to acceptance by the NYSDEC.

7.3.7.2 Community Acceptance

The proposed methodology for stopping the migration of contamination from the site is subject to acceptance by the surrounding community pending a public comment period where community residents have the opportunity to voice concerns pertaining to the proposed remedial action.

7.3.7.3 Conclusion

The active treatment alternative, Alternative 4, is more beneficial to the site than Alternative 3. The natural attenuation/bioremediation/monitoring alternative is a lower cost alternative than the active treatment alternatives however, the benefit (i.e., remediation) is often slower than with extraction and treatment. The sections above provide information on the pros and cons of each alternative as well as site-specific factors considered when selecting site alternatives. All options listed in Alternative 4 have been proven to be protective and effective for remediating contaminated ground water depending on the type and concentration of contaminant (i.e., petroleum products, VOCs, metals). Therefore, LBG has decided to determine the most appropriate method of extraction treatment and discharge during the remedial design phase. As it stands now, this cannot be completed until the additional investigation is completed.

7.3.8 Selected Remedial Action

Alternative 4 was selected as the remedial action for the site to address and treat the ground water contamination. Alternative 4 (Extraction, Treatment, and Discharge) is the selected interim action, the objective of the extraction is source control, migration control, offsite remediation, or a combination of these. Each of the selected options will protect human health and the environment, and comply with ARARs. They will be effective at reducing contamination, and are implementable, cost-effective, and acceptable to the public and the State of New York. Remedial objectives will be developed in order to evaluate the performance of implemented remedial alternative during its operational period. These remedial objectives will be similar to final cleanup levels but will not be enforceable goals.

Alternative 4 is the selected remedial action for the site while at least one of the following cases exists:

1. **Offsite Remediation** - Where dissolved VOC contamination extends offsite.
2. **Source Control** - Where floating petroleum product or secondary sources of VOC contamination (non-aqueous phase liquids [NAPLs]) exist.
3. **Migration Control** - Where migration of contaminated ground water is confirmed.

Once the above criteria no longer apply to the site, LBG considers. Alternative 3 (Natural Attenuation/Bioremediation/Monitoring) as a possible remedial action. Some portions of the ground water plume has low concentrations of contaminants; therefore, the contaminant plume may be stable due to natural processes or to the introduction of accelerating compounds, but additional characterization is needed to make a determination. In addition, some portions of the contaminant plume have mixtures of VOCs and petroleum contamination, which can facilitate the natural degradation and/or biodegradation of chlorinated solvents. If natural attenuation and/or bioremediation is found to be inadequate to stabilize the plume, a contingency action

such as Alternative 4 will be implemented. The work plan will indicate a "trigger point" based on methods such as modeling and statistical analysis that will indicate the need for contingency action. The NYSDEC will review and approve the proposed work plan.

Ground water is not currently used for drinking water at the site or in the surrounding areas. Administrative controls will be conducted on areas with ground-water contamination, restricting excavation and subsurface work where the excavation worker will encounter ground water or vapors emitted from the ground water. Excavation and work will only commence after environmental and worker safety control measures are implemented. Ground water from beneath the site is not used for onsite water supply; therefore, LBG contingency plan for onsite water supply are required.

7.3.9 Ground-Water Extraction System Monitoring

Ground-water monitoring of the site will continue while the remedial action is operational to document the effect of the remedial action. Data will be evaluated on a regular basis, with NYSDEC review, to determine the effectiveness of extraction remedies and to evaluate natural attenuation and bioremediation (if implemented). At the site, if data indicates the plume is not stable, actions to stabilize the plume will be initiated. Ground Water Monitoring Reports will be completed on a regular basis to document contaminant concentrations throughout the site and to evaluate the effectiveness of the remedial action.

7.3.10 Alternative 4 Remedial Action Description

This alternative (also referred to as "pump and treat") cleans or controls the contaminated plume by extracting contaminated ground water. Extraction, treatment, and discharge processes that will be used for the interim remedial actions are described in the following sections.

7.3.10.1 Extraction Strategy and Technology

Extraction processes would be conducted via vertical extraction well(s). Two (2) of the proposed monitor wells will be installed as extraction wells. The locations of the proposed extraction wells are shown on figure 3. These locations were selected so that one extraction well is located in the source zone and the second extraction well is located downgradient of the source zone.

The extraction wells would be constructed of 6-inch diameter galvanized steel well screen and galvanized steel riser pipe. The well screen would extend 3 to 5 feet above the static ground-water or product level and will extend to approximately 40 feet below grade for total depth. While drilling the soil borings for the new extraction wells, soil samples would be collected at 5-foot intervals to the water table and below the water table to the completion depth or to a point where sample integrity is no longer possible due to geology. The samples would be described on a geologic log and screened for VOCs in the headspace vapor using a photoionization detector (PID). The soil sample exhibiting the highest VOC concentration would be packaged for laboratory analysis of VOCs by EPA Method 8260. Laboratory results will be reported with ASP Category A deliverables. Drilling cuttings will be contained and stored onsite pending offsite disposal.

Initial extraction activities will be conducted at the source area extraction well and the downgradient extraction well will be used as an additional monitoring well. Pending evaluation of the effectiveness of the source area extraction well, the downgradient extraction well will be available as a secondary extraction well should it be necessary to control the contaminant migration.

Contaminated ground water would be pumped from recovery wells and treated to meet New York State regulatory discharge limits prior to discharge. Skimmer pumps could also be used for floating product recovery if necessary. A dual-phase system, if utilized, would be effective in removing free product, ground water and soil gas. Specific site conditions, such as plume size and

concentration, hydrogeology, soil permeability, and distribution of the contamination will be assessed to determine the most appropriate extraction technique will be determined. For example, most of the site has moderate permeability soils, which is assumed that a well will yield moderate to high pumping rates. A pumping test to determine the hydrogeologic parameters at the site will be used for assessing the final remedial design.

7.3.10.2 Treatment Strategy and Technologies

One or more of the following treatment technologies will be implemented for treatment:

- **Air Stripping** – Air stripping utilizes the volatility of many common organic contaminants to remove them from the contaminated water and transfer them to the gaseous phase. Air strippers may consist of towers with heights up to fifty feet, and with diameters from several inches to several feet. Contaminated water enters the top of the tower while air blows upwards through the tower. The agitation provided by the air and plates or synthetic media within the column break up the water into small droplets, providing a large water surface-to-air interface for organics to volatilize into the air phase. Treated water exits the bottom of the tower while air carrying the organic contaminants exits the top of the tower. Depending on concentration and local requirements, the contaminants in the air will usually require subsequent treatment, consisting of thermal or catalytic destruction or adsorption onto activated carbon, before discharge to the atmosphere.
- **Activated Carbon** – Activated carbon can be used to treat contaminated ground water for VOCs; the carbon is replaced or regenerated once the adsorbent is saturated. The target

contaminant groups for liquid-phase carbon adsorption are halogenated and non-halogenated SVOCs. The technology can be used, but may be less effective, in treating halogenated VOCs, fuel hydrocarbons, pesticides, and inorganics. The following factors may limit the applicability and effectiveness of liquid-phase carbon adsorption:

- the solubility and concentration of the contaminants can impact process performance;
- metals can foul the system;
- costs are high if used as the primary treatment on waste streams with high contaminant concentration levels; and,
- type and pore size of the carbon, as well as the operating temperature, will impact the process performance.

Vapor phase carbon could also be used to adsorb VOCs from the air stream, and the carbon filter would eventually need replacement or regeneration. The adsorptive capacity of activated carbon significantly increases when it is used with vapor phase rather than with aqueous phase contaminants.

7.3.10.3 Discharge

All treated ground-water discharges will comply with the discharge requirements of both the City of New York and the State of New York. Additionally, State Pollution Discharge Elimination System (SPDES) substantive requirements will be established for each new discharge not running to the sanitary sewer and necessary permit(s) will be obtained (if necessary). This information will include, but is not limited to, descriptions of treatment units with schematic drawings and design criteria, operation and maintenance procedures, results of chemical analyses of untreated ground water (influent) at

each site, projected maximum concentrations, projected flow rates, and topographic maps showing exact locations of proposed discharges. Based on a review of this information, SPDES substantive requirements for sampling, monitoring, and reporting will be established and specified along with the final Remedial Design. Should a SPDES permit be obtained for the treated water and the water be discharged to the East River, LBG will evaluate the volumes of treated ground water discharged to the East River to ensure there are no adverse effects on the River. Should a SPDES permit not be obtainable, the treated ground water will be discharged to the sanitary sewer operated by the City of New York. LBG will treat the extracted ground water until contaminants have been reduced to the specified discharge standards.

7.3.11 Alternative 3 Remedial Action Description

Alternative 3 (natural attenuation/bioremediation/monitoring) is selected as a potential secondary remedial action at the site. Characterization and field data collected during ground water monitoring rounds will be used to evaluate contaminant plume concentrations and to evaluate the potential effectiveness of Alternative 3. Should Alternative 3 be instituted, Alternative 4 will be reserved as a contingency action if natural attenuation/bioremediation is not effective based on ground water monitoring results. Should Alternative 3 be deemed feasible, a schedule and a decision matrix that outlines the method to determine whether the site and/or portions of plumes are appropriate for remediation by Alternative 3 will be prepared. The Ground Water Monitoring Plan will be modified to include additional parameters, which will be useful in assessing the effectiveness of natural attenuation/bioremediation. Additionally, a method to monitor overall effectiveness of Alternative 3 and a "trigger action" that initiates re-implementation of the contingency action (Alternative 4) if natural attenuation is not effective at the site will be established.

7.3.12 Statutory Determinations

This section discusses the applicability and compliance of the following statutory determinations:

- protectiveness;
- applicable or relevant and appropriate requirements;
- cost effectiveness;
- use of permanent solutions, alternative treatment, or resource recovery technologies;
- preference for treatment as a principle element;
- State and community acceptance.

7.3.13 Protectiveness

The selected remedies are protective of human health and the environment in the short term, and the actions are intended to increase protection until the final site compliance is achieved. Protection is achieved by:

- remediating all offsite dissolved phase contamination to below the regulatory standards through ground water extraction, treatment, and discharge;
- removing areas of contamination with floating products using ground water extraction, treatment, and discharge;
- preventing migration of contaminated ground water using ground-water extraction, treatment, and discharge; and
- monitoring to confirm the stability of the plume and to evaluate the potential beneficial effects of natural attenuation.

7.3.14 Use of Permanent Solutions and Alternative Treatment

The selected remedies utilize permanent solutions to the potential threats posed by ground water contamination at the site to the maximum extent practicable. Use of ground water extraction, treatment, and discharge will control and remove

contamination from the subsurface permanently. Source control will remove and control contamination from the highest concentration areas, while remediation of the dissolved offsite contamination will remove contamination from areas outside the long-term control of the site. Natural attenuation and bioremediation of dissolved chlorinated solvents is an innovative and alternative treatment technique that may help remediate contaminated ground water at the site.

7.3.15 Implementation and Schedule

The volunteer will implement the Remedial Design and Remedial Action pending approval from the NYSDEC. The Remedial Design and Remedial Action schedule will follow the general outline below. Factors considered in this outline include human health risk, offsite migration, ecological risk, public interest, natural attenuation, mass of contaminants, ground water concentration, capital cost, project execution, and projected funding levels. The Remedial Design and Remedial Action Work Plan will address the following elements:

- Remedial Design and Remedial Action initiation and purpose;
- site work schedule;
- an extracted ground water treatment technology evaluation;
- installation of all necessary remedial equipment,
- a treatment system pilot test and discharge evaluation;
- long-term monitoring to evaluate the effectiveness of the remedy; and,
- eventual completion of site cleanup.

Should it become feasible to implement Alternative 3, a Remedial Design and Remedial Action Work Plan will be developed to assess the effectiveness of natural attenuation and bioremediation and revise the ground water monitoring plan to include additional parameters needed to assess the effectiveness of natural attenuation. This revised Remedial Design and Remedial Action Work Plan will establish long term ground water monitoring requirements to assess the effectiveness of Alternative 3.

11.0 SCHEDULE

A schedule outlining the completion dates and estimated completion dated of project milestones is listed below.

1. Environmental Site Audit

- Site Inspection.....Completed on November 2004
- Supplemental Environmental Site Audit .....Completed on March 2005

2. Bailing of Free-Product (IRM)

- Bailing Onsite Monitoring Wells
  Bailing Start Date..... Completed on February 18, 2004
  Most Recent Bailing Date .....Completed on March 31, 2005

3. Site Safety Assessment.....Completed on January 4, 2005

4. Supplemental Investigation Work Plan (Addendum I – Revised)
Estimated Completion Date.....April 4, 2005

5. Soil Vapor Investigation

- NYSDEC and NYSDOH Approval of the Work Plan
  Estimated Completion Date..... April 22, 2005
- Utility Clearance
  Estimated Completion Date..... April 29, 2005
- Collection of Soil Gas Samples
  Estimated Completion Date.....May 5, 2005
- Completion of Laboratory Analysis
  Estimated Completion Date..... May 25, 2005
- Report Preparation
  Estimated Completion Date..... June 10, 2005

6. Interim Remedial Measure

- Preparation of Work Plan
  Estimated Completion Date.....April 1, 2005
- Approval by NYSDEC
  Estimated Completion Date..... April 15, 2005
- Approval by Con Ed & Street Clearance and Development
  Estimated Completion Date..... April 22, 2005

- Drilling of Source Area Extraction Wells
  Estimated Completion Date..... April 29, 2005
- Testing and Product Recovery Equipment Selection
  Estimated Completion Date..... May 15, 2005
- Obtain Discharge Permit
  Estimated Completion Date..... May 27, 2005
- Start Operation of Source Recovery System
  Estimated Completion Date..... May 31, 2005

7. Installation of Additional Monitoring Wells

- Clearance/Permit on Kent Avenue and River Street
  Estimated Completion Date..... April 22, 2005
  (Currently along Kent Avenue there is major construction work associated with the sewer system taking place which will delay the drilling.)
- Start Drilling
  Estimated Completion Date.....May 1, 2005
- Complete Monitor Well Installation
  Estimated Completion Date..... May 25, 2005
- Report Preparation
  Estimated Completion Date..... June 15, 2005

8. Ground-Water Sampling

- Ground-Water Sampling from Existing and New Monitor Wells
  Estimated Completion Date..... June 15, 2005
- Laboratory Analysis
  Estimated Completion Date..... June 20, 2005
- Report Preparation
  Estimated Completion Date.....July 20, 2005

9. Final Remedial System Design
Estimated Completion Date..... August 15, 2005

10. Installation of Final Remedial System
Estimated Completion Date.....September 15, 2005

11. Remediation System Start-Up

Estimated Completion Date..... October 1, 2005

LEGGETTE, BRASHEARS & GRAHAM, INC.

Sean Groszkowski
Senior Hydrogeologist

Reviewed By:

Dan C. Buzea, CPG
Vice President

dmd
April 1, 2005
f:\reports\keane beane\supp invest work plan addendum i revised\si work plan (contaminant migration).doc

TABLES

TABLE 1

FYN PAINT & LACQUER COMPANY
230 KENT AVENUE
GREENPOINT, BROOKLYN, NEW YORK

Summary of Subsurface Air Samples - EPA Method TO-15
Collected July 2 and July 29, 2003

		AS-1	AS-2	AS-3	AS-4	AS-5	SS-1	SS-2	SS-3	SS-4	Ambient Air
Sample Interval (ftbg)[1/]		3.75-4	4.5-5	4.5-5	4.5-5	4.5-5	0-5.0	1.75-2.25	0.75-2.25	2.0-4.5	NA
Date Collected		7/2/03	7/2/03	7/2/03	7/2/03	7/2/03	7/29/03	7/29/03	7/29/03	7/29/03	7/29/03
1,1,1 trichloroethane	(ppbv)[2/]	<4.0	6	20	86	14	2,130	3,400	<200	<200	<0.8
1,1 Dichloroethane	(ppbv)	52	<1.0	<1.0	4.8	<1.0	<200	<200	<200	<200	<0.8
1,2,4 trimethylbenzene	(ppbv)	<4.0	1.6	1.2	1.6	1.2	<200	<200	<200	<200	1.7
2,2,4-trimethylpentane	(ppbv)	ND[3/]	ND	ND	ND	ND	220	<200	<200	<200	<0.8
Acetone	(ppbv)	ND	28	31	110	38	1,180,000	695,000	269,000	405,000	540
Benzene	(ppbv)	310	1.3	1.5	8.1	6.1	2,200	4,800	<200	<200	0.83
Chloroethane	(ppbv)	490	<1.0	<1.0	<1.0	<1.0	<200	<200	<200	<200	<0.8
cis-1,3-dichloropropylene	(ppbv)	34	<1.0	<1.0	<1.0	<1.0	<200	<200	<200	<200	<0.8
Ethylbenzene	(ppbv)	1,100	26	6.1	5.2	27	1,960	25,200	10,000	6,200	25.8
o-xylene	(ppbv)	130	5.2	1.4	3.3	4.7	240	4,200	3,700	3,300	12.1
p&m xylene	(ppbv)	2,970	81	17	13	70	1,670	23,600	13,000	9,100	31.9
Tetrachloroethylene	(ppbv)	<4.0	1.9	16	3.2	7.2	230	1,270	<200	<200	<0.8
Toluene	(ppbv)	690	15	15	90	39	235,000	313,000	135,000	180,000	180
Trichloroethylene	(ppbv)	20	<1.0	1.4	6.2	1	270	700	<200	<200	<0.8
Vinyl chloride	(ppbv)	350	<1.0	<1.0	<1.0	<1.0	<200	<200	<200	<200	<0.8
MTBE	(ppbv)	13	<1.0	<1.0	91	<1.0	<200	<200	<200	<200	0.8
Ethylacetate	(ppbv)	ND	ND	ND	ND	ND	4,500	2,200	<200	<200	8
Isopropanol	(ppbv)	68	186	168	200	160	55,000	39,700	10,400	9,000	55
Methyl ethyl ketone	(ppbv)	ND	ND	ND	28	ND	15,100	26,000	<200	470	13.9
Methyl isobutyl ketone	(ppbv)	ND	ND	ND	ND	ND	1,300	2,200	6,300	220	4.7
n-Hexane	(ppbv)	2,800	ND	2	ND	17	370	390	<200	<200	1.6
n-Heptane	(ppbv)	960	ND	ND	ND	11	<200	<200	620	<200	<0.8
4-Ethyltoluene	(ppbv)	ND	ND	ND	ND	ND	<200	<200	<200	<200	1.3
Carbon disulfide	(ppbv)	ND	10	10	12	9	<200	<200	<200	<200	1.3

1/ Feet below grade

2/ Parts per billion by volume

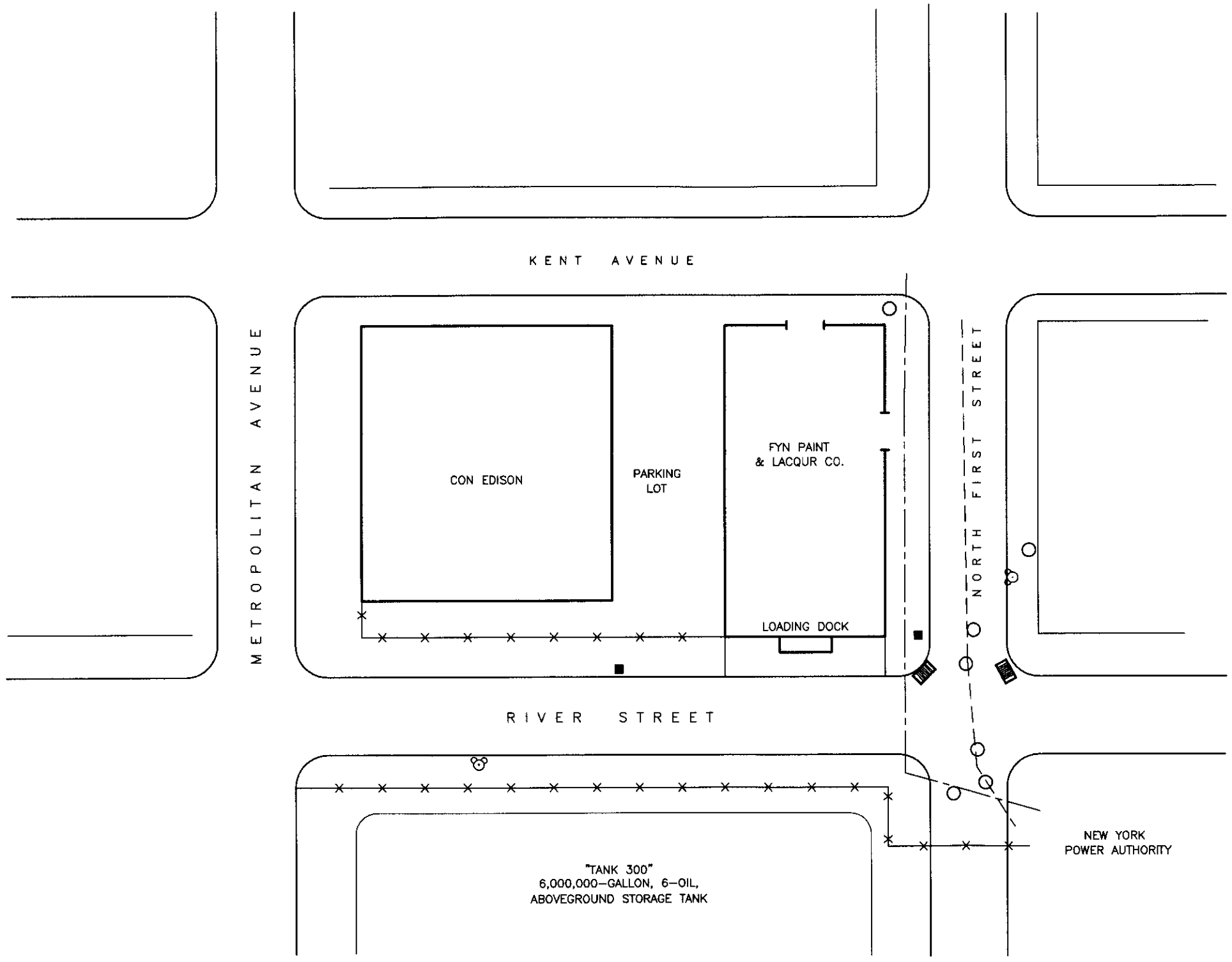
3/ Not detected

dmd

22-Sep-03

reports\keanebeane\supplemental\remedialinvestigation\air samples tbl

FIGURES



N

LEGEND

- CATCH BASIN
- LAMP POST
- CHAIN LINK FENCE
- HYDRANT
- MANHOLE
- SUBSURFACE 12" DIA. HIGH PRESSURE GAS MAIN.
- SUBSURFACE HIGH VOLTAGE TRANSMISSION LINE.

0 40

SCALE IN FEET

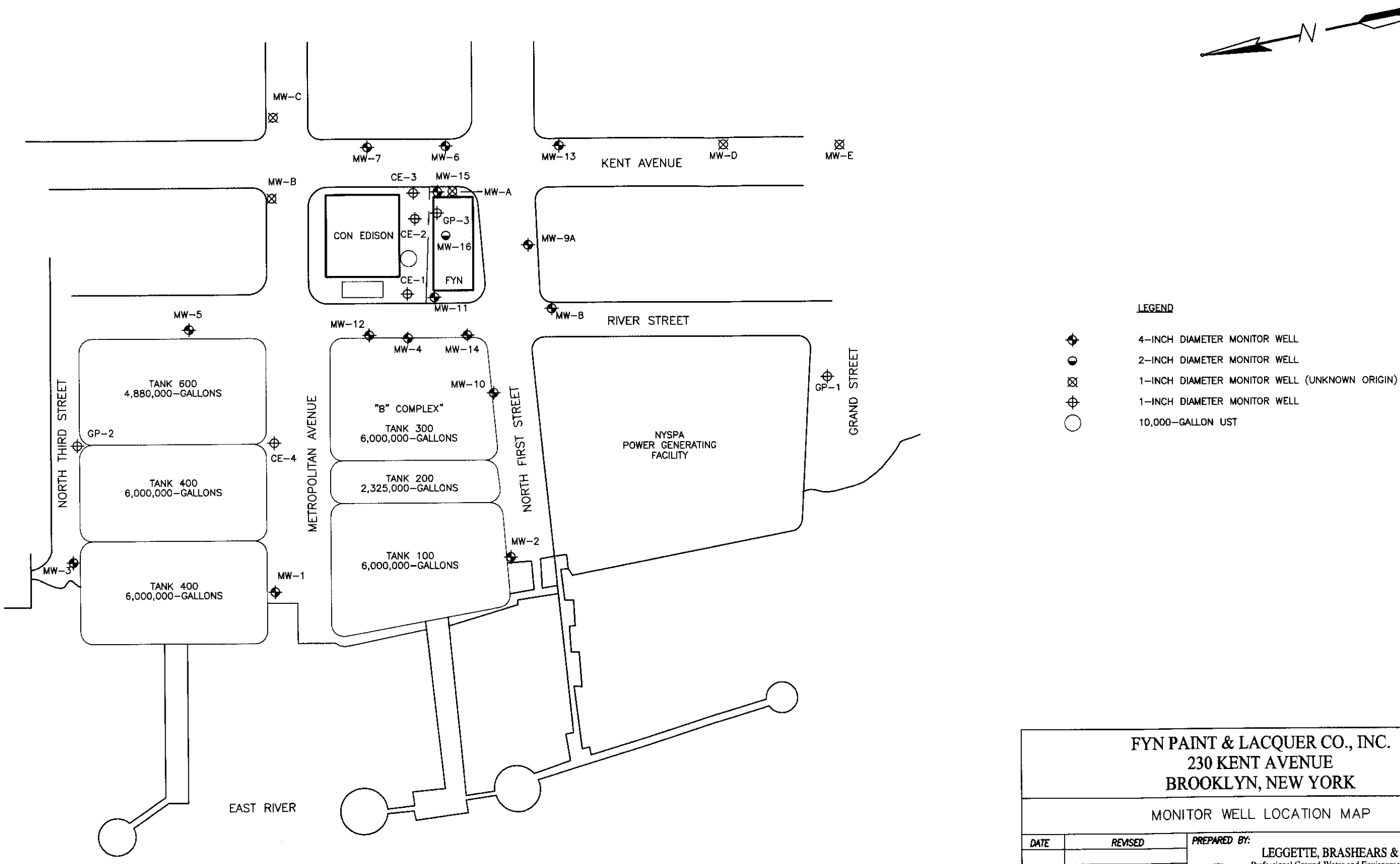
FYN PAINT & LACQUER CO. INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

SITE PLAN

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	MRV	CHECKED:	SG	DATE:	3/25/05	FIGURE:	1



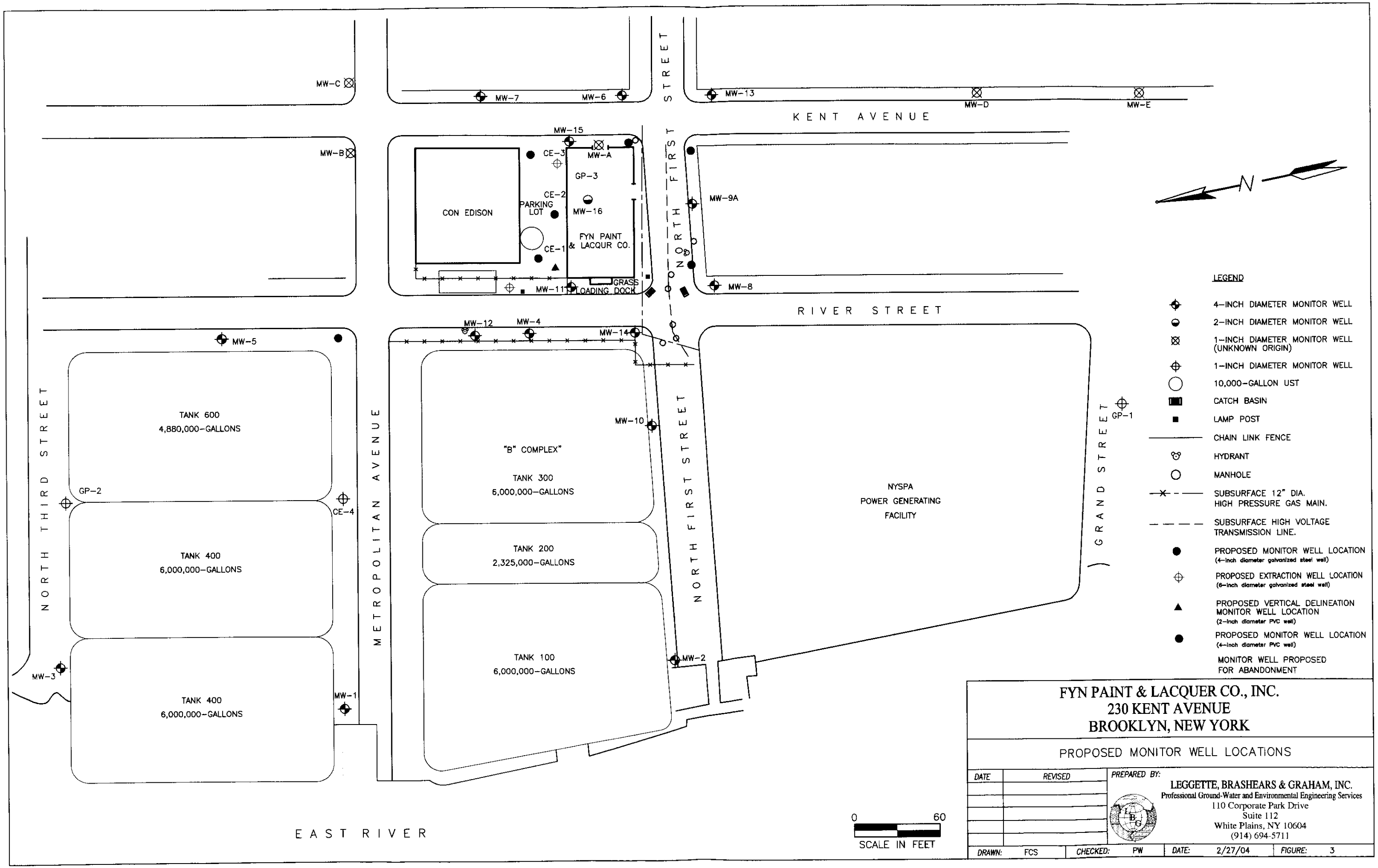
FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

MONITOR WELL LOCATION MAP

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	MRV	CHECKED:	SG	DATE:	3/25/05	FIGURE:	2



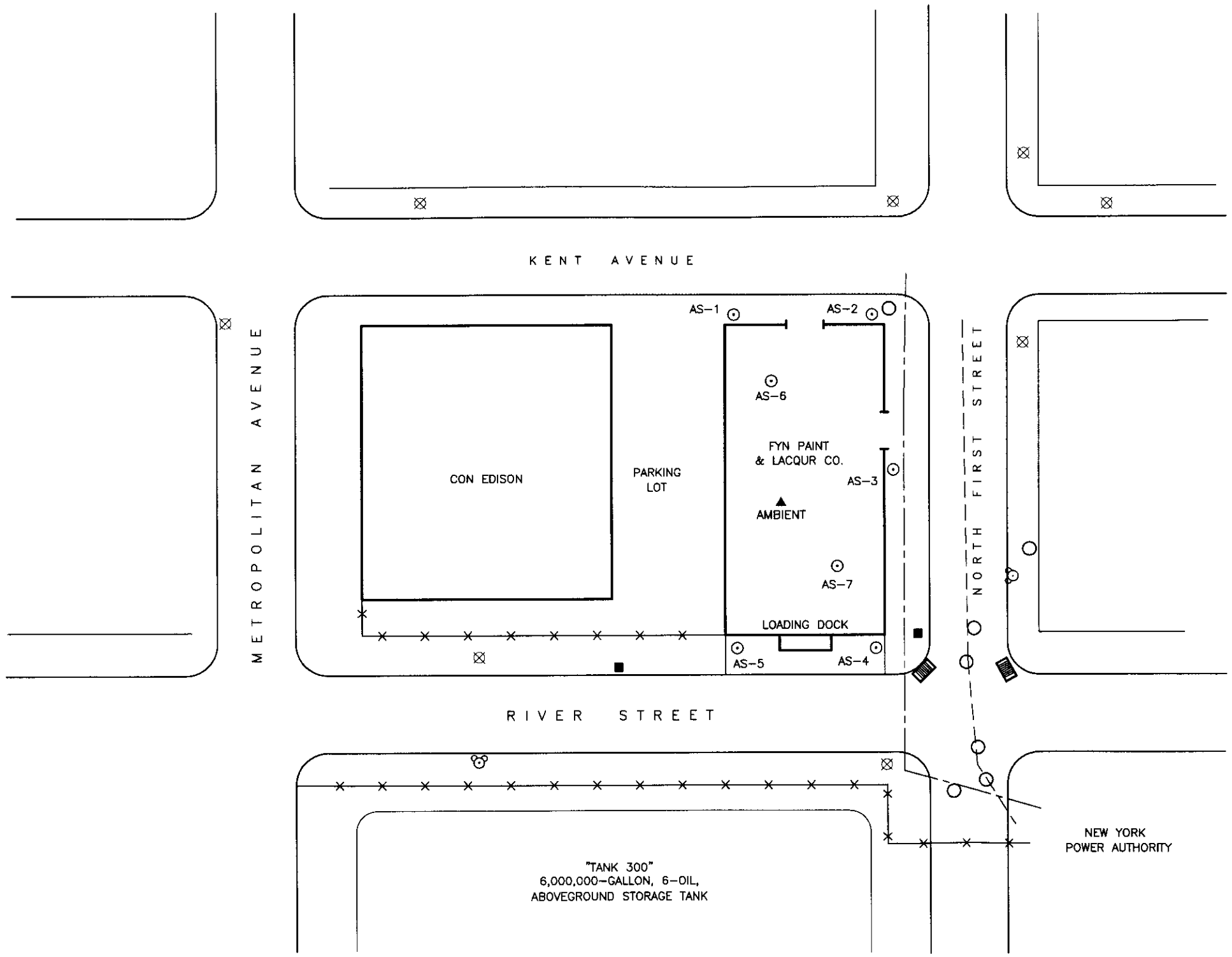
FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

PROPOSED MONITOR WELL LOCATIONS

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	FCS	CHECKED:	PW	DATE:	2/27/04	FIGURE:	3



N

LEGEND

- AS-1 — SOIL GAS SAMPLE LOCATION (2004)
- AMBIENT AIR SAMPLE LOCATION (2004)
- CATCH BASIN
- LAMP POST
- CHAIN LINK FENCE
- HYDRANT
- MANHOLE
- SUBSURFACE 12" DIA. HIGH PRESSURE GAS MAIN.
- SUBSURFACE HIGH VOLTAGE TRANSMISSION LINE.
- PROPOSED SOIL-VAPOR SAMPLING LOCATION

0 40

SCALE IN FEET

FYN PAINT & LACQUER CO. INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

SOIL GAS AND AMBIENT AIR SAMPLE LOCATIONS

DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive
Suite 112
White Plains, NY 10604
(914) 694-5711

DRAWN:	CHECKED:	DATE:	FIGURE:
MRV	SG	3/25/05	4

APPENDIX I

Site Inspection Report (November 2004)
&
Environmental Site Audit (March 7, 2005)

SITE INSPECTION
FYN PAINT FACILITY
230 KENT AVENUE
BROOKLYN, NEW YORK

Prepared For

Fyn Paint & Lacquer Co., Inc.

November 2004

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694-5711

TABLE OF CONTENTS

SITE INSPECTION
FYN PAINT FACILITY
230 KENT AVENUE
BROOKLYN, NEW YORK

INTRODUCTION

Leggette, Brashears & Graham, Inc. (LBG) was retained by Fyn Paint to conduct a site inspection at 229 Kent Avenue, Brooklyn, New York. The site inspection was conducted on May 27, 2003 by Dan C. Buzea and Edward Destefanis of LBG in the presence of Mr. William Feinstein, owner of Fyn Paint and Mr. Howard Simka, chemist for the facility. The purpose of the inspection was the following:

- conduct an inventory of the materials used for preparing paint at the time of the inspection;
- obtain data regarding the paint preparation process; and,
- determine the presence of potential leaks or spills related to the storage of chemicals and manufacturing of paint and pathways for such materials to reach the environment.

INVENTORY OF CHEMICALS

First Floor – Chemical Storage Area

The site inspection started at the first floor (ground level) of the facility from the Kent Avenue entrance. The following materials used for paint were stored on the first floor.

- Titanium dioxide pigment, 50 pound bags/6 bags.
- Talc powder, 50 pound bags/11 bags.
- Various powder paints for coating, 55 and 44 pound boxes/45 boxes.
- One gallon cans which were empty, approximately 20 cans.
- Solvent 100, 55-gallon drums, sealed/1 drum; one 55-gallon drum containing 10 gallons.
- Five-gallon containers of lacquer, sealed/100 containers.
- Five-gallon plastic containers of a water based paint/15 containers.
- Kelsol labeled 55-gallon drums/35 drums, empty. Kelsol is a resin used in paint processing and is water based.
- Lacquer in 5-gallon containers, sealed/30 containers.

Pictures of the first floor area, showing the storage of chemicals for paint manufacturing are attached. It should be noted that Fyn Pain is a wholesale distributor of powered paint used for coating.

Second Floor - Paint Manufacturing Area

The access to the second floor is via a staircase located in the vicinity of the Kent Avenue entrance. In addition, a service lift (only for chemicals) is used to bring drums and containers from the first floor to the second floor. The second floor is used for storage and paint processing by mixing various chemicals. The final product are various paint colors. The inspection identified the following:

- 55-gallon drums sealed containing processing chemicals.
- A 550-gallon blending tank out of service. (The tank was empty at the time of the visit).
- Six mixers.
- Four 175-gallon tanks out of service (empty).
- Two sand mills.
- Empty 5-gallon containers, final product.
- Empty 55-gallon drums, for storage.

Pictures of the second floor area are attached.

DESCRIPTION OF HAZARDOUS CHEMICALS

During the visit, LBG received from Fyn Paint a list of hazardous chemicals used at the facility for paint manufacturing (see attached). LBG conducted an interview with Mr. Bill Feinstein (owner) and Mr. Howard Simka (chemist) regarding the quantities of hazardous chemicals stored at the site during the visit. The following is the list of the hazardous chemicals supplied by Fyn Paint:

Solvents

Acetone

One, 55-gallon drum, full

One, 55-gallon drum containing 15 gallons

N butyl acetate

One, 55-gallon drum, full

N butyl alcohol

Three-gallon container, full

Methyl alcohol

One, 55-gallon drum, full

One, 55-gallon drum containing 40 gallons

Isopropylalcohol

None

Solvent 100

One, 55-gallon drum full

One, 55-gallon drum containing 10 gallons

Blend 90 (lacquer thinner)

Two, 55-gallon drums, full

Twenty-five containers of 5-gallons, full

Blend BA cleaning solvent

None

VMP naptha (aliphatic hydrocarbon)

One, 55-gallon drum containing 45 gallons

Toluol (toluene)

One, 55-gallon drum, full

Xylol (xylene)

One, 55-gallon drum, full, plus 18 gallons in a 55-gallon drum

Oxsol

42 gallons packaged in 5-gallon containers.

All solvents are purchased in 55-gallon steel, sealed drums.

Resins

Alkyd resins

Fifteen, 55-gallon drums

Water reducible resins

Twelve, 55-gallon drums

Melamine resins

One, 55-gallon drum

Nitrocellulose resins

Six, 55-gallon drums

Finished paint product

15 cases of six, 1-gallon per case

Fifty, 5-gallon containers

DESCRIPTION OF MANUFACTURING PROCESS

The first floor is used for receiving chemicals which are stored for sale to various customers. The powered paint is not manufactured at the facility.

All other chemicals received at the first floor, via Kent Avenue entrance or North First Street, are in 55-gallon steel sealed drums or containers of 5-gallon capacity. No manufacturing process takes place on the first floor. During the visits, no significant stains, drains or other area of possible spill or leaks of chemicals could take place on the first floor area were observed. According to the owner of the facility, Mr. William Feinstein, no bulk deliveries were made at the site since December 1999 when the facility's underground storage tanks were taken out of service and abandoned onsite in accordance with applicable regulations.

The paint manufacturing takes place at the second floor where various chemicals are mixed using the existing six mixers. In general, the manufacturing process is the following:

The chemical containers or drums from the storage area located on the first floor are transported to the second floor using an electric lift. The chemical ingredients are measured

based on formula following a "batch card" and put into the mixing vessel. After mixing and quality control process the finished batch is strained, set in the appropriate containers and labeled.

CONCLUSIONS

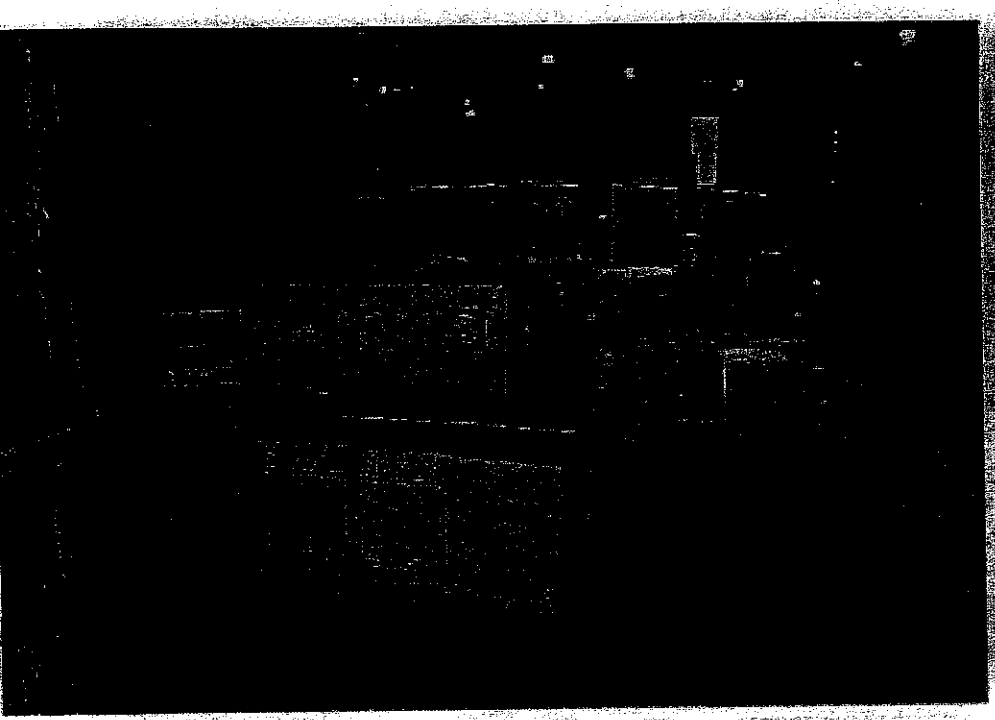
The site visit and inventory indicated the following:

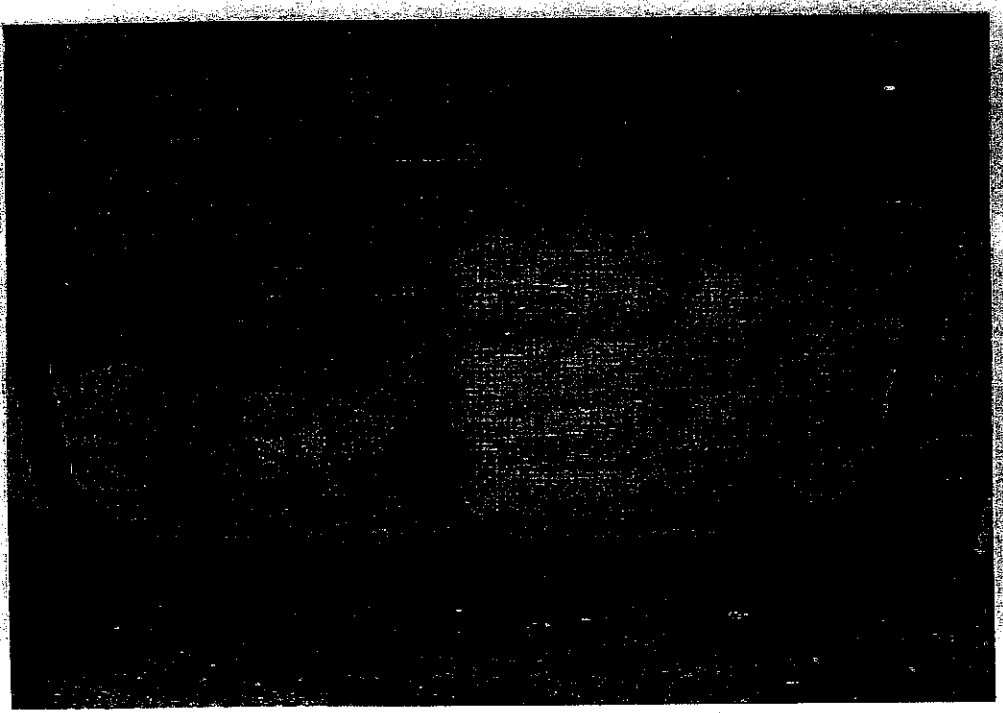
1. First Floor
   - first floor is used for storage of processed chemicals and finished products;
   - no underground storage tanks are in use at the site; the USTs were abandoned in place in 1999; all fill boxes were sealed at the same time;
   - no drainage or other pathway for leaks of chemicals to underground were observed at the first floor; and,
   - the first floor appears to be generally well kept.

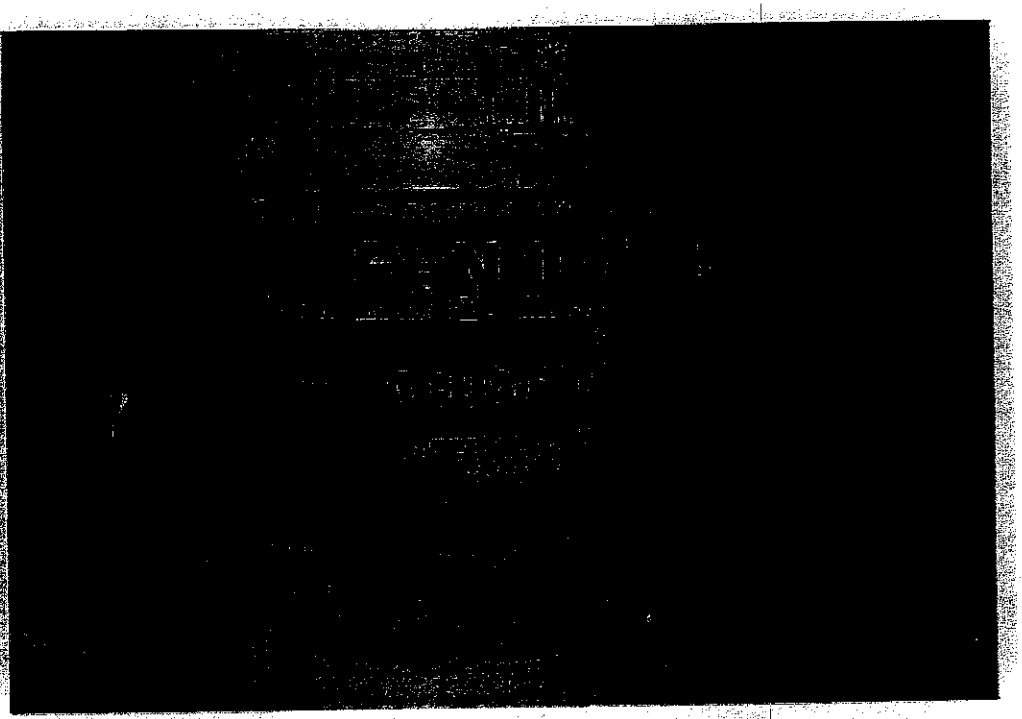
2. Second Floor
   - this floor is used for paint manufacturing;
   - the floor, drums and mixing basins are splashed with paint; and,
   - there is no pathway or potential for chemicals from this floor impacting the environment.

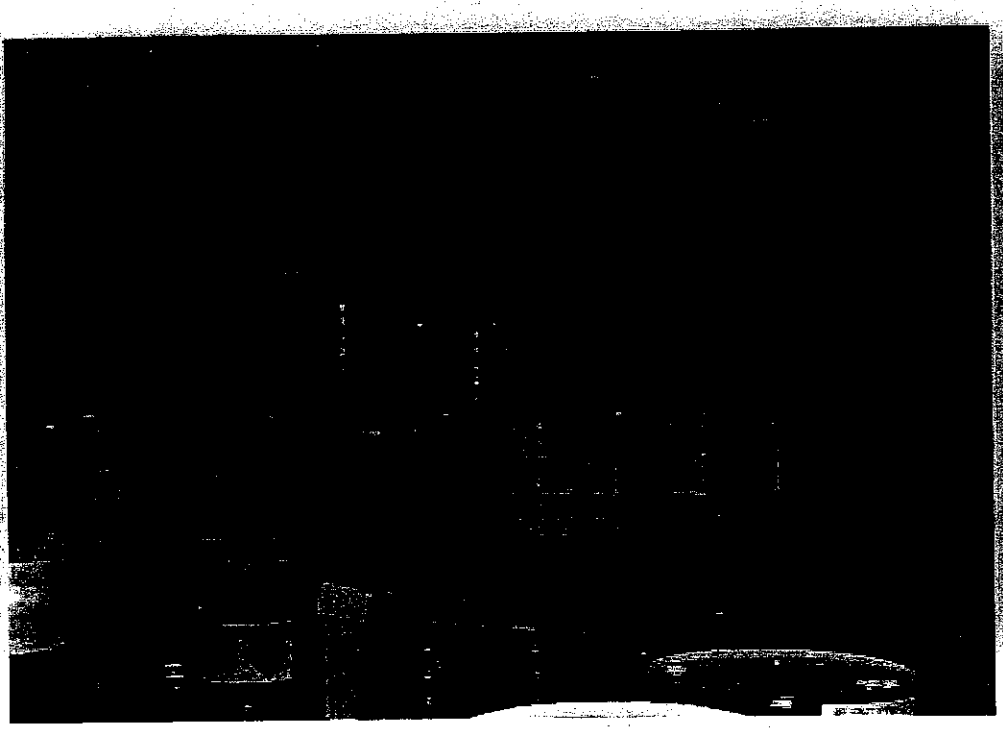
dmd
November 1, 2004
F:\REPORTS\Keane Beane\Supplemental Remedial Investigation\materials inventory report rpt.doc

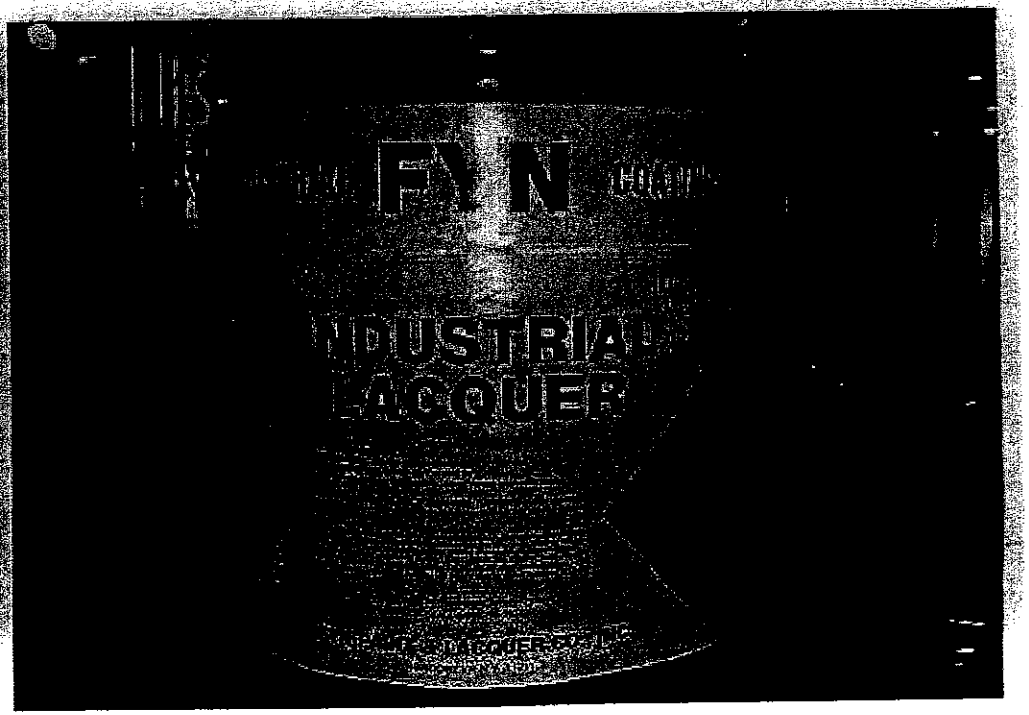
FIRST FLOOR - PROCESS CHEMICALS AND FINISH PRODUCT STORAGE

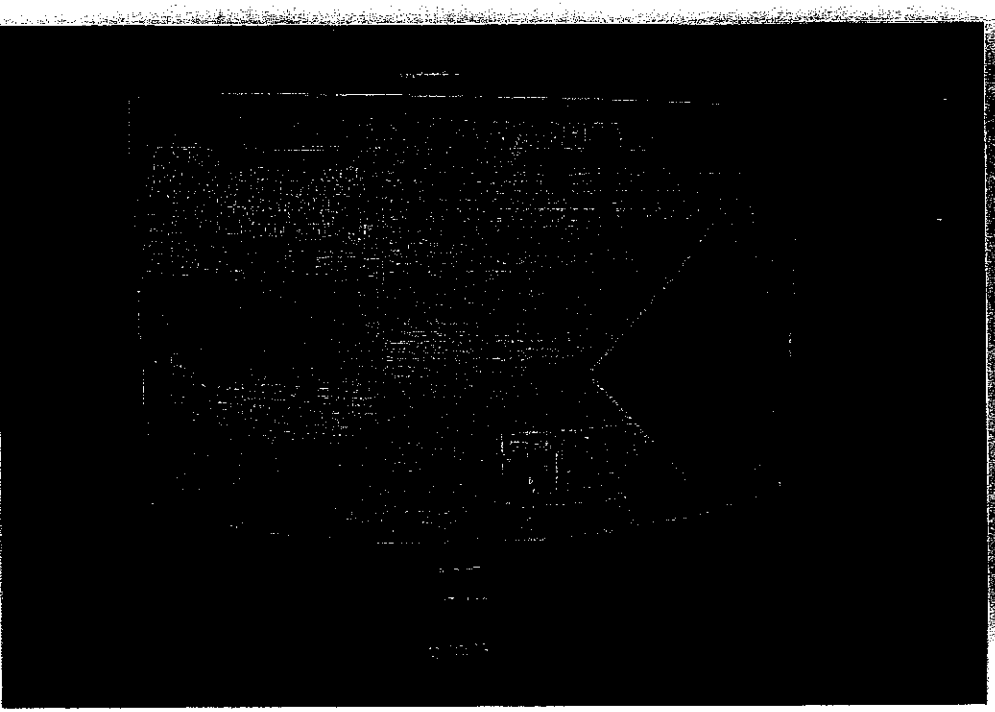


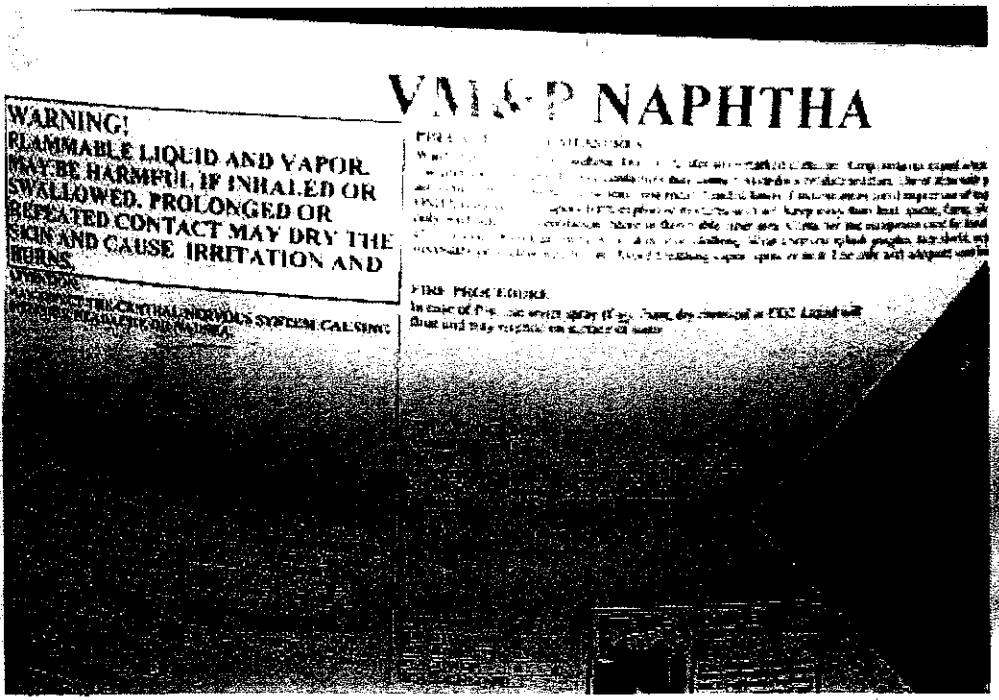


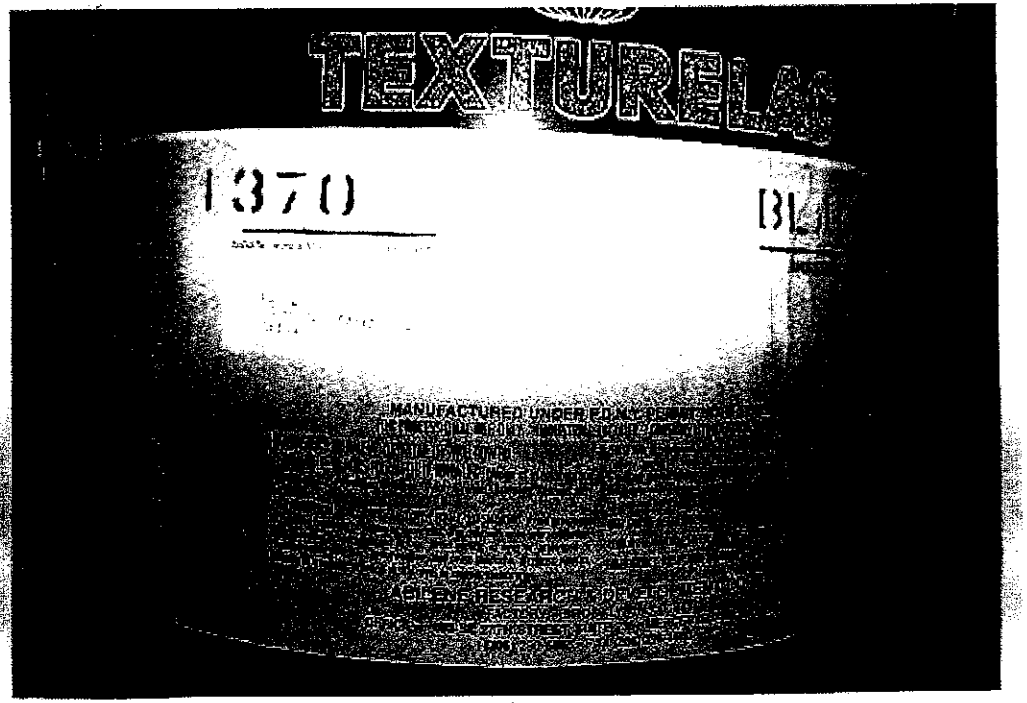


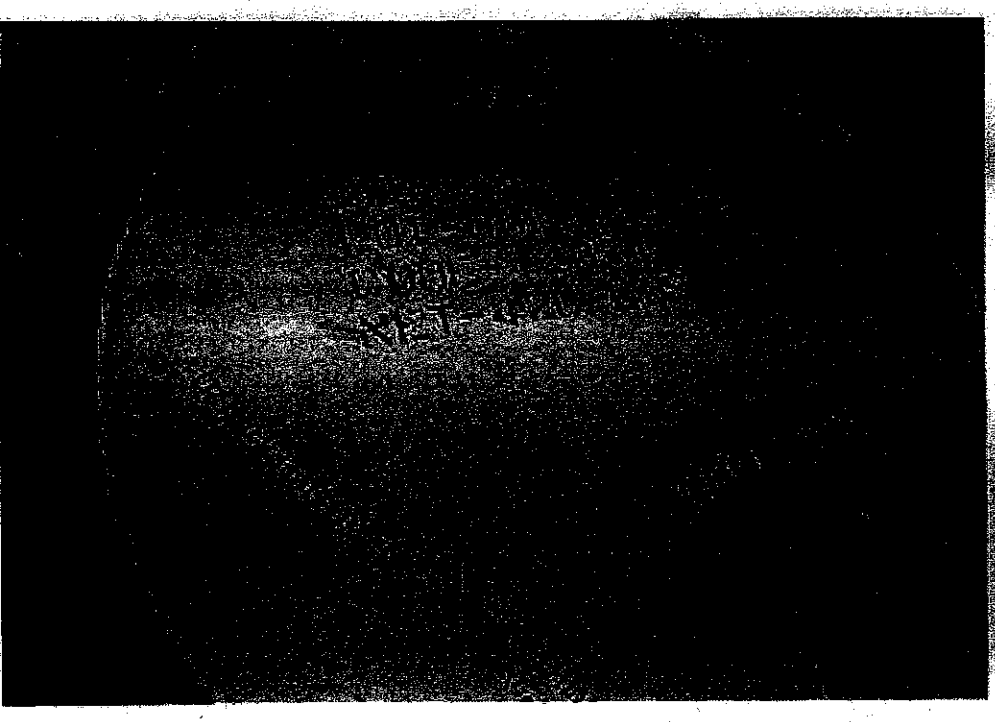


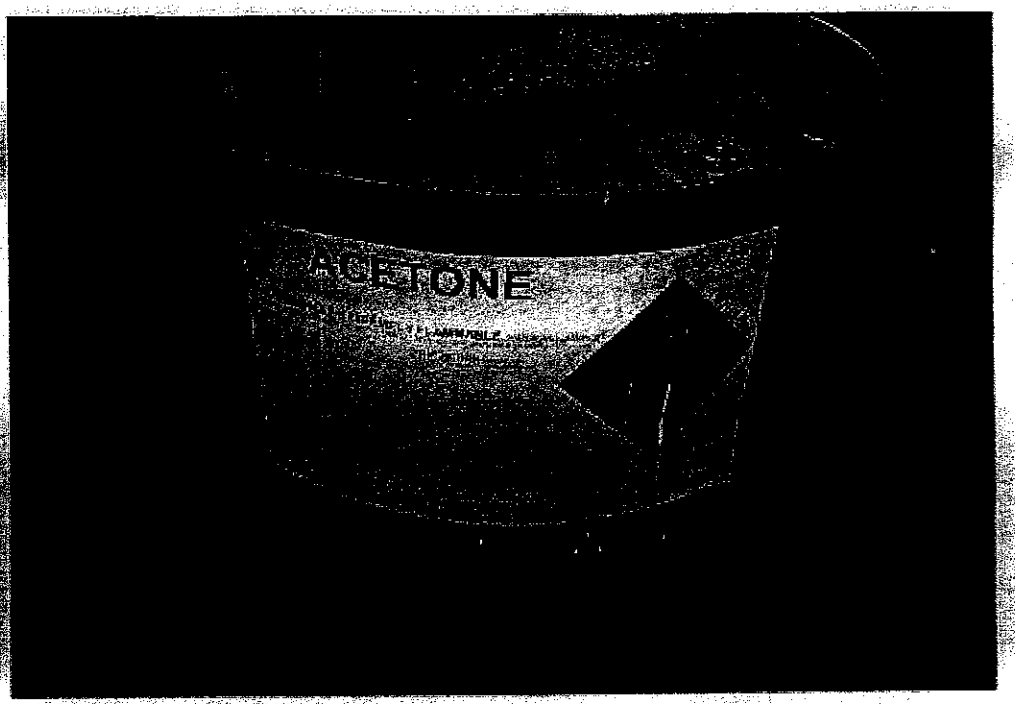

INDUSTRIAL
LACQUER

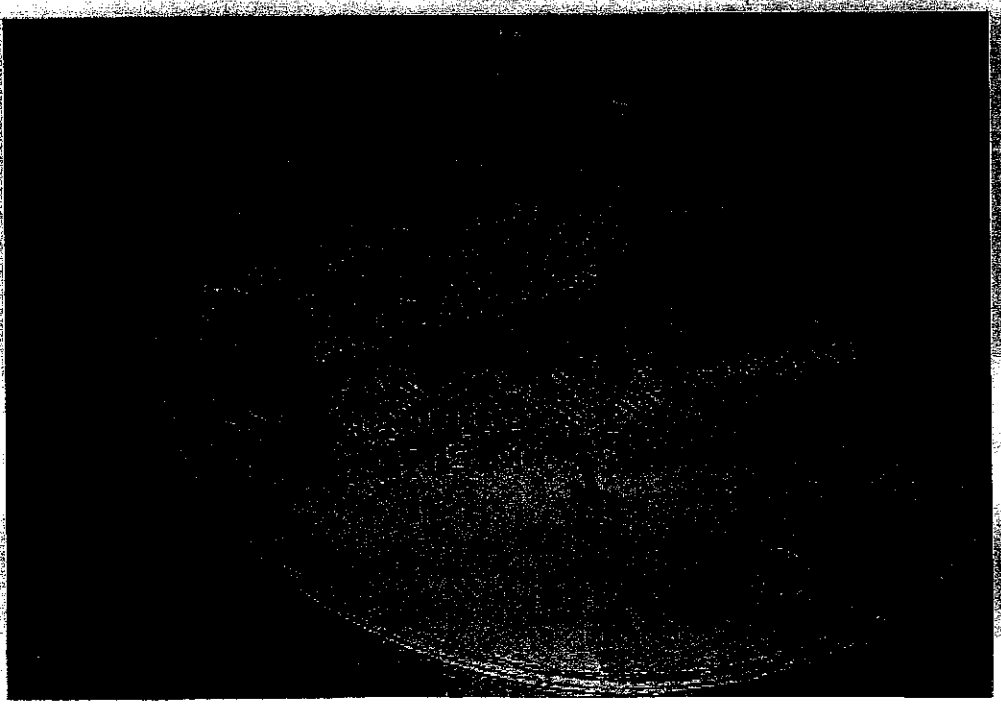


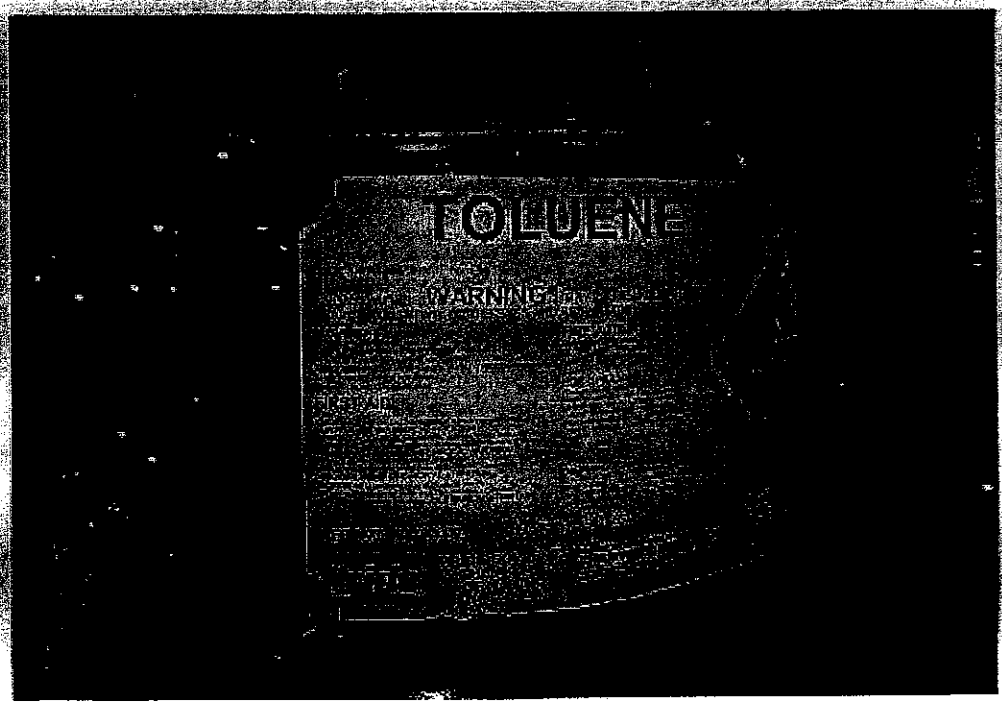

VM&P NAPHTHA
WARNING!
FLAMMABLE LIQUID AND VAPOR.
MAY BE HARMFUL IF INHALED OR
SWALLOWED. PROLONGED OR
REPEATED CONTACT MAY DRY THE
SKIN AND CAUSE IRRITATION AND

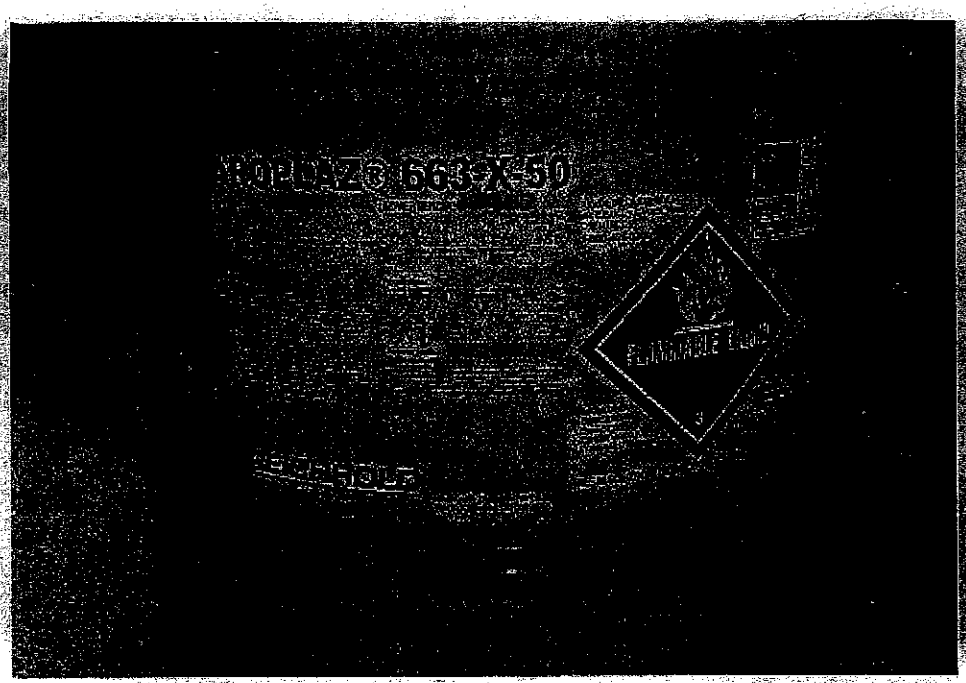

TEXTURELAC
1370

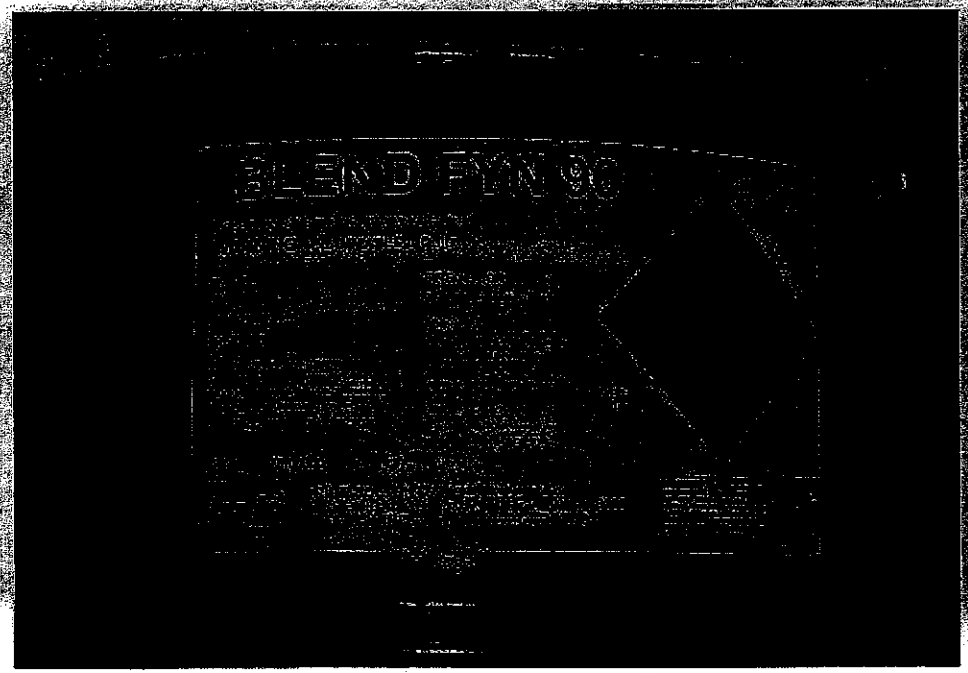


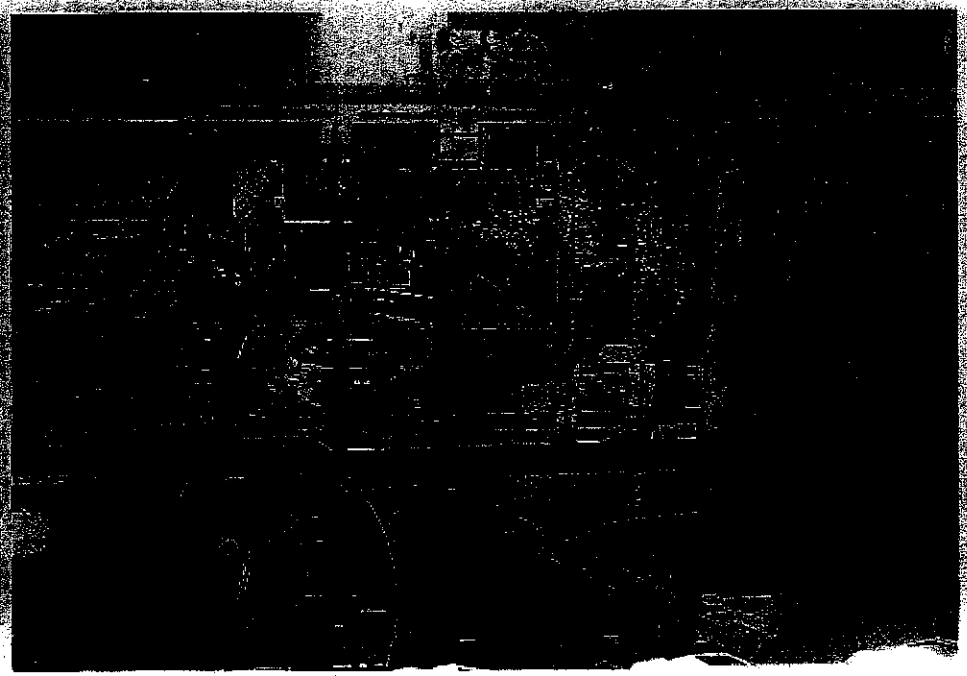

ACETONE




TOLUENE



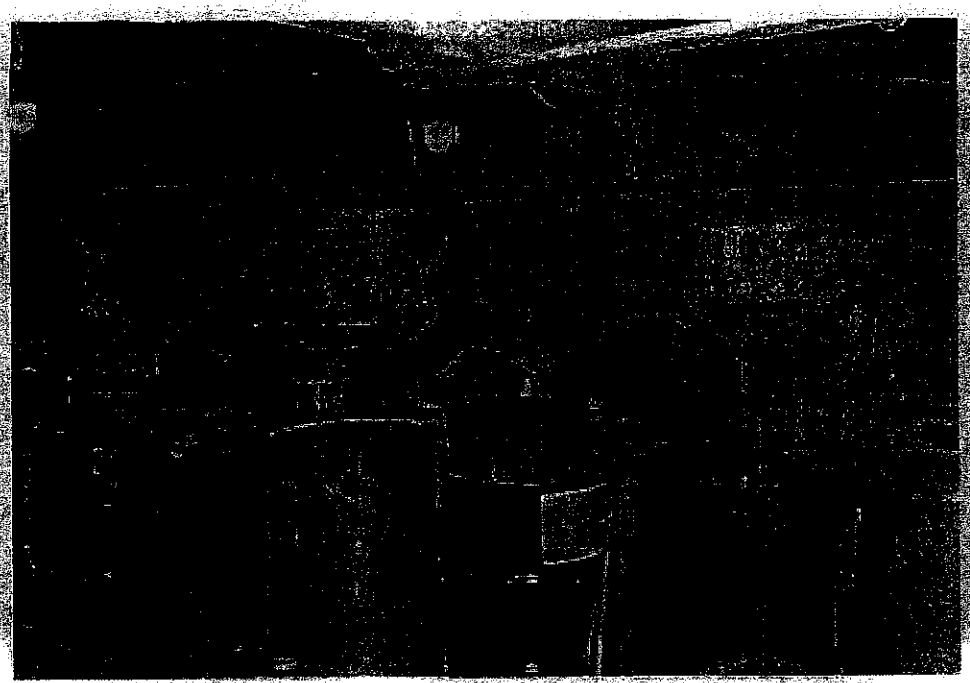




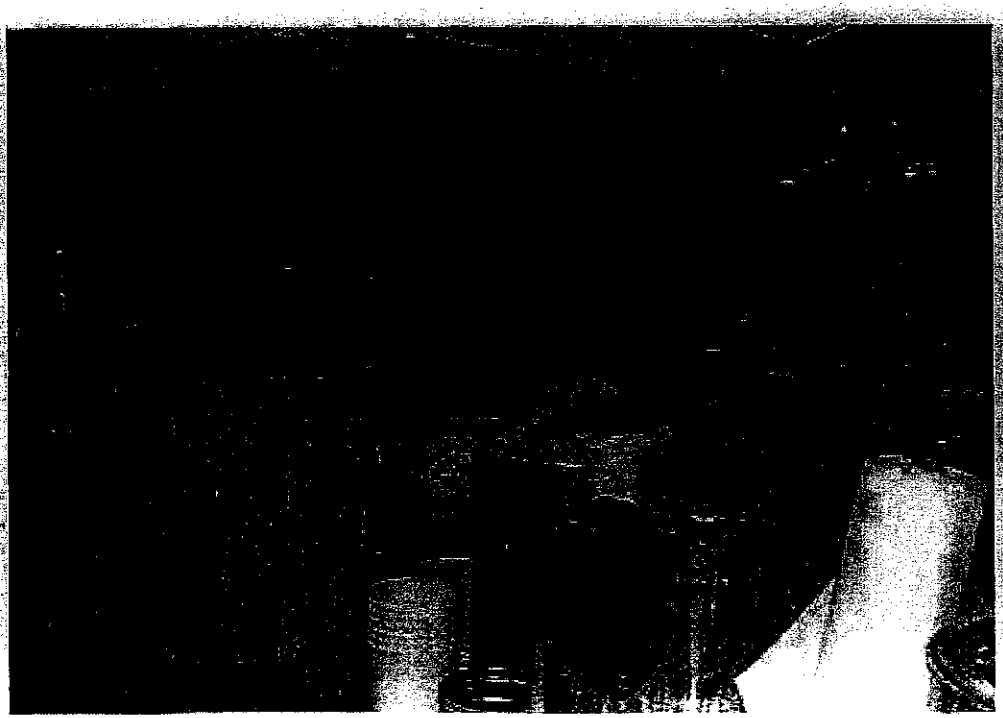
FINAL PRODUCT

VIEW TO SECOND FLOOR

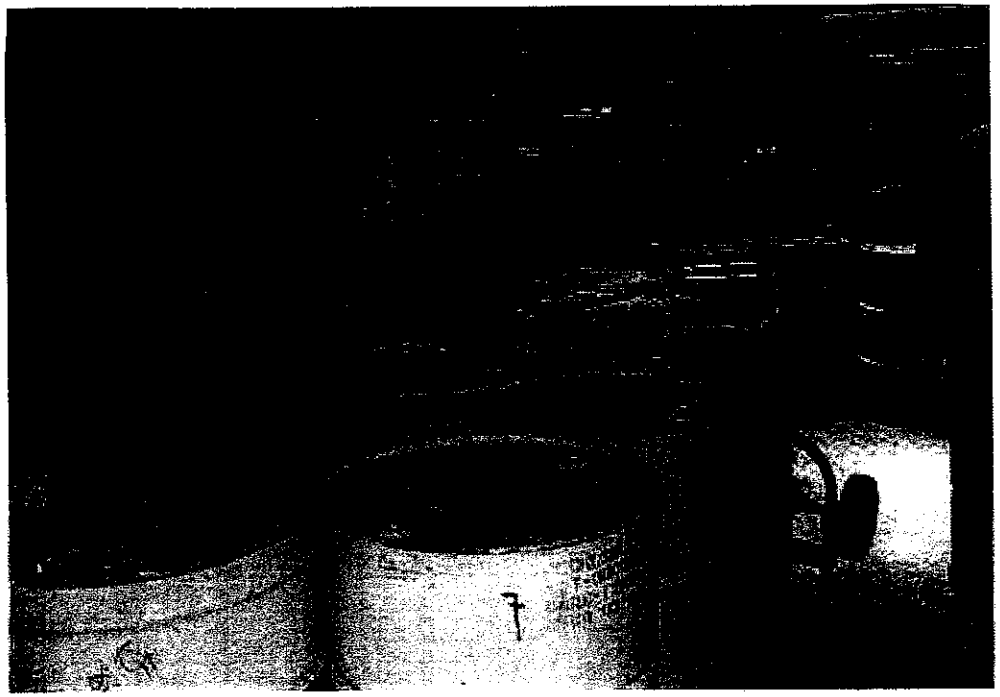
SECOND FLOOR - MANUFACTURING AREA

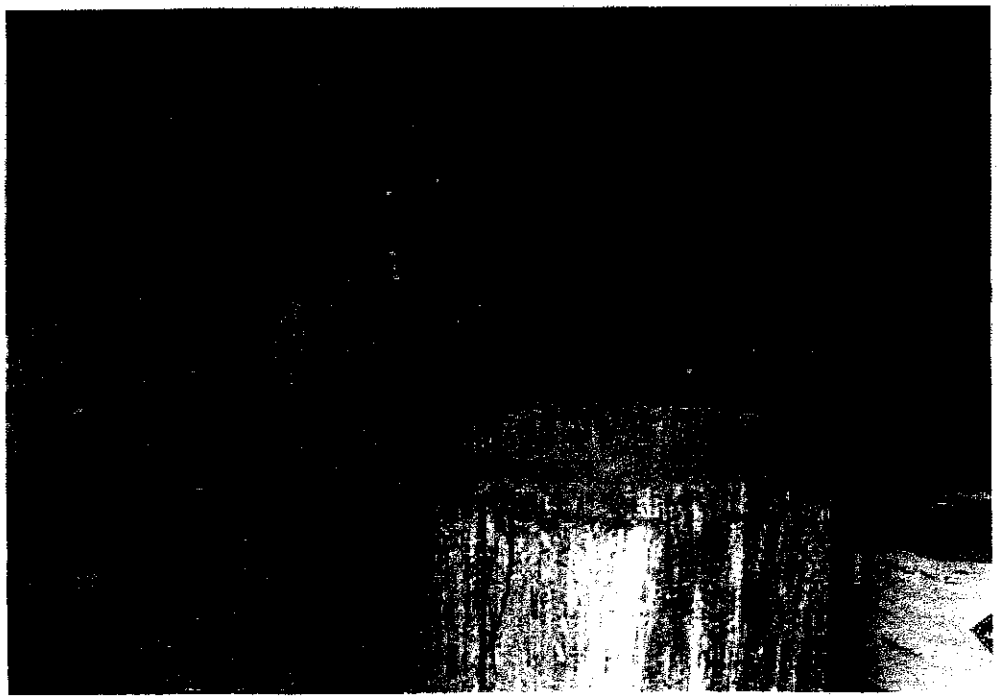


TANK NOT IN USE



SECOND FLOOR - MANUFACTURING AREA





SUPPLEMENTARY ENVIRONMENTAL SITE AUDIT

INTRODUCTION

On January 26, 2005, an additional site visit was conducted at the Fyn Paint and Lacquer Co., Inc. site located at 229 Kent Avenue, Brooklyn, New York. The site is under the Voluntary Cleanup Program, Site #V00380-2, Index #W2-0873-00-10.

The site visit was conducted in response to a New York State Department of Environmental Conservation (NYSDEC) letter dated December 16, 2004, as a part of additional work required by the NYSDEC for the volunteer to remain in the Voluntary Cleanup Program.

The environmental audit includes the following:

1. A list of all the material stored in the 55-gallon drums located in the factory building.
2. Inspection of drains and pipes.
3. Exposure and inspection of all piping located on first and second floor and basement.

Inventory of Chemicals and Materials

An inventory of all chemicals and materials stored in 55-gallon drums at the facility was provided by Mr. William Feinstein, owner of Fyn Paint and Mr. Howard Simka, chemist.

A list of these chemicals and materials is presented below:

Solvents/Lacquer Thinner

Acetone
Toluol
Methanol
Iso propyl Acetate
Butyl Cellusolve
Xylol
VM&P Naptha

Mineral Spirits
Solvent 100 (Hi Flash)
Normal Butyl Acetate
Oxsol 100 Solvent

Resins

Alkyd Resin
Nitrucello Lose Resin
Acrylic Emulsions Resin
Acrylic Resin

Pigments

Titanium Dioxide
Chome Yellow
Red Oxide
Yellow Oxide
Thalu Blue
Organic Red

Inert Dry Fillers

Talc
Malais Resin
Calcium Carbonate
Zinc Stearate

Plasticizers

Dioctyl Phthlate

Miscellaneous Chemicals

Phosphoric Acid (85%)
Ammonia (14%)

Inspection Of Drains and Pipes

During the audit, the floors at the first and second floors were inspected for drains, cracks or other openings related to present or past operations at the site. As a result of

inspection no floor drains or cracks were identified on the first and second floors of the facility.

The inspection of pipes, tanks and other equipment was also conducted during the site visit. Prior to inspection, Fyn Paint hired an outside contractor to cut open or open the existing valves of all pipes located on the first and second floors. No liquids or water was observed flowing from any of these pipes.

Photographs 1 to 31 shows the location and status of pipes, tanks and equipment. An explanation of each photograph is presented below:

Photograph #1

Solvent condenser tank and water line with non-contact cooling water (front view). Solvent used for washing the equipment is distilled and recycled for reuse.

Photograph #2

Manifold pipes to the abandoned solvent underground storage tank. The pipes were filled with concrete at the time the tanks were abandoned in January 2000. Electric box and conductor on the wall.

Photograph #3

Solvent condenser – tank and water line as Photograph #1 (side view).

Photograph #4

Abandoned pipes from out of service solvent/paint mixing tank. Pipes were open and are not used.

Photograph #5

Abandoned pipes from out of service solvent/paint mixing tank. Pipes were open and are not used. Picture also shows sprinkler and water lines across.

Photograph #6

Former solvent line which was open and abandoned. A former 10-gallon tank which is abandoned (red tank).

Photograph #7

Abandoned/discontinued empty solvent lines.

Photograph #8

Solvent pipes as in Photograph #7.

Photograph #9

Out of service resin lines which are connected with the second floor resin tanks. The resin tanks are not in use. Pipes near ceiling are the solvent pipes shown on Photographs #7 and #8.

Photograph #10

Former lacquer mixing tank which is not in use. Pipes were cut or open from the former solvent manifold.

Photograph #11

Lacquer mixing area. Electric line and disconnected pipes.

Photograph #12

Lacquer mixing tank - not in use. Photograph shows open pipes, cutoff steam line and electrical lines. The tank is not in use.

Photograph #13

Electric conduits and steam pipes (unused).

Photograph #14

First floor (ground floor) resin tanks – near Metropolitan Avenue; the tanks are not used and the pipes are disconnected.

Photograph #15

Discontinued resin tank and cut pipes removed from various areas on the ground. The 55-gallon drums are empty.

Photograph #16

River Street wall electric lines, steam line for heating, sprinkler pipe. Temperature sensor hose attached to the fire alarm.

Photograph #17

Second floor – facing Metropolitan Avenue – resin pipes coming from first floor discontinued from the resin tanks. Other pipes are water sprinkler and steam pipes.

Photograph #18

Second floor – facing Metropolitan Avenue – resin pipes coming from first floor discontinued from the resin tanks. Other pipes are water sprinkler and steam pipes.

Photograph #19

Basement steam pipe; sprinkler pipe, control valves; electric conduits, sprinkler activation box.

Photograph #20

Steam pipe; sprinkler controls and valves.

Photograph #21

Fuel oil tanks and sprinkler system.

Photograph #22

Basement – two 250-gallon tanks; steam and sprinkler system.

Photograph #23

City water line and meter.

Photograph #24

Main sewer line; old debris and pipes.

Photograph #25

Fuse panel of the dismantled pumping system; yellow is the control box for sprinkler system.

Photograph #26

Basement North First Street well; old air compressor and pump; steam line, sanitary sewer line and sprinkler line.

Photograph #27

Area of finished paint; water line pipes to the right.

Photograph #28

General view of the finishing area, dumpster and 5-gallon drums empty.

Photograph #29

Finished product and elevator for materials.

Photograph #30

Finished products area.

Photograph #31

First floor (ground) stairs to second floor, solvent 55-gallon drums.

The photographs show that the pipes used in the past for moving solvents from the underground storage tanks were abandoned and filled with concrete. In addition, it was observed that all the open pipes did not contain any chemicals. The only pipes which are presently used are the steam heating pipes, water-supply piping system and sprinkler system. The equipment used for paint mixing which includes the mixing tank and other tanks used for storage are not in use. The basement has two aboveground 250-gallon oil tanks used for heating. The site is supplied with New York City electricity, water and sanitary sewer.

CONCLUSIONS

Based on the site visits, the following conclusions are presented for evaluation to Fyn Paint.

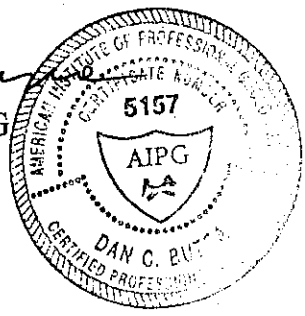
1. The piping system used in the past for various operations is presently discontinued.

2. All the existing valves were open and previously closed pipes were cut and inspected. No liquids were observed in these pipes.

3. The facility floors were inspected twice and no drains or cracks in the concrete floor were observed. It is our conclusion that there are no pathways for materials from the factory to enter the soil or ground water beneath the building.

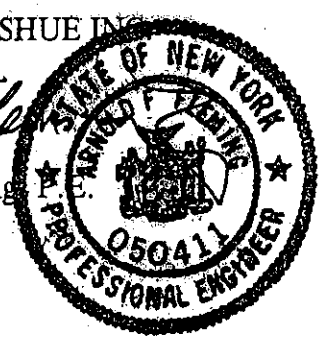
LEGGETTE, BRASHEARS & GRAHAM, INC.

Dan C. Buzea, CPG
Vice President

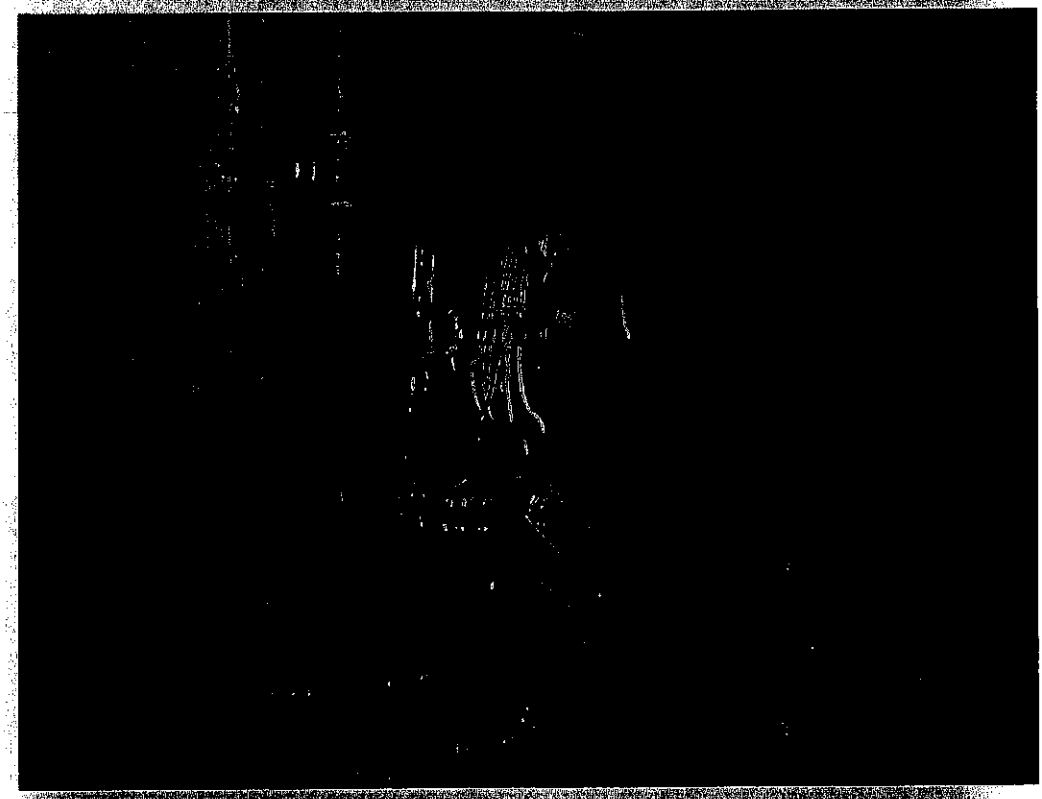


FLEMING-LEE SHUE INC.

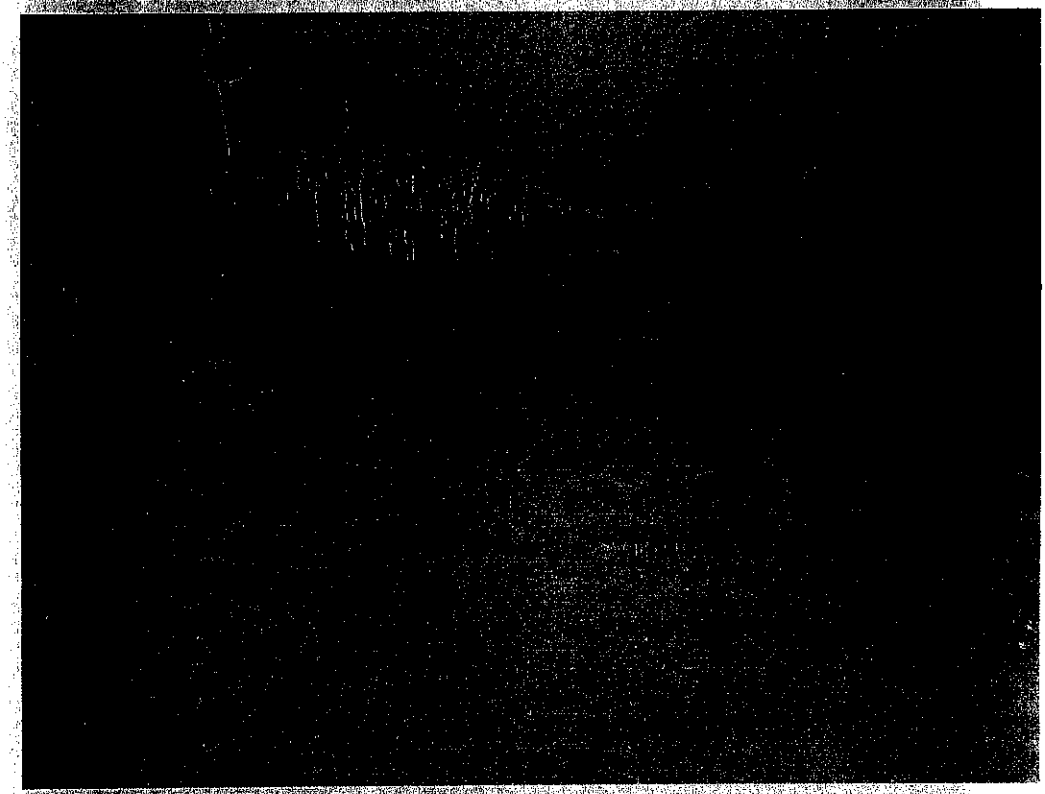
Arnold F. Fleming, P.E.
President



dmd
March 2, 2005
f:\reports\keane beane\supplementary environmental site audit.doc

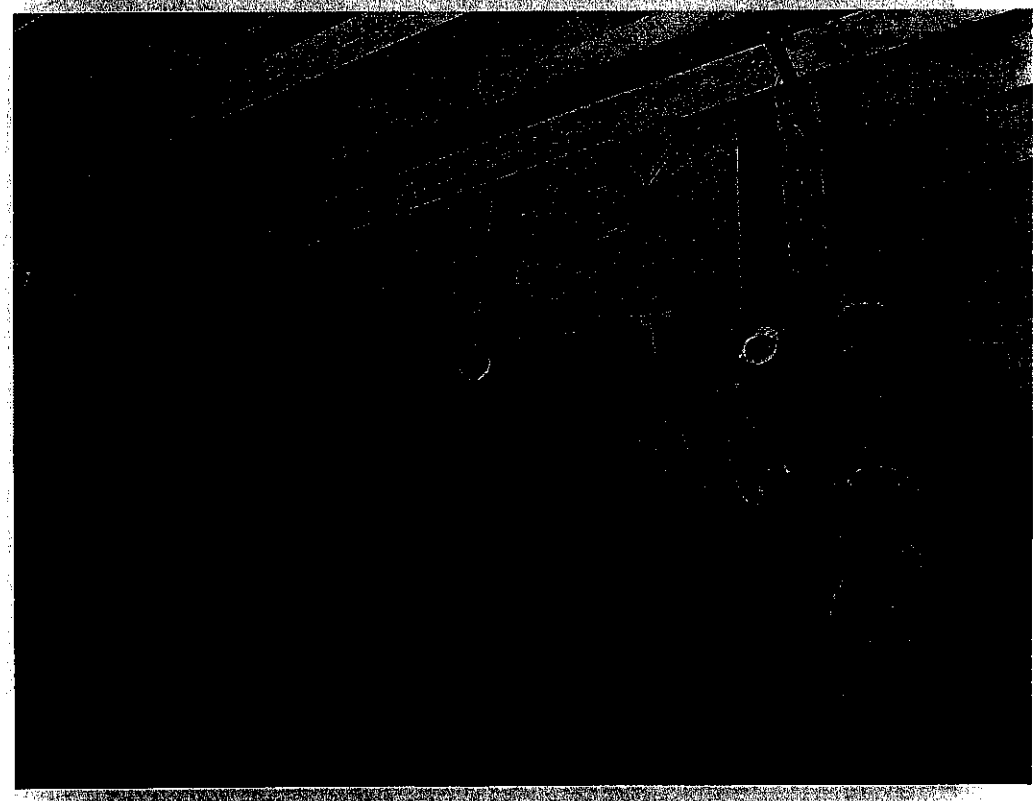


Photograph #1. Solvent condenser tank and water line with non-contact cooling water (front view). Solvent used for washing the equipment is distilled and recycled for reuse.



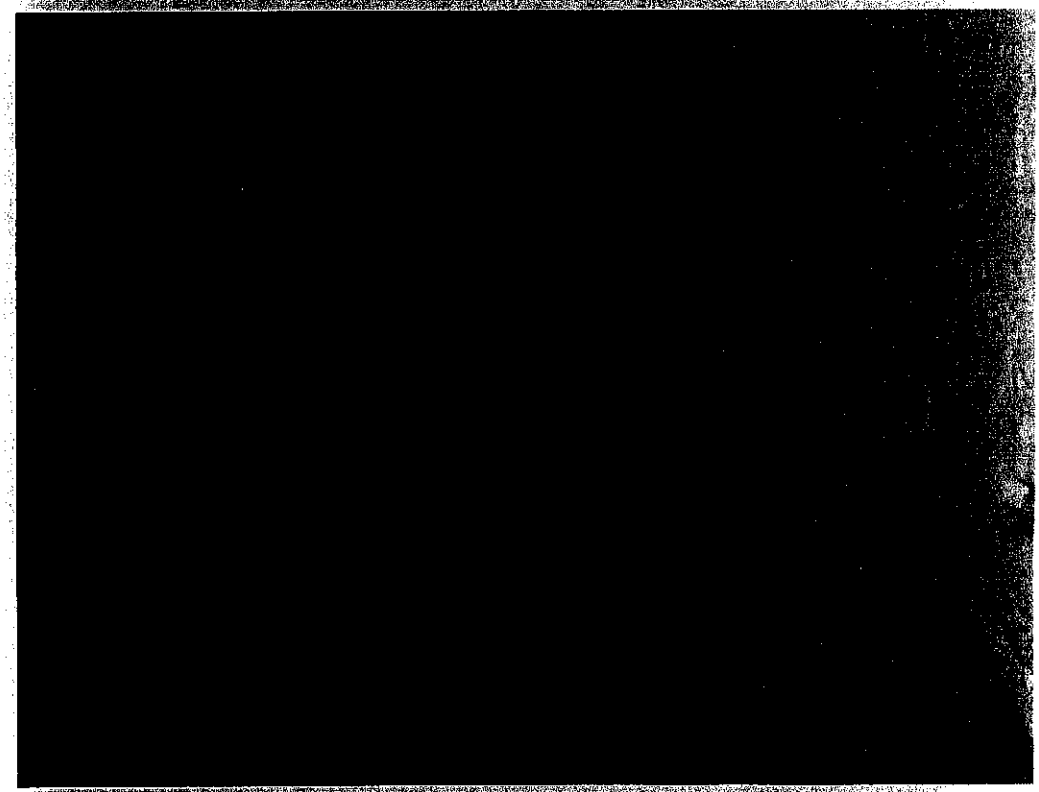
Photograph #2. Manifold pipes to the abandoned solvent underground storage tank. The pipes were filled with concrete. Electric box and conductor on the wall.

Photograph #3: Solvent condenser – tank and water line as Photograph #1 (side view).

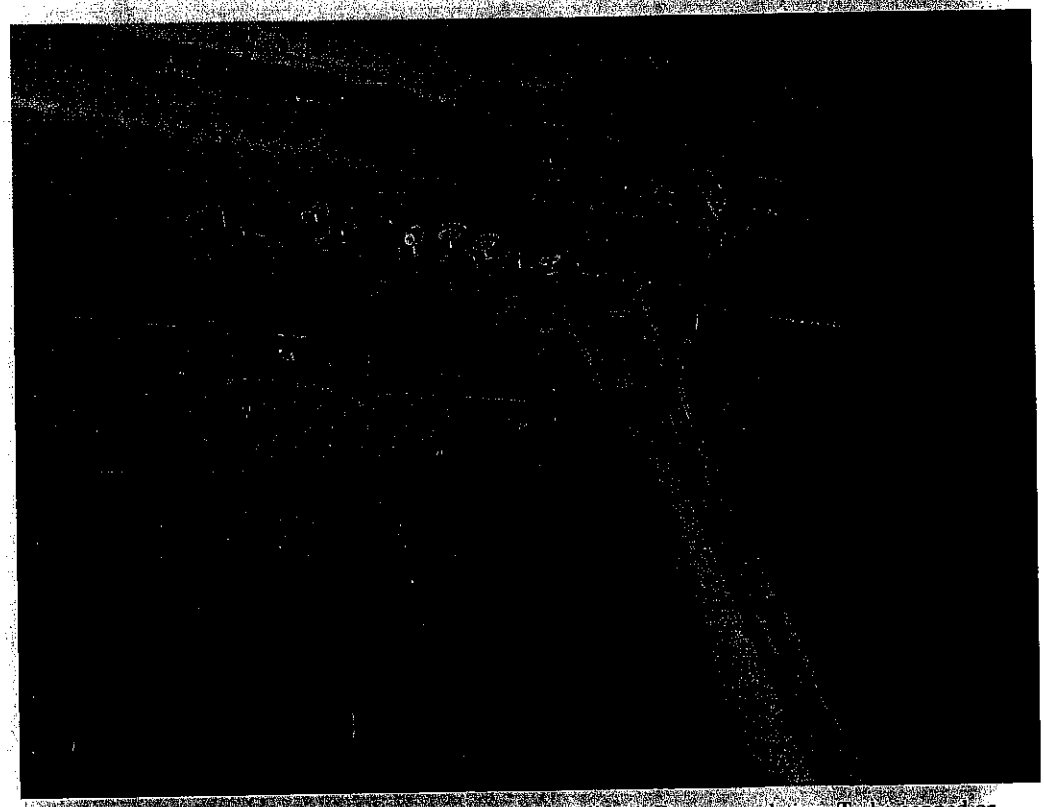


Photograph #4: Abandoned pipes from out of service solvent/paint mixing tank. Pipes were open and are not used. Recommendation to be capped or removed from the site.

Photograph #5. Abandoned pipes from out of service solvent/paint mixing tank. Pipes were open and are not used. Recommendation to be capped or removed from the site. Picture also shows sprinkler and water lines across.

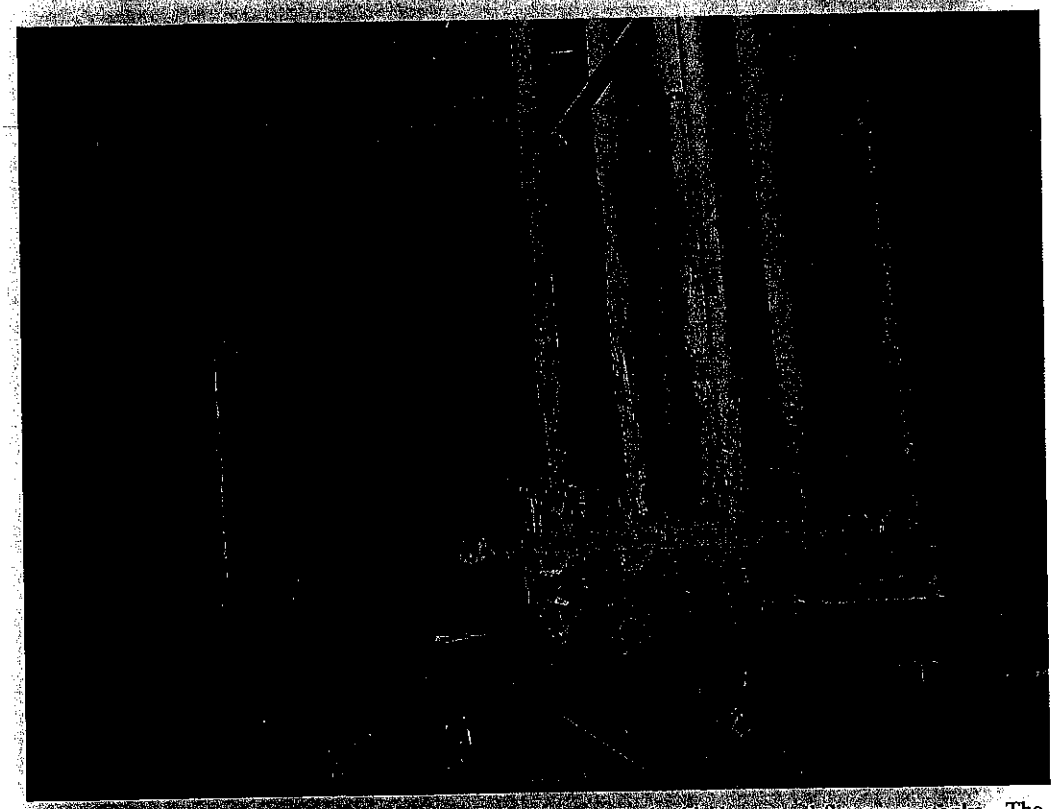


Photograph #6. Former solvent line which was open and abandoned. A former 10-gallon tank which is abandoned (red tank).

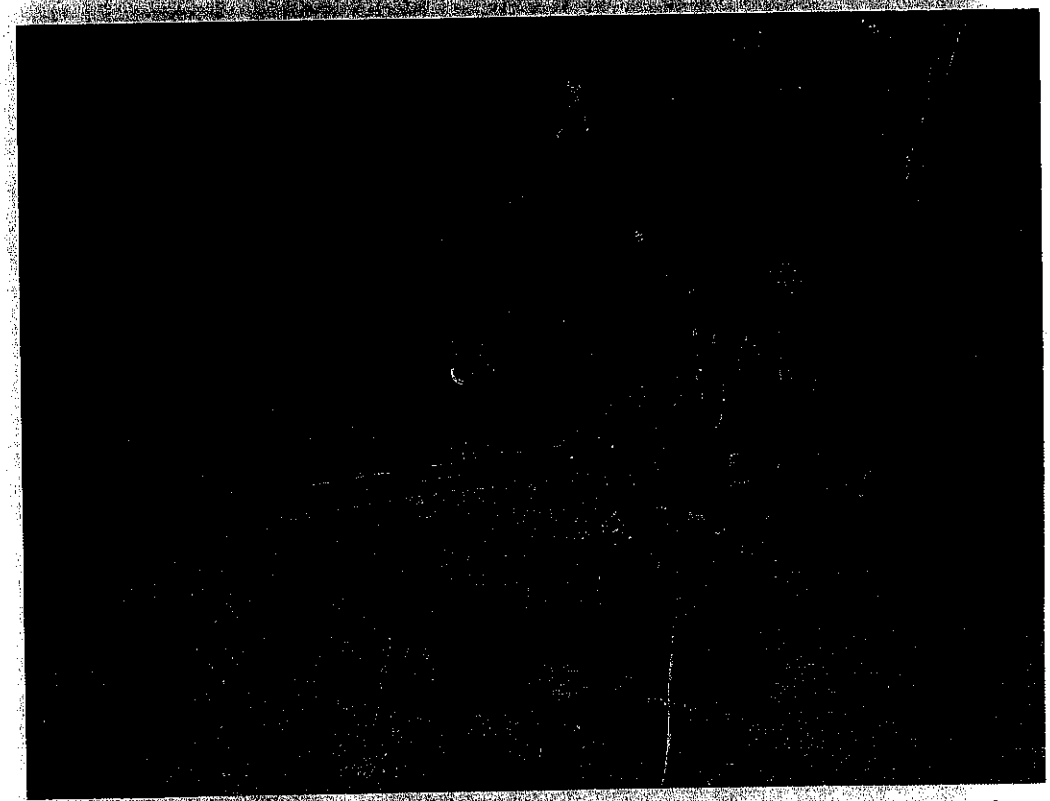


Photograph #7: Abandoned/discontinued empty solvent lines. Recommendation: To be capped or removed from the plant.

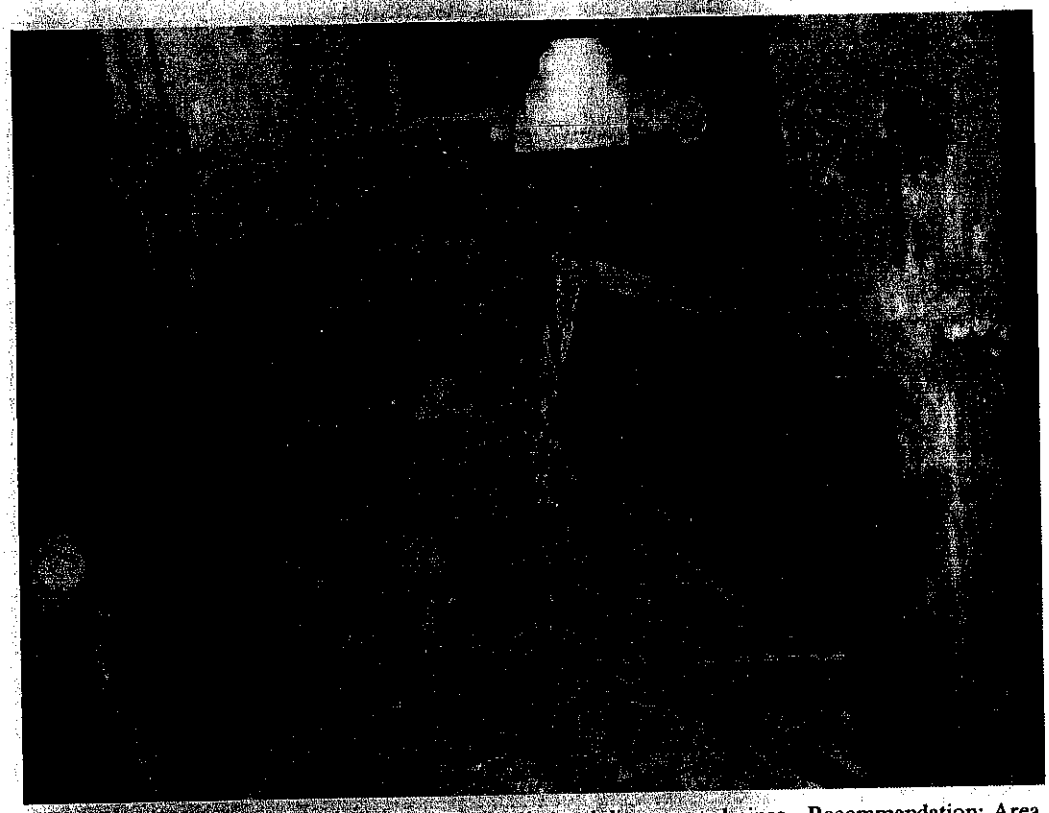
Photograph #8: Solvent pipes as in Photograph #7.



Photograph #9: Out of service resin lines which are connected with the second floor resin tanks. The resin tanks are not in use. Pipes near ceiling are the solvent pipes shown on Photographs #7 and #8. To be capped or removed.



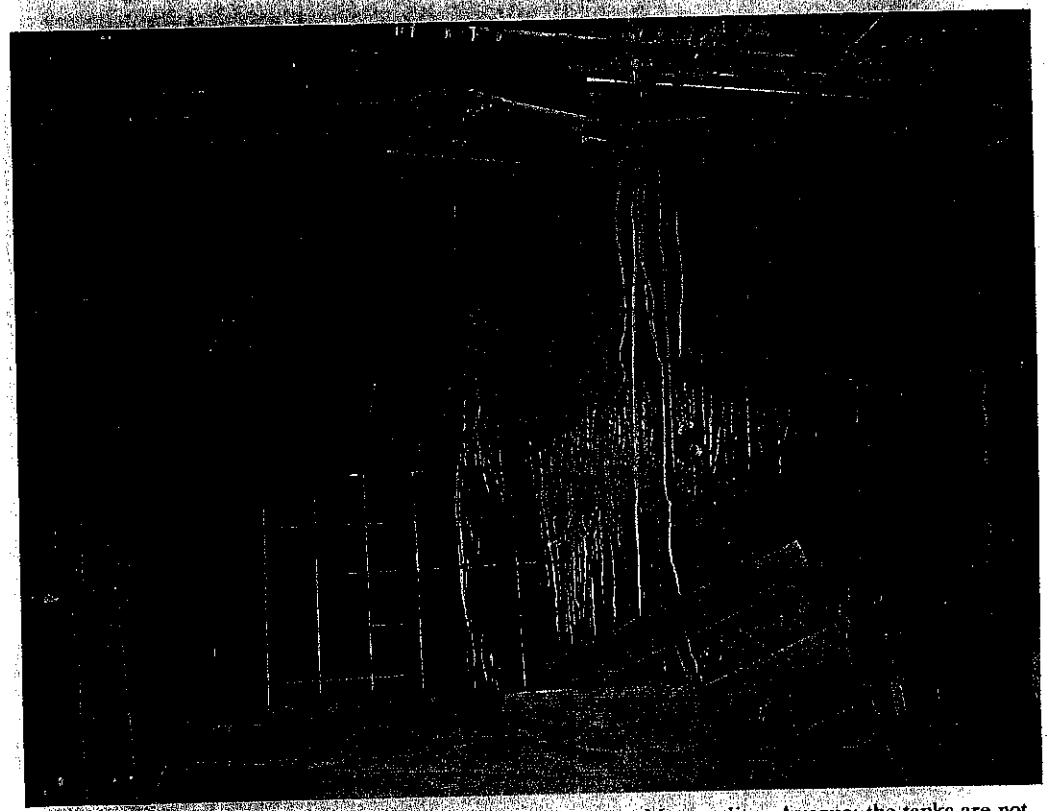
Photograph #10: Former lacquer mixing tank which is not in use. Pipes were cut or open from the former solvent manifold. To be removed from the site.



Photograph #11: Lacquer mixing area. Electric line and disconnected pipes. Recommendation: Area needs to be cleared and the pipes removed.

Photograph #12: Lacquer mixing tank – not in use. Photograph shows open pipes, cut-off steam line and electrical lines. The tank is not in use. The open pipes to be capped.

Photograph #13: Electric conduits and steam pipes (unused).

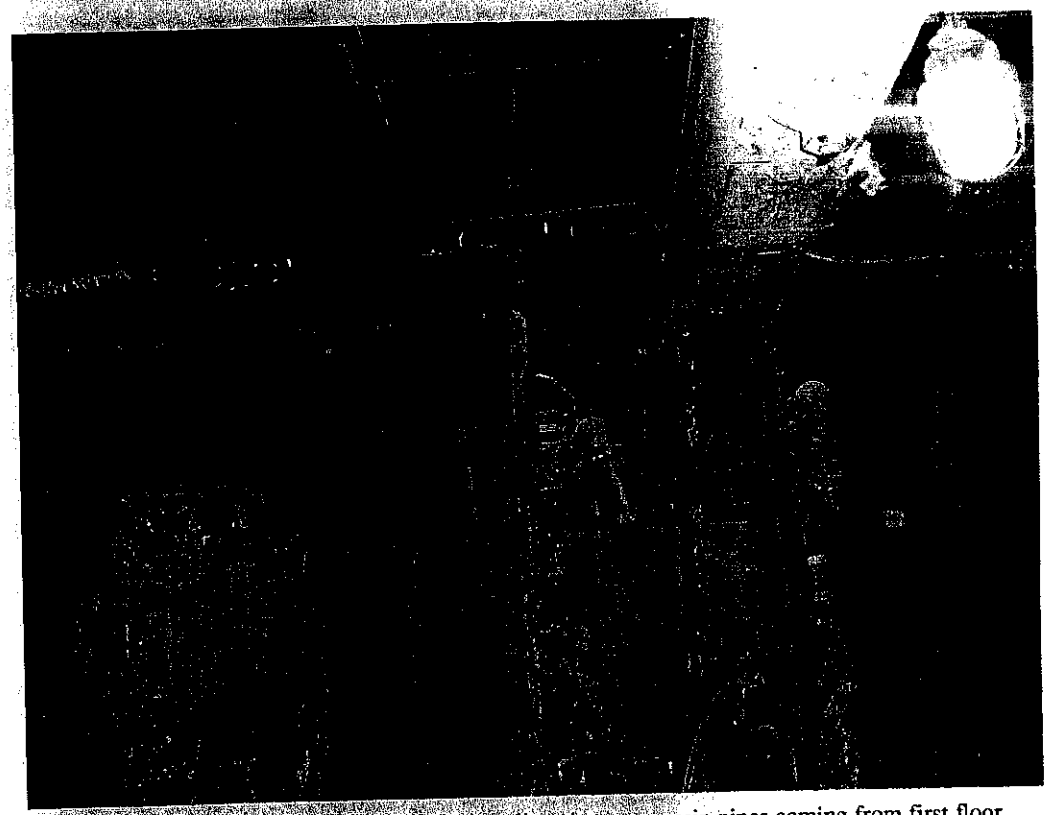


Photograph #14: First floor (ground floor) resin tanks – near Metropolitan Avenue; the tanks are not used and the pipes are disconnected.

Photograph #15: Discontinued resin tank and cut pipes removed from various areas on the ground. The 55 gallon drums are empty. The area to be cleaned and the pipes removed.

Photograph #16: River Street wall electric lines, steam line for heating, sprinkler pipe. Temperature sensor hose attached to the fire alarm.

Photograph #17: Second floor – facing Metropolitan Avenue – resin pipes coming from first floor discontinued from the resin tanks. Other pipes are water sprinkler and steam pipes.

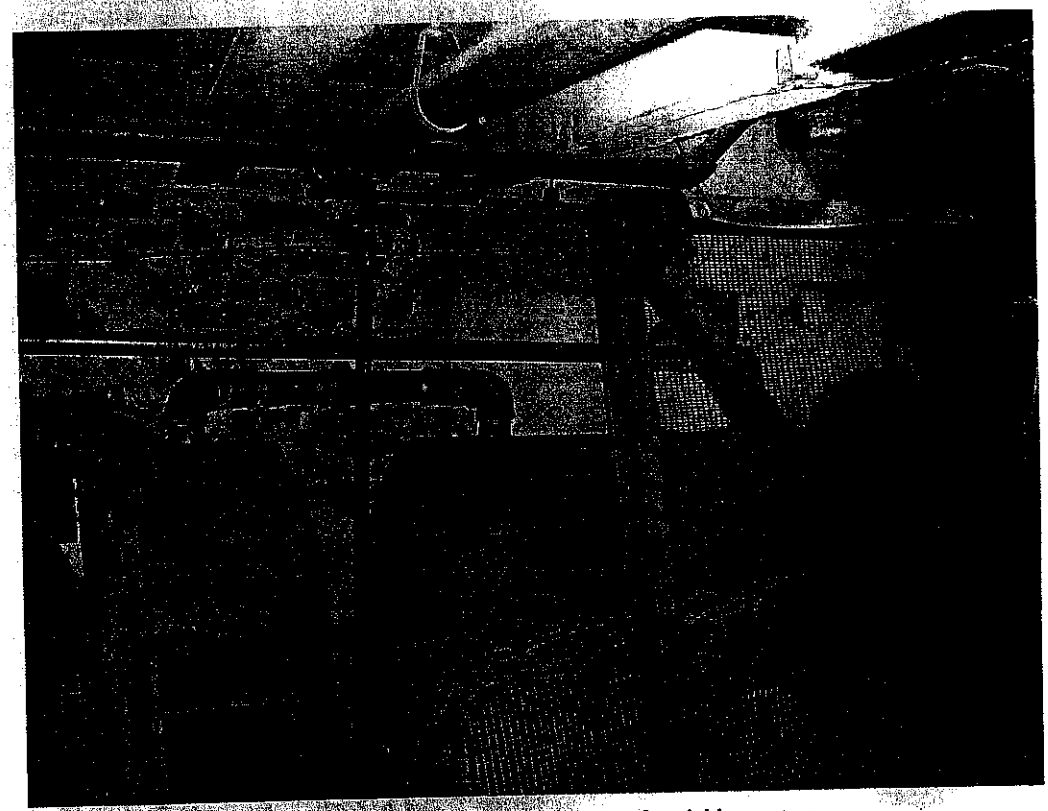


Photograph #18: Second floor – facing Metropolitan Avenue – resin pipes coming from first floor discontinued from the resin tanks. Other pipes are water sprinkler and steam pipes

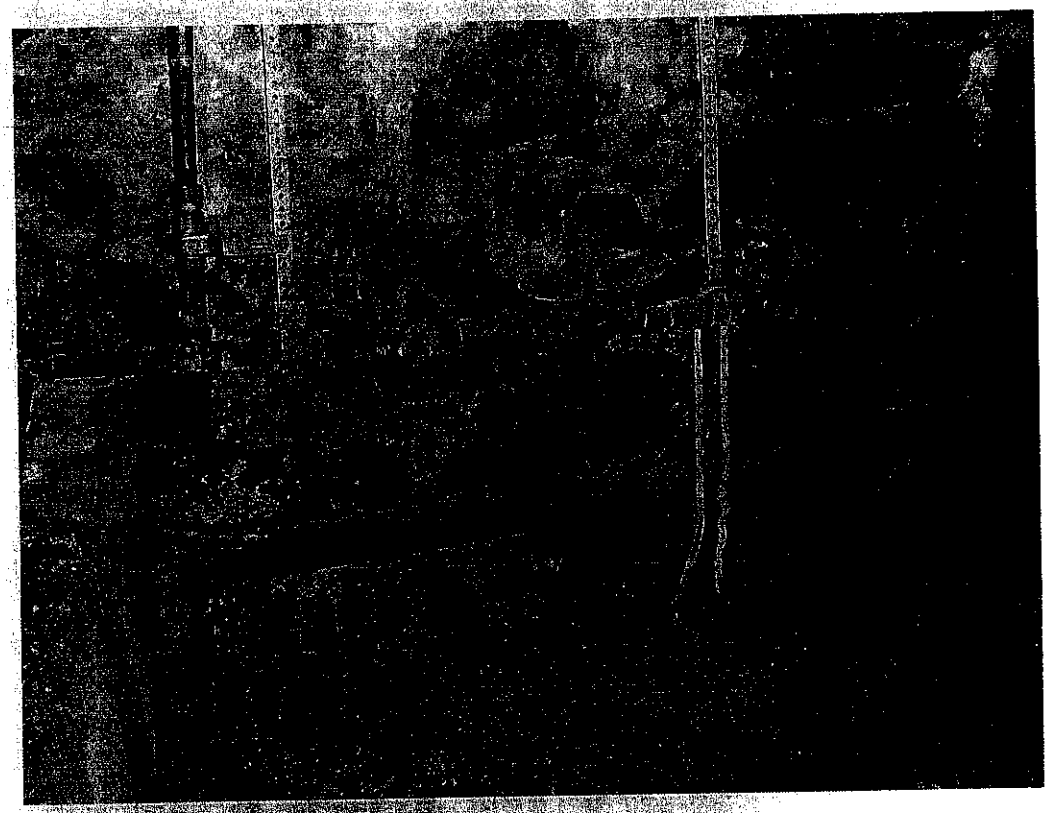
Photograph #19: Basement steam pipe, sprinkler pipe, control valves, electric conduits, sprinkler activation box.

Photograph #20: Steam pipe, sprinkler controls and valves.

Photograph #21: Fuel oil tanks and sprinkler system.

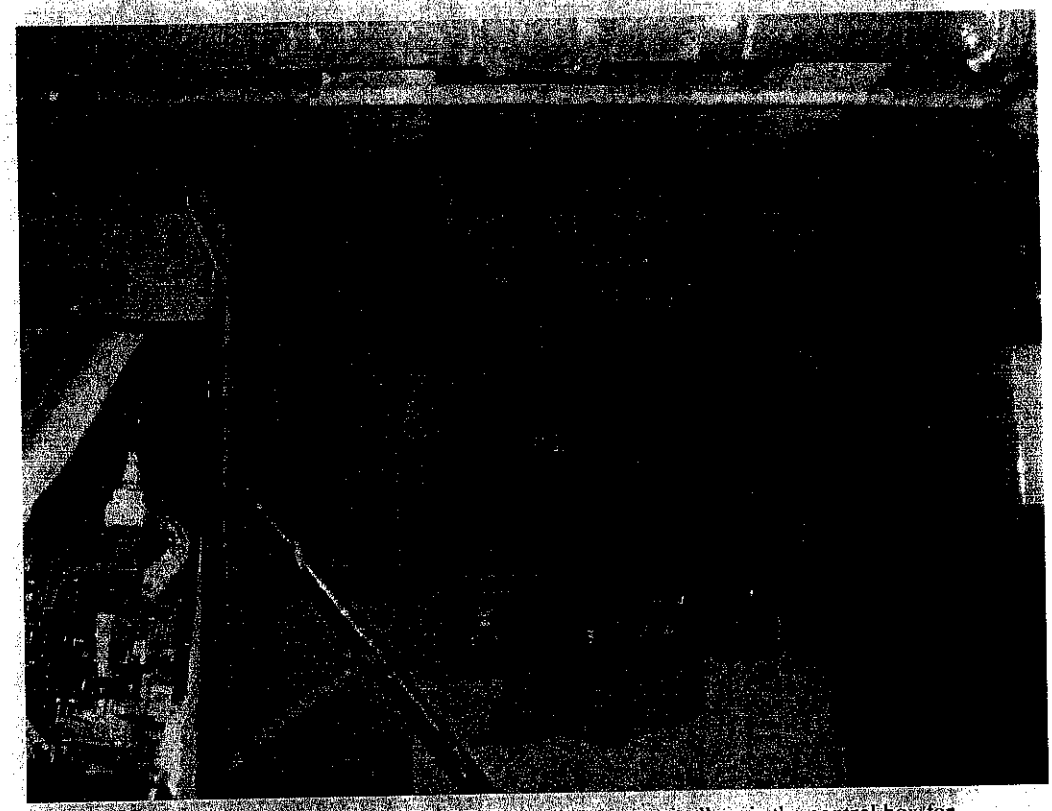


Photograph #22: Basement – two 250-gallon tanks; steam and sprinkler system.

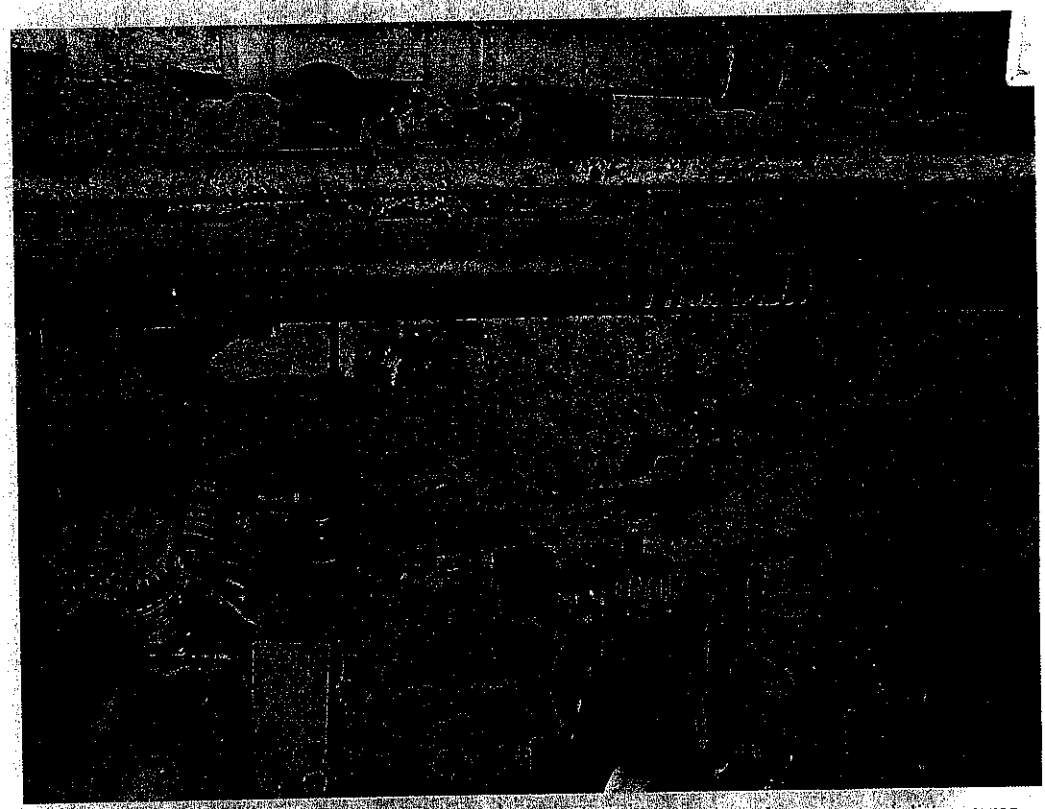


Photograph #23: City water line and meter.

Photograph #24: Main sewer line, old debris and pipes. To be cleaned

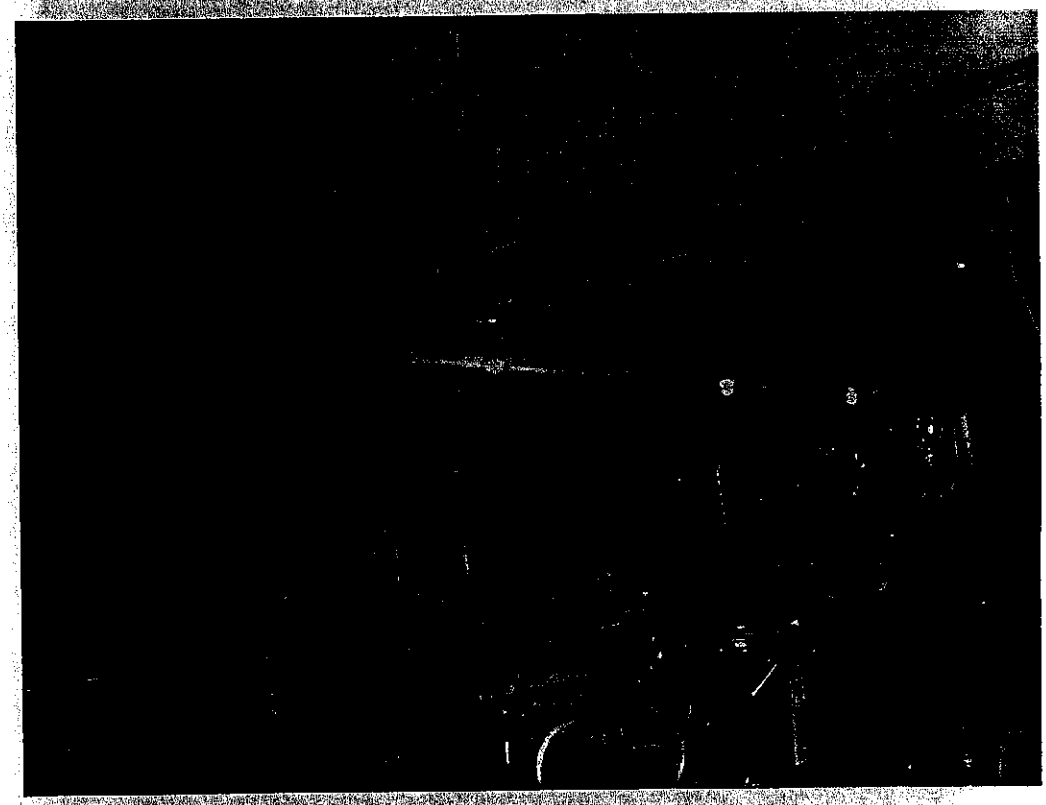


Photograph #25: Fuse panel of the dismantled pumping system; yellow is the control box for sprinkler system.

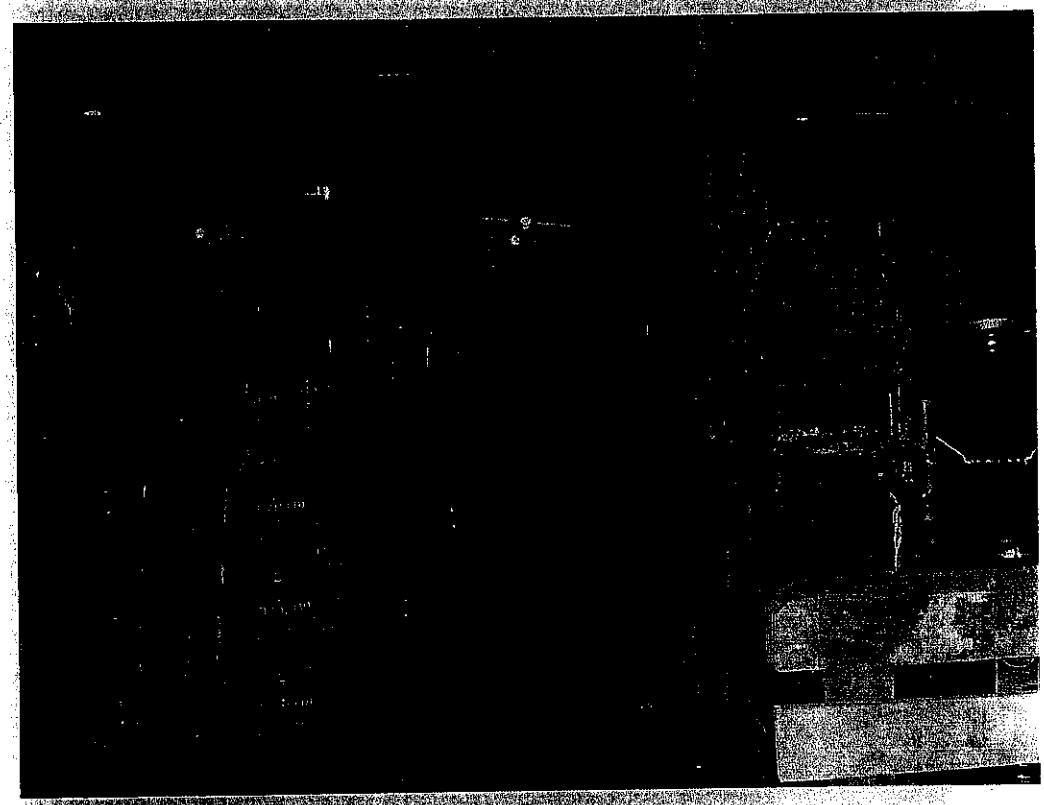


Photograph #26: Basement North First Street wall; old air compressor and pump, steam line, sewer line and sprinkler line.

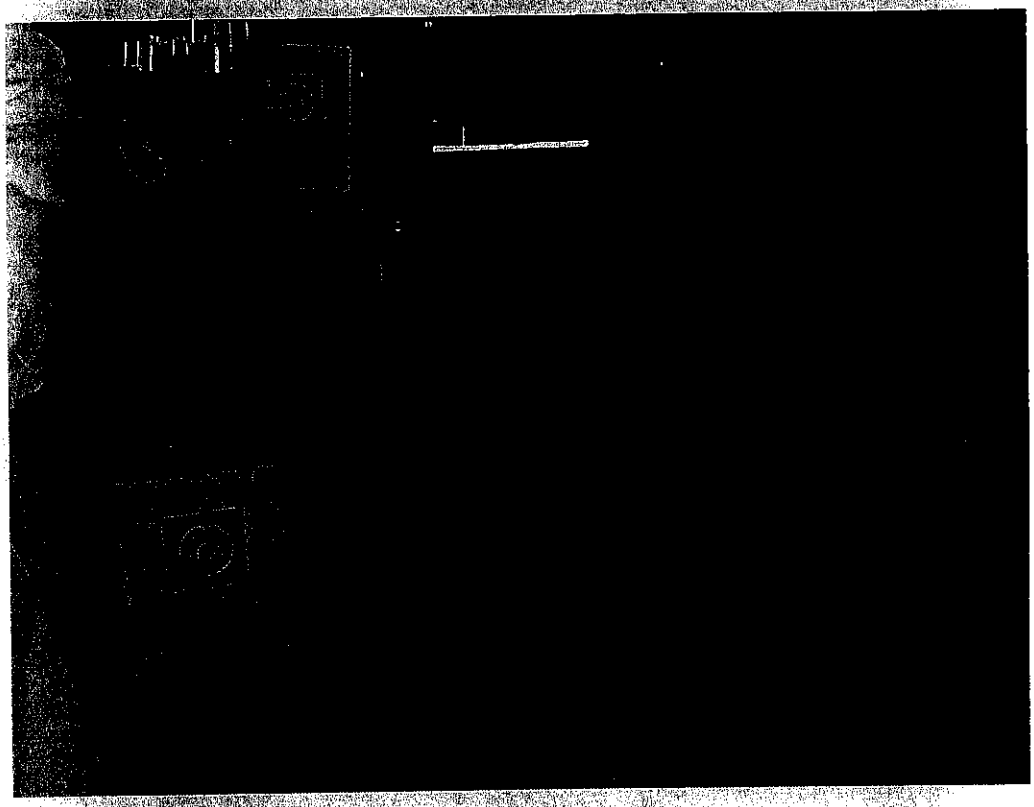
Photograph #27: Area of finish paint; water line pipes to the right.



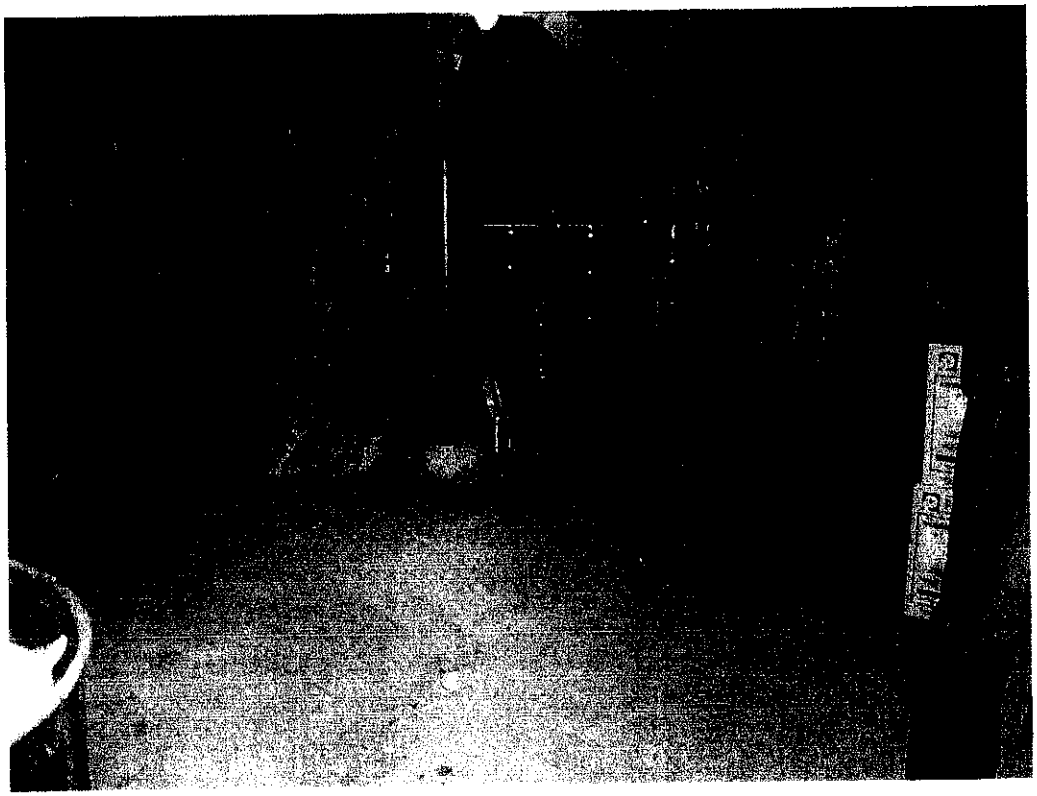
Photograph #28: General view of the finish area, dumpster and 5-gallon drums empty.



Photograph #29: Finished product and elevator for materials.



Photograph #30: Finished product area.



Photograph #31: First floor (ground) stairs to second floor, solvent 55-gallon drums.

APPENDIX II

NYSDEC Site Safety Assessment Letter (January 4, 2005)

R. G. SLAYBACK
JOHN NASO, JR.
WILLIAM K. BECKMAN
DAN C. BUZEA
J. KEVIN POWERS
FRANK J. GETCHELL
CHARLES W. KREITLER
JEFFREY B. LENNOX
W. JOHN SEIFERT, JR.
DAVID A. WILEY
ROBERT F. GOOD, JR.
TIMOTHY L. KENYON

60th Anniversary 1944-2004

LEGGETTE, BRASHEARS & GRAHAM, INC.

PROFESSIONAL GROUND-WATER AND ENVIRONMENTAL ENGINEERING SERVICES

110 CORPORATE PARK DRIVE
SUITE 112
WHITE PLAINS, NY 10604
914-694-5711
FAX 914-694-5744
www.lbgweb.com

KENNETH D. VOGEL
W. THOMAS WEST
DAVID B. TERRY
THOMAS P. CUSACK
CHARLES W. OLMSTED
MATTHEW P. PERAMAKI
JOHN M. BENVEGNA
EDWARD J. DESTEFANIS
JOHN L. BOGNAR
KIMBERLY R. BLOMKER
ALFRED N. KOVALIK

FRANK H. CRUM

WILLIAM B. KLEMT
BRUCE K. DARLING
WILLIAM P. PREHODA
MATTHEW E. ROBBINS
KAREN B. DESTEFANIS
JOSEPH W. STANDEN, JR.
JOHN B. ASHWORTH
JEFFREY M. TROMMER
DAVID S. HUME
JEFFREY T. SCHICK
MICHAEL A. MANOLAKAS
KENNETH D. TAYLOR
ROBERT M. ROHLFS
JAMES A. BEACH
JORMA WEBER
WILLIAM G. STEIN
JOHN W. NELSON
WILLIAM H. AVERY

January 4, 2005

Ms. Ioana Munteanu-Ramnic
Environmental Engineer
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
Hunters Point Plaza, 47-40 21st Street
Long Island City, NY 11101

RE: Fyn Paint & Lacquer Co., Inc.
230 Kent Avenue
Brooklyn, New York
Safety Assessment

Dear Ms. Munteanu-Ramnic:

On December 28, 2004, Leggette, Brashears & Graham, Inc. (LBG) personnel screened the air quality at 15 locations at the above-referenced site. The locations were all within a two-block radius of the site and consisted of storm-water catch basins, utility and/or sewer vaults. Air quality was screened at all locations for the presence of volatile organic compounds (VOCs), lower explosive limit (LEL) and oxygen percentage. A site plan showing the air quality screening locations is shown on figure 1.

The VOCs were screened using a photoionization detector (PID) calibrated at 100 ppm (parts per million) per calibration gas equivalent (isobutylene). The LEL and oxygen percentage were measured using a multi-gas meter (MGM) calibrated with a standard calibration gas for the parameters chosen. The air quality screening was conducted by inserting a dedicated length of tubing approximately four feet below grade into the sample location, connecting it to the operating monitor's vacuum pump and observing each unit's response (PID and MGM) for approximately five to ten minutes, after which the average reading for each parameter was recorded. A summary of the results for the air quality screening are shown on table 1.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.

Michael K. De Felice
Hydrogeologist
OSHA 29 CFR 1910.120

Reviewed By:

Dan C. Buzea, CPG
Vice President

MKD:dmd
f:\reports\keane beane\supplemental remedial investigation\air screening .doc

TABLE 1

FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK

Catch Basin, Utility and Sewer Manhole Air Quality
Air Samples Screened December 28, 2004

A-1	0.2	0	20.7	Catch Basin
A-2	0.1	0	20.7	Catch Basin
A-3	0.3	0	20.6	Manhole
A-4	0.9	0	20.5	Sewer Manhole
A-5	0.2	0	20.4	Catch Basin
A-6	0	0	20.3	Catch Basin
A-7	0.2	0	20.2	Manhole
A-8	0.1	0	20.2	Catch Basin
A-9	0.2	0	20.3	Catch Basin
A-10	0	0	20.2	Catch Basin
A-11	0	0	20.2	Catch Basin
A-12	0	0	20.2	Catch Basin
A-13	0	0	20.2	Catch Basin
A-14	0	0	20	Catch Basin
A-15	0	0	20	Catch Basin

APPENDIX III

Site Specific Health and Safety Plan

Privileged and Confidential

SITE SPECIFIC HEALTH AND SAFETY PLAN
FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK 11211
SITE # U-00380-2, INDEX #W2-0873-00-10

Prepared For

Fyn Paint & Lacquer Co., Inc.

March 2005

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive, Suite 112
White Plains, NY 10604
(914) 694-5711

TABLE OF CONTENTS

LIST OF TABLE

Table

Privileged and Confidential

SITE SPECIFIC HEALTH AND SAFETY PLAN
FYN PAINT & LACQUER CO., INC.
230 KENT AVENUE
BROOKLYN, NEW YORK 11211
SITE # U-00380-2, INDEX #W2-0873-00-10

This Health and Safety Plan (HASP) is intended to provide a basic framework for the Voluntary Cleanup Program (VCP), Index Number W2-0873-00-10 by Fyn Paint & Lacquer Co., Inc. pursuant to the New York State Department of Environmental Conservation (NYSDEC) VCP. The procedures provided herein are intended as a guide for all Leggette, Brashears & Graham, Inc. (LBG) and subcontractor employees who will be involved in the performance of the project.

The primary objective of the HASP is to establish work-safety guidelines, requirements and procedures before field activities begin and during the field activities. The following information was prepared specifically for field operations by personnel to enforce and adhere to the established rules as specified in the HASP. The HASP will be provided to all personnel to aid in accomplishing the following objectives:

- monitoring the effectiveness of the HASP as it is conducted in the field by performing field operation audits;
- following up on any necessary corrective actions;
- interacting with regulatory agencies and/or client representatives regarding modifications of health and safety actions; and
- stopping work should conditions warrant such action.

All personnel will have had health and safety training in accordance with OSHA Interim Final Standard 29 CFR 1910 or as may be amended. A copy of LBG's Corporate Safety Policy and Drug and Alcohol Policy is attached in Appendix A.

1.0 ORGANIZATION AND RESPONSIBILITIES

The organization and responsibilities for implementing safe site-investigation procedures, and specifically for the requirements contained in this manual, are described in this section. A

Contact, Site Safety Briefing, Air Monitoring sheets, and a site and hospital location map are to be completed for applicable sites. Blank forms are attached at the end of this document.

1.1 Project Manager

The LBG Project Manager will be responsible for the overall implementation and monitoring of the health and safety program by:

- ensuring appropriate protective equipment is available and properly used by all personnel, in accordance with the HASP;
- ensuring personnel health and safety awareness by providing them with proper training and familiarity with procedures and contingency plans;
- ensuring all personnel are apprised of potential hazards associated with the site conditions and operations;
- supervising and monitoring the safety performance of all personnel to ensure their work practices are conducted in accordance with the HASP;
- correcting any work practices or conditions that would expose personnel to possible injury or hazardous condition;
- communications with the onsite Health and Safety Officer (HSO);
- ensuring sufficient protective equipment is provided and used;
- promptly initiating emergency alerts; and,
- communicating with the client and/or regulatory agency representatives.

1.2 Onsite Health and Safety Officer

The LBG HSO will be onsite during all field activities. The HAO will be accountable for the direct supervision of personnel from the subcontractors and other LBG personnel with regard to:

- health and safety program compliance;
- maintaining a high level of health and safety consciousness among employees at the work site; and,
- reporting accidents within LBG jurisdiction and undertaking corrective action.

1.3 Field Personnel

All field personnel will report directly to the onsite HSO, and will be required to:

- be familiar with, and conform to, provisions of the HASP;
- ensure that they are well informed of potential hazards at the work site and exercise informed consent in their work;
- report any accidents or hazardous conditions to the onsite HSO; and,
- have complete familiarity with their job requirements and the health and safety procedures involved.

1.4 Reporting of Accidents and Unsafe Conditions

If an accident occurs, the HSO and the injured person(s) are to complete an Accident Report for submittal to the project manager, who will forward a copy to the principal-in-charge who should ensure that follow-up action is taken to correct the situation that caused the accident.

1.4.1 Disciplinary Actions for Safety Related Infractions

If an infraction of the Health and Safety Plan is discovered by the Project Manager or the onsite HSO, each case will be dealt with individually. The infraction will be investigated and a disciplinary meeting held with the offender. Disciplinary actions may include a performance deficiency evaluation entered into the employee's personnel file, correction of problem after the disciplinary meeting or removal of the offender from the project. Repeated infractions will not be tolerated and will be dealt with accordingly.

1.4.2 Safety Inspections

Safety inspections will be conducted periodically by the Project Manager. The Project Manager will be familiar with the Health and Safety Plan before performing an onsite visit. While onsite, the Project Manager will evaluate the effectiveness of the plan and offer any suggestion for improvement. Although Project Managers are responsible for periodic safety inspections and evaluation of the Health and Safety Plan, the onsite HSO is responsible for daily observation and evaluation of Health and Safety Plan effectiveness.

1.4.3 Safety Meetings

Prior to the start of field activities, a meeting will be held to discuss the potential hazards at the site, with a review of the required protective clothing and procedures observed at this site. As needed, daily meetings will be held to discuss any changes in the hazards.

2.0 HAZARD EVALUATION

The exposure limits of chemical constituents which may be encountered are listed in table 1. These constituents would possibly be encountered in ground water and/or soil and comprise the major concerns for personal health. The protection of personnel and the public from exposure to these substances by inhalation, oral ingestion, dermal absorption or eye contact is included as a primary purpose of this plan.

The onsite HSO is responsible for determining the level of personal protection equipment required. The HSO will perform a preliminary evaluation to confirm personal protective equipment requirements once the site has been entered. When work-site conditions warrant, the onsite HSO will modify the level of protection to be utilized. The existence of a situation more hazardous than anticipated will result in the suspension of work until the Project Manager and client representative has been notified and appropriate instructions have been provided to the field team.

3.0 MONITORING REQUIREMENTS

A photoionization detector (PID) will be used to continuously monitor ambient air quality at the drilling or excavation sites. Records of these data will be maintained by the onsite HSO. During drilling operations, air quality will be monitored at each drilling or boring location, especially near the top of the boreholes as samples are taken. Work operations which involve handling of potentially hazardous substances will include continuous contaminant monitoring using the PID. In addition, field monitoring will be performed when work is initiated at different portions of the site, when a new operation is initiated and/or when potentially leaking drums or containers are going to be handled. When deemed necessary or desirable by the onsite HSO, area monitoring will be used in potentially hazardous zones. Area monitoring will be performed as plans and conditions dictate, and in accordance with the HASP and with the goal of accident and

hazardous condition prevention in mind. Instrument calibration information is included in Appendix B.

For the compounds previously identified to be most prevalent, the lowest 8-hour exposure limit is listed on table 1.

3.1 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

3.2 Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and if the following levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect.

- if organic vapor levels are approaching 5 ppm above background.

However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

3.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the Health and Safety Plan of the Work Plan will be notified.
2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.
3. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

4.0 LEVELS OF PROTECTION

The level of protection anticipated to perform work on this investigation is Level D, unless otherwise upgraded. Only protective equipment deemed suitable by the onsite HSO for use at the work site will be worn. Any changes in protection levels shall be documented by the onsite HSO. Field personnel should exercise informed judgment on protective equipment requirements at active work sites or at work sites that have been repeatedly entered or occupied without apparent harm. In any case where doubt exists, the safest course of action must be taken. The protective equipment to be used by field personnel is listed below.

4.1 Level D

- hard hat;
- safety glasses, shatter-proof prescription glasses or chemical splash goggles;

- boots/shoes, leather or chemical-resistant, steel toe and shank;
- coveralls; and,
- chemical resistant gloves.

At a minimum, protective headgear, including protective hearing devices, eyewear and footwear will be worn at all times by personnel working around the drilling equipment. When work-site conditions dictate, protective gloves and chemical-resistant boots shall be required for those personnel handling contaminated soils.

Should levels of organic vapor in the ambient air greater than 5 ppm above background levels be detected by the PID in the work area, work will stop and all personnel will leave the work area. The New York State Department of Health (NYSDOH) recommends a level of 5 ppm above background as measured with a PID for VOCs related work. Once the PID readings in the ambient air are back to 0.0 ppm above background, field activities will resume.

4.2 Level C

- hard hat;
- boots, leather, steel toe and shank;
- outer boots, chemical resistant;
- chemical-resistant gloves (solvex);
- Tyvek or Saranex suit; and,
- Air purifying respirator with organic vapor cartridge and dust and mist filter.

Level C protection will be considered for PID consistent readings of 5 to 100 ppm above background in the breathing zone.

Respirators for all personnel will be available with both particulate and organic vapor protection cartridges. The onsite HSO will direct when the protective clothing and respirators will be utilized based on the conditions encountered at the work site.

4.3 Level B

- pressure-demand, self-contained breathing apparatus;
- standby escape pack;
- chemical resistant clothing (Saranex suit);

- outer gloves (Solvex);
- inner gloves (surgical);
- outer boots (chemical resistant);
- inner boots (leather, steel shank and toe); and,
- hard hat.

Level B will be considered for PID readings of 150 ppm above background in the breathing zone. In the event that the work space atmosphere contains in excess of 150 ppm of total ionizable compounds above background, colorimetric tubes or a portable gas chromatograph will be used to determine the levels of individual chemicals. The use of Level B equipment will be based on the specific compounds present and will include discussions with the regulatory authorities and/or the client representative.

Level A conditions will require specialized procedures to be formulated on a case-by-case basis.

5.0 SAFE WORK PRACTICES AND HYGIENE

In addition to the use of protective equipment, other procedures will be followed to minimize risk:

- all consumptive activities including eating, drinking or smoking are prohibited during the drilling, sampling and decontamination activities;
- an adequate source of potable water for emergency use will be available at the drilling sites (two liters per person per day);
- fire extinguishers will be available at the work sites for use on equipment or small fires when appropriate; and,
- an adequately stocked first-aid kit will be maintained at the work site at all times during operational hours.

5.1 Heat Stress

In order to avoid heat stress several preventative measures will be observed:

- Workers will drink a 16-ounce glass of water prior to work (in the morning and after lunch). Water will be contained in a cooler, maintained at a temperature

below 60°F. Workers will be encouraged to drink approximately every 20 minutes during days of extreme heat.

- Workers will be encouraged to wear long cotton underwear under the heat-retaining protective clothing required by Level C.
- In extreme hot weather, field activities will be conducted in the early mornings and late afternoons.
- Rest breaks in cool or shaded areas will be enforced as needed.
- Toilet facilities will be made available to site workers, unless transportation is readily available to nearby toilet facilities.
- Good hygiene practices will be encouraged, stressing the importance of allowing the clothing to dry during rest periods. Anyone who notices skin problems should receive medical attention immediately.
- If there are support personnel available outside the work zone, they should observe the workers in the exclusion zone to monitor signs of stress, frequency of breaks, etc.

5.2 Cold Stress and Exposure

In order to avoid cold stress, several preventative measures will be observed;

- work will not take place when the temperature falls below -20°F. (The wind chill factor should be a major consideration);
- clothing should be worn in layers, so that personnel can adapt to changing conditions and various levels of physical stress;
- if possible, breaks should be taken in a heated vehicle or building, but care should be taken to remove outer clothing during the break;
- have on hand extra inner clothing in case perspiration builds up;
- keep insulated containers of warm liquids available for breaks outside of the exclusion zone;
- be aware of the signs of frostbite and take immediate remedial measures; and,
- take extra precautions around areas subject to ice buildup, such as sanding slippery surfaces.

6.0 WORK ZONE

To prevent unauthorized personnel from entering areas where active operations are being performed, the area enclosing the operation will be marked.

This zone will be entered in Level D protection. However, individual work sites within the zone may require higher levels of protection based on air monitoring results during the various activities. If this becomes the case, separate work sites will be established based on the level of protection required.

Field personnel are instructed to leave the area if monitoring shows readings above the permissible exposure limits. Before conducting field work in respirators, the Project Manager and client representative will be contacted. A determination will be made by the onsite HSO and Project Manager if work is to continue with respirators. Factors which may influence this decision include the level of observed or suspected hazards, period of time required to complete activity and weather conditions.

If it is necessary to upgrade personal protection then site control measures need to be implemented. This control will help prevent transporting contaminants off site and minimize exposures to onsite personnel. Site maps will be available which show special work zones.

Three work zones will be delineated. The exclusion zone is where the investigation will take place in the appropriate safety equipment. The contamination reduction zone is where the decontamination of personnel will take place. The support zone is the outer limit zone where equipment is stored and protective clothing is not required.

The buddy system will be observed in the exclusion and contamination reduction zones. Non-essential employees will remain at the clean support zone which will be delineated by a rope or barrier. No one will be permitted beyond that point unless certified and has read and signed the HASP. These zones will be set up with the clean zone being furthest upwind.

6.1 Confined Spaces

Confined spaces are those which, by design or circumstance, present difficulties for entry and exit, or which may serve to reduce ventilation or concentrate vapors. Typical confined spaces consist of excavations, trenches and vaults. Excavations or trenches over 5 feet in depth will be

shored or benched according to OSHA regulations. If a vault is to be entered, mechanical ventilation will be initiated and air quality will be monitored.

6.2 VOC Project Work Zone Considerations

Typically VOC projects involve installation of wells, monitoring of wells, installation and operation of treatment systems and observation of tank and trench excavation work. Safety issues with respect to this type of work are attached in Appendix C.

7.0 DECONTAMINATION

An area will be set aside within the work zone for decontamination. The type of decontamination procedures used will be based on the level of protection required. Decontamination of Level D protective wear will consist of brushing heavily soiled boots to remove soils, rinsing gloves and safety glasses (and overboots, if worn) with water, and removing and storing coveralls in plastic bags before leaving the work zone, if heavily soiled or suspected of having been in contact with site contaminants. For detailed decontamination, equipment and procedures, refer to Appendix D.

8.0 CONTINGENCY PLAN FOR EMERGENCIES

In the event of a safety or health emergency, appropriate corrective measures must immediately be taken to assist those who have been injured or exposed and to protect others from hazard. The onsite HSO will be notified of the incident immediately. If necessary, first aid will be rendered.

9.0 SAFETY TRAINING

All site workers, including site managers, will provide documentation to the onsite HSO that the field personnel have been trained in the proper use of protective clothing and equipment in accordance with 29 CFR Part 1910, including:

- purpose of wearing respirators;
- how the respirator works;
- limitations;

- fit testing;
- maintenance; and
- conditions of use.

All LBG personnel, client representatives, regulatory personnel and field personnel shall be made aware of the particular hazardous substances which could be encountered during this project.

10.0 MEDICAL SURVEILLANCE

The HSO will insure that each site worker involved in environmental sampling participates in an ongoing medical surveillance program, which includes baseline and annual follow-up exams.

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hsp rpt

TABLE

TABLE 1

Exposure Limits

COMPOUND	EXPOSURE STANDARDS			RECOGNITION QUALITIES		
	TLV/PEL (a) (ppm)	STEL (b) (ppm)	IDLH (c) (ppm)	Odor/Threshold (ppm)	LEL (d) (%)	Ionization Potential (eV)
Gasoline[1/]	300	500	1,400	–	1.4	–
Alachlor[2/]	–	–	–	No odor	–	–
Benzene[1/]	0.1	1	500	12	1.2	9.24
Butane	800	–	–	2,700	1.6	10.63
Chlorobenzene	75[3/]	–	1,000	Almonds	1.3	–
1,1-Dichloroethane	100	Ca[5/]	3,000	Chloroform	5.4	11.06
1,2-Dichloroethylene	200	–	1,000	Chloroform	5.6	9.65
EDB (Ethylene dibromide)[1/]	0.045	0.13	100	Sweet	–	9.45
EDC (Ethylene dichloride)[1/]	1	2	50	Chloroform	6.2	11.05
Ethylbenzene	100	125	800	Aromatic	0.8	8.76
Heptane	85	440	750	150	1.05	9.90
N-Hexane	50	–	1,100	Gasoline/130	1.1	10.18
Hexanes	100	510	–	Mild gasoline	–	–
Methyl ethyl ketone (MEK)	0.2[4/]	–	–	Characteristic odor	–	–
Octane	75	385	1,000	Gasoline/150	1.0	9.82
Pentane	120	610	1,500	Gasoline/1000	1.5	10.34
TBA (Tert-butyl alcohol)	100	150	1,600	Camphor	2.4	9.70
Tetrachloroethylene[1/]	Ca[5/]	Ca[5/]	150	Chloroform	–	9.32

TABLE 1
(continued)

Exposure Limits

COMPOUND	EXPOSURE STANDARDS			RECOGNITION QUALITIES		
	TLV/PEL (a) (ppm)	STEL (b) (ppm)	IDLH (c) (ppm)	Odor/Threshold (ppm)	LEL (d) (%)	Ionization Potential (eV)
Tetraethyl Lead	0.075*	–	40*	Sweet	1.8	11.10
Tetramethyl Lead	0.075*	–	40*	Fruity	–	8.50
Toluene	100	150	500	Sweet benzene like/2.9	1.1	8.82
1,1,2-Trichloroethane	Ca[5/]	10	100	Chloroform	6.0	11.00
Trichloroethylene	Ca[5/]	25	1,000	Chloroform	8.0	9.45
Vinyl Chloride	Ca[5/]	Ca[5/]	Not determined	Pleasant	3.6	9.99
Xylenes	100	150	900	Aromatic/1.1	0.9	8.56

Notes:

1/ Potential occupational carcinogen

2/ Alachlor manufacturer established internal exposure guideline of 10 ppb for 8-hour TWA

3/ OSHA guideline, NIOSH questions the adequacy of 75 ppm

4/ Ceiling REL, should not be exceeded at any time

5/ NIOSH recommends occupational exposures to carcinogens to be limited to the lowest feasible concentration

– = No published value

* mg/m3

(a) The more stringent of either: (1) Occupational Safety and Health Administration (OSHA) 1989 Permissible Exposure Limit (PEL), (2) American Conference Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), or (3) National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs), time-weighted average concentrations for up to a 10-hour work day.

(b) Short Term Exposure Limit - 15 minute exposure.

(c) Immediately dangerous to life and health.

(d) Lower Explosive Limit.

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hsptbl1.tbl

FORMS

CONTACT SHEET

Client:	Fyn Paint & Lacquer Co., Inc.
Project:	Fyn Paint & Lacquer Co., Inc.
Location:	North First Street and Kent Avenue
	Brooklyn, New York
	Index #W2-0873-00-10
Task:	
Client Contact:	Nicholas Ward-Willis, Esq. (Keane & Beane, P.C.)

Leggette, Brashears & Graham, Inc.

(914) 694-5711 (914) 694-5744 (fax)

Field Supervisor (HSO):	Mike DeFelice
Project Manager:	Sean Groszkowski
Principal-in-Charge:	Dan C. Buzea

Local Police Headquarters:	90th Precinct, Long Island City, New York
	(718) 963-5311
Local Hospital:	Woodhull Hospital, 760 Broadway
	Brooklyn, New York 11206
	(718) 963-8000
Emergency Room:	(718) 963-8442
State Police:	State Government Police, New York Marshalls Bureau,
	80 Maiden Lane, Floor 17, New York, New York,
	(212) 825-5953
Miscellaneous:	New York State Department of Environmental Conservation
	(NYSDEC) Region 2, 1 Hunters Point Plaza, 47-40 21st Street,
	Long Island City, New York (718) 482-4900

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspfrms1 rpt

SITE SAFETY BRIEFING

Job Name: Supplemental Remediation Investigation Work Plan
Date: September 2002
Site Location: 230 Kent Avenue, Brooklyn, NY 11211
Index #W2-0873-00-10

SAFETY ISSUES (Circle appropriate information)

Tasks: Soil Boring Drilling, Ground-Water Monitoring Wells Installation, Trench Excavation

Protective Clothing/Equipment: Level D, Level C, Level B, Level A

Chemical Hazards: Acetone, Xylene, Toluene, Gasoline, Diesel Fuel, Heating Oil, Number 2 and 4 Oil

Physical Hazards: Car Traffic, Construction Equipment, Confined Space, Overhead Wires

Control Methods: Cones, Restricted Access, Traffic Control Personnel

Other: _____

Hospital Name/Address: _____

ATTENDEES

Print Name:	Sign Name:
_____	_____
_____	_____
_____	_____
_____	_____

Meeting conducted by: _____

AIR MONITORING

General Information

Name(s): _____ Background Level: _____

Date: _____ Weather Conditions: _____

Time: _____ _____

Project: 230 Kent Avenue
Brooklyn, NY 11211
Index #W2-0873-00-10

Equipment Calibration

PID _____ CGI _____

Sample No.	Time	Location	PID Reading (ppm)	Comments	CGI Reading	
					$\%O_2$	%LEL
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspfrms1.rpt

Air Monitoring Data

General Information

Name(s): Fyn Paint & Lacquer Co., Inc.

Project/Location: 230 Kent Avenue, Brooklyn, NY 11211
Index #W2-0873-00-10

Equipment Used: MINIRAM

Background Level: _____

Date	Weather	Total Time (min)	SA (mg/m^3)	TWA (mg/m^3)

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspfrms1.rpt

PLAN ACCEPTANCE FORM

PROJECT HEALTH & SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each Leggette, Brashears & Graham, Inc. employee to work on the subject project work site and returned to the Office Safety Coordinator prior to site activities.

Client/Project: Fyn Paint & Lacquer Co., Inc., 230 Kent Avenue, Brooklyn, NY 11211

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

_____	_____
Signed	Signed
_____	_____
Print Name	Print Name
_____	_____
Date	Date
_____	_____
Signed	Signed
_____	_____
Print Name	Print Name
_____	_____
Date	Date

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspfrms1.rpt

EXCLUSION ZONE LOG SHEET

LEGGETTE, BRASHEARS & GRAHAM, INC.
110 CORPORATE PARK DRIVE, SUITE 112
WHITE PLAINS, NEW YORK 10604

Client: Fyn Paint & Lacquer Co., Inc.

Location: 230 Kent Avenue, Brooklyn, New York 11211

Name	Date	Time In	Time Out	Elapsed Time

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspfrms1.rpt

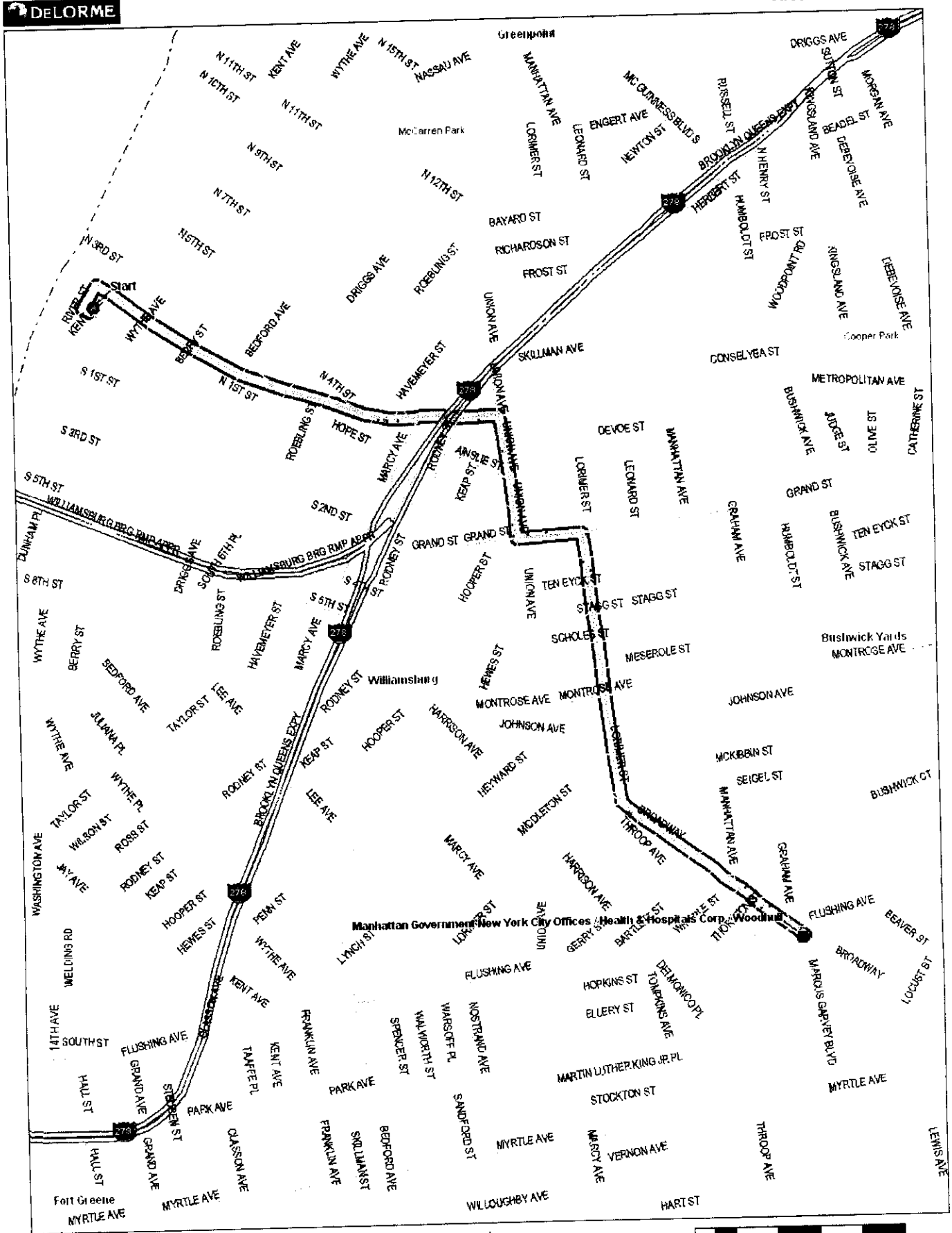
DIRECTIONS TO LOCAL HOSPITAL:

Woodhull Hospital
760 Broadway
Brooklyn, New York 11206

Total Distance: 2.1 miles
Total Estimated Time: 5 minutes

- Go north on Kent Avenue one (1) block
- Turn right onto Metropolitan Avenue
- Follow Metropolitan Avenue east for just under one mile
- Turn right onto Union Avenue
- Follow Union Avenue south for just over half a mile
- Turn left onto Broadway
- Follow Broadway southeast for just over half a mile to the intersection with Flushing Avenue
- Woodhull Hospital is on the southwest corner of the intersection between Broadway & Flushing Avenue

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspfrms1.rpt



MN (13.2° W)

ft

0 400 800 1200 1600 2000

Data Zoom 13-7

APPENDIX A

LEGGETTE, BRASHEARS & GRAHAM, INC.

SAFETY POLICY

Job safety is a common-sense part of everyone's life, but requires constant alertness to possible dangers. When we work on industrial sites, LBG employees are expected to observe the safety rules of our Client hosts.

You are the first line of defense for your own personal safety. In the field, appropriate clothing should be worn at all times. Where appropriate, work shoes with hard toes and/or ankle protection should be worn at all times. **Sneakers/tennis shoes should never be worn in the field, regardless of the circumstances.**

LBG provides hard hats that should be worn around any drilling operations and in any other "hard hat zones". Where required, safety glasses, goggles, protective gloves, respirators, and other safety clothing or equipment should be worn and disposed of as specified by the Project Safety Officer.

Periodically, LBG provides special safety seminars which satisfy the OSHA requirements for work on hazardous waste sites. In-house safety training is conducted on an ongoing basis and as dictated by case-by-case needs. There is a Corporate Safety Officer in the Trumbull, Connecticut headquarters and a designated Safety Officer in each regional office to whom questions and problems relating to job safety should be referred.

Any project that involves or may involve hazardous or toxic waste or any potentially dangerous condition requires the preparation, filing, use and compliance with a Health and Safety Plan (HASP). LBG has a petroleum related work HASP that can be readily adapted to most petroleum jobs and has numerous site-specific HASPS that comply with state and federal CERCLA requirements that can be used for guidance in developing site-specific HASPS.

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspappa.rpt

LEGGETTE, BRASHEARS & GRAHAM, INC.
GENERAL DRUG AND ALCOHOL POLICY

In any company, certain common-sense rules of conduct and performance must be established for the employees to follow in order to avoid any misunderstanding and to protect the right of all concerned. Breaches of acceptable conduct which include, but are not limited to, abusive language, insubordination, intoxication, moral turpitude, or substance abuse/possession can lead to disciplinary action or to dismissal.

While performing any service for LBG or LBG's clients, employees, agents, and subcontractors of LBG shall not: (1) be under the influence of alcohol or any controlled substance; (2) use, possess, distribute, or sell illicit or unprescribed controlled drugs, drug paraphernalia, or alcoholic beverages; or (3) misuse legitimate prescription drugs.

LBG may remove from active project status any of its employees any time there is a reasonable basis for suspicion of alcohol/drug use, possession, or impairment involving such employee, and at any time an incident occurs where drug or alcohol use could have been a contributing factor. In such cases, employee may only be considered for return to work after LBG certifies as a result of a for-cause test, conducted immediately following removal, that said employee is in compliance with this policy.

LBG reserves the right to require drug and alcohol testing for its employees, either for its own purposes or at the direction of Clients. Such testing may take place periodically, or for specific projects. The testing will be in compliance with Department of Transportation drug testing regulations.

dmd
July 29, 2002
r reports\keanebeane\healthandsafety\general hspappa.rpt

APPENDIX B

LEGGETTE, BRASHEARS & GRAHAM, INC.
AIR MONITORING EQUIPMENT OPERATION

Instrument Calibration

All applicable instruments will be calibrated daily before use. Readings will be recorded on the Air Monitoring form.

Background Readings

Before any field activities commence, the background levels of the site must be read and noted. Daily background readings must be conducted away from areas of potential contamination to obtain accurate results.

Air Monitoring Frequency

All site readings must be noted on the Air Monitoring form along with the date, time, background level, weather conditions, wind direction and speed, and the location where the background level was recorded.

OVM 580B Calibration

- Turn the OVM on by pressing the ON/OFF switch.
- With the OVM running, press the MODE/STORE switch and then press the -/CRSR switch when the OVM reads if "logging is desired".
- Keep pressing the -/CRSR switch until OVM will display "reset to calibrate".
- Enter the calibration mode by pressing the RESET switch. The OVM will then display "restore backup + = Yes".
- Press the -/INC switch and the OVM will display "zero gas reset when ready".
- Connect zero gas to OVM and press RESET switch. The OVM will display "Model 580B zeroing".
- After the OVM calibrates the zero gas, it will display "span gas reset when ready".
- Connect span gas to OVM and press RESET switch.
- When OVM displays "reset to calibrate", the OVM has calibrated the span gas.
- To exit calibration mode, press MODE/STORE switch.

HNU PI-101 Calibration

- Battery check--The function switch should be turned to BATT. The needle should be in the green region; if not, recharge the battery.
- Zero set--The function switch should be turned to STANDBY. In this position, the lamp is OFF and no signal is generated. The zero point should be set with the ZERO set control.
- Gas standard--The standard should be connected to the probe. The function switch should be turned to the range position of the standard and the meter reading should be noted. The SPAN control setting should be adjusted, as required, to read the parts per million (ppm) concentration of the standard. The zero setting should be rechecked.
- Lamp cleaning--If the span setting from calibration is 0.0 or calibration cannot be achieved, then the lamp must be cleaned.
- Lamp replacement--If the lamp output is too low or if the lamp has failed, it must be replaced.

MSA Explosimeter Model 2A Calibration Instructions

Before the calibration can be checked, the instrument and its aspirator sampling bulb must be in operating condition, as described in the instrument instruction manual.

- The flow control should be attached to the calibration gas tank.
- The hose should be connected to the flow control and to the instrument inlet fitting.
- The control valve should be opened.
- The meter reading should be recorded after it stabilizes. Note: It is not necessary for the aspirator bulb to be operated for the calibration sample to be obtained. If the instrument does not read within the acceptable range, the detector filament unit should be replaced and the calibration check procedure should be repeated.
- The flow control valve should be closed.
- The hose should be removed from the flow control and from the inlet fitting on the instrument.
- The flow control should be removed from the calibration gas tank.

Thermo Anderson MIE Personal Data RAM Dust Meter Calibration and Operation:

- Turn unit on by pressing the ON/OFF button
- Press 'Enter' to 'Start zero', unit will enter the zeroing mode and LCD will display 'Calibration:OK' when complete
- Press 'Next' to enter measure mode, unit will display 'Start Run', press 'Enter'\
- Unit will display instantaneous dust concentration (SA) and time weighted average (TWA) in milligrams per cubic meter (mg/m3)

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspappb.rpt

APPENDIX C

LEGGETTE, BRASHEARS & GRAHAM, INC.
VOLATILE ORGANIC COMPOUNDS
PROJECT WORK ZONE CONSIDERATIONS

1.0 EXCAVATION

The following requirements, which apply to all types of excavation operations, except tunnels and shafts, are taken from the U.S. Department of the Interior, Bureau of Reclamation's Construction Safety Standards. They are not intended to be an exhaustive set of requirements, but rather, a summary of current practices that are being enforced at construction activities by Federal and state government agencies and private industry. The requirements were assembled in cooperation with the Associated General Contractors of America, the American National Standards Institute, labor unions, and other interested in improving safety.

1.1 Preliminary Inspection

Prior to excavation, the site should be thoroughly inspected to determine conditions that require special safety measures. The location of underground utilities, such as sewer, telephone, gas, water, and electric lines, must be determined and plainly staked. Necessary arrangements must be made with the utility company or owner for the protection, removal, or relocation of the underground utilities. In such circumstances, excavation will be done in a manner that does not endanger the employees engaged in the work or the underground utility. Utilities left in place should be protected by barricading, shoring, suspension, or other measures, as necessary.

1.2 Protection of the Public

Necessary barricades, walkways, lighting, and posting should be provided for the protection of the public prior to the start of excavation. Excavation operations on or near state, county, or city streets, accessways, or other locations where there is extensive interface with the public and/or motorized equipment will not start until all of the following actions have been taken:

- The contractor has contacted the authority having jurisdiction and obtained written permission to proceed with protective measures required.

- The contractor, using the authority's instructions and these standards, has developed an extensive and detailed standard operating plan.
- The plan has been discussed with affected employees, and applicable protective measures are in place and functioning.

1.3 Access and Lighting

Safe access will be provided for employees, including installation of walkways, stairs, ladders, etc. When operations are conducted during hours of darkness, adequate lighting will be provided at the excavation, borrow pits, and waste areas.

Where employees are required to enter excavations over 4 feet in depth, stairs, ladders, or ramps must be provided, so as to require no more than 25 feet of lateral travel. When access to excavations exceeds 20 feet vertically, ramps, stairs, or personnel hoists should be provided. Ladders extending from the bottom of the trench to at least 3 feet above the top must be placed within 25 feet of workers in the trench.

1.4 Personal Protective Equipment

PPE will be provided and used in accordance with the specific requirements set forth in the plan. Drillers and helpers must wear approved safety goggles or safety glasses with side shields, hearing protection, hard hats, and safety shoes.

1.5 Removal of Trees and Brush

Prior to excavation, trees, brush, boulders, and other surface obstacles that present a hazard to employees should be removed.

1.6 Slide Prevention and Trenching Requirements

All trench excavations over 5 feet in depth must be shored, shielded, or sloped to the angle of repose from the bottom of the trench, but never less than 3/4 horizontal to 1 vertical (i.e., 37 degrees from vertical), or supported by structures designed by a professional engineer. Excavations should be inspected following rainstorms or other hazardous events. Additional protection against possible slides or cave-ins shall be provided, as necessary.

1.7 Angle of Repose

The determination of the angle of repose and design of supporting systems should be based on a thorough evaluation of all pertinent factors, including depth of cut; possible variation in water content of the material; anticipated changes in the material from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, or overlying or stored material; and vibrations from sources such as traffic, equipment, and blasting. The angle of repose for all excavations, including trenching, should be determined by a professional engineer, but in no event should the slope be less than 3/4 horizontal to 1 vertical (i.e., 37 degrees from vertical) from the bottom of the excavation.

1.8 Support Systems

Materials used for support systems, such as sheeting, piling, cribbing, bracing, shoring, and underpinning, should be in good serviceable condition, and timbers should be sound and free of large or loose knots. The design of support systems should be based on calculations of the forces and their directions, with consideration for surcharges, the angle of internal friction of materials, and other pertinent characteristics of the material to be retained.

When tight sheeting or sheet piling is used; full loading due to the ground-water table should be assumed unless relieved by weep holes, drains, or other means. Cross braces and trench jacks should be placed in true horizontal position and secured to prevent sliding, falling, or kickouts. Additional stingers, ties, and bracing should be provided to allow for any necessary temporary removal of individual supports. Support systems should be planned and designed by a professional engineer competent in the field.

Backfilling and removal of trench support systems should progress together from the bottom of the trench. Jacks or braces should be released slowly. In unstable soil, ropes or other safe means will be used to remove the braces from the surface after workers have left the trench.

Special precaution must be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation or fill area. The use of compacted backfill as backforms on slopes that are steeper than the angle of repose of the compacted material in its natural state is prohibited.

1.9 Structural Foundations and Footings

Except in hard rock, excavations below the level of the base of any foundation, footing, or retaining wall will not be permitted unless the wall is underpinned and all necessary precautions are taken to ensure the stability of adjacent walls. If the excavation endangers the stability of adjacent buildings or structures, shoring, bracing, or underpinning designed by a qualified person will be installed. Such supporting systems must be inspected at least daily by qualified persons to ensure that protection is adequate and effectively maintained.

Small diameter footings that workers are required to enter, including bell-bottomed footings over 4 feet deep, must be provided with a steel casing or support system of sufficient strength to support the earth walls and prevent cave-ins. The casing or support system shall be provided for the full depth, except for the bell portion of bell footings.

Fixed or portable ladders must be provided for access. A lifeline, securely attached to a shoulder harness, should be worn by every employee entering the footing. The lifeline should be manned from above and should be separate from any line used to raise or lower materials.

1.10 Vertical Cuts and Slopes

Before a slope or vertical cut is undercut, the residual material must be adequately supported and the undercutting method and support system must be inspected.

When exposed to falling, rolling, or sliding rocks, earth, or other materials, employees working below or on slopes or cuts should be protected in the following manner:

- By effective scaling performed prior to exposure and at intervals necessary to eliminate the danger.
- By the installation of rock bolting, wire mesh, or equivalent support if the material continues to ravel and fall after scaling.
- By the installation of protective timber or wire mesh barricades at the slope of the cut and at necessary intervals down the slope. Wherever practical, benching sufficient to retain falling material may be used in lieu of barricades.
- By ensuring that personnel do not work above one another where there is danger of falling rock or earth. Personnel performing work on vertical cuts or slopes

where balance depends on a supporting system must wear appropriate safety equipment.

1.11 Ground Water

Ground water should be controlled. Freezing, pumping, draining, and other major control measures should be planned. Full consideration should be given to the existing moisture balance in surrounding soil and the effects on foundations and structures if it is disturbed. When continuous operation of ground-water control equipment is necessary, an emergency power source should be provided.

1.12 Surface Water

The accumulation of surface water in excavations must not be permitted and should be controlled by diversion ditches, dikes, dewatering sumps, or other effective means.

1.13 Excavated Materials

Excavated materials should be laced and retained at least 2 feet from the depth of the excavation, or at a greater distance when required to prevent hazardous loading on the face of the excavation.

1.14 Protective Devices

Guardrails, fences, barricades, and warning lights or other illumination systems will be maintained from sunset to sunrise on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Walkways or bridges that are protected by standard guardrails should be provided where employees are required or permitted to cross over excavations.

Wells, calyx holes, pits, shafts, and all similar hazardous excavations must be effectively barricaded or covered and posted. All temporary excavations of this type should be backfilled as soon as possible. When mobile equipment is permitted adjacent to excavations with steep slopes or cuts, substantial stoplogs or barricades should be installed.

1.15 Equipment Operation

Equipment that is operated on loading or waste areas must be equipped with an automatic backup alarm. Additionally, when employees are on foot or otherwise endangered by equipment in dumping or waste areas, a competent signalman should be used to direct traffic. The signalman must have no other assignment that interferes with signaling duties. If the equipment or truck cab is not shielded, the operator should stand clear of the vehicle during loading. Excavating or hoisting equipment should not be allowed to raise, lower, or swing loads over workers unless effective overhead protection is provided.

1.16 Drilling Operations

When drilling in rock or other dust-producing material, the dust should be controlled within the OSHA Permissible Exposure Limits (PELs). Except in shaft and tunnel excavation, dust control devices are not required on jackhammers as long as the operators wear approved dust respirators.

2.0 DRILLING SAFETY

2.1 Basic Requirements

Employees will not proceed with work on, or in the proximity of, hazardous equipment until they have been properly trained and have received a safety briefing. If drilling is at a hazardous substance site, the site-specific safety plan must be reviewed onsite and discussed in the safety briefing.

Potential hazards (e.g., overhead or underground power, oil, or gas lines in the immediate vicinity of the drilling location) must be removed, avoided by relocating the drill site, or adequately barricaded to eliminate the hazard.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly and, if found to be defective, must be immediately removed from use and either repaired or replaced.

Employees will be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers for emergency assistance must be prominently posted and kept current.

2.2 General Requirements at Drilling Operations

2.2.1 Housekeeping

Good housekeeping conditions should be observed in and around the work area. Suitable storage places should be provided for all materials and supplies. Pipe, drill rods, etc., must be securely stacked on solid, level sills.

Work surfaces, platforms, stairways, walkways, scaffolding, and accessways will be kept free of obstructions. All debris will be collected and stored in piles or containers for removal and disposal.

2.2.2 Salamander Heaters

Salamanders will be used only with approved fuels (e.g., do not use gasoline). Salamander heaters must not be refueled or moved until they have been extinguished and permitted to cool. Heaters will be equipped with exhaust stacks and will not be set on or placed near combustible material. They should be equipped with metal stands that will provide adequate stability and permit at least a 2-inch clearance under the unit.

Burning salamanders must be attended at all times, with suitable fire extinguishers available to each attendant. If tarpaulins or other flexible materials and used to form a heating enclosure, they must be fire resistant and installed to prevent contact with the heater. Worn salamanders that have developed holes or have been otherwise damaged will be replaced and removed from service.

2.2.3 Lighting

In addition to providing required or recommended illumination intensities of at least 5 foot-candles, consideration should be given to the selection and placement of lighting equipment. Proper lighting should provided minimum glare, eliminate harsh shadows, and provide adequate illumination to perform work efficiently and safely.

Light bulbs should be of the heavy duty, outdoor, nonshattering type.

All lighting circuits, including drop cords, should be grounded and have ground fault interrupters. Lighting circuits will be inspected periodically, and defective wiring or fixtures will be removed from service.

2.2.4 Flammable Liquids

All highly flammable liquids should be stored and handled only in approved containers. Portable containers must be the approved red safety containers equipped with flame arresters and self-closing lids.

Approved hand pumps will be used to dispense gasoline from barrels. Gasoline must not be used for degreasing or to start fires. Also, gasoline containers should be clearly labeled, and storage areas should be posted with "No Smoking" signs. Fire extinguishers should be installed in all areas that contain flammable liquids.

2.2.5 Public Safety

Work areas will be regulated so that the public will be protected from injury or accident. Adequate danger signs, barriers, etc., will be placed to effectively warn the public of hazards as well as to restrict access to dangerous areas.

2.3 Off-Road Movement of Drill Rigs

The following rules apply to the off-road movement of drill rigs:

- Before moving a drill rig, an inspection should be made of the route of travel for depressions, slumps, gullies, ruts, and similar obstacles.
- The brakes of a drill rig carrier should always be checked before traveling, particularly on rough, uneven, or hilly ground.
- All passengers should be discharged before a drill rig is moved on rough or hilly terrain.
- The front axle of 4 x 4 or 6 x 6 vehicles or carriers should be engaged when traveling off-road on hilly terrain.
- Caution should be used when traveling on a hillside. The hillside capability of drill rigs should be evaluated conservatively, because the addition of drilling tools may raise the center of mass. When possible, travel should be made directly uphill or downhill.
- Obstacles such as small logs, small erosion channels, or ditches should be crossed squarely, not at an angle.

- When lateral or overhead clearance is close, someone on the ground should act as a guide.
- After the drill rig has been moved to a new drilling site, all brakes or locks should be set. Wheels should be blocked on steep grades.
- The mast (derrick) of the drill rig should not be in the raised or partially raised position during off-road travel.
- Loads on the drill rig and supporting trucks should be tied down during transport.

2.4 Drilling Equipment

2.4.1 Skid-Mounted Units

Labels clearly indicating the function and direction of control levers should be posted on the lower unit controls of all drills.

An emergency safety power shutoff device should be installed within reach of the operator on all units. The device should be clearly labeled or otherwise made readily identifiable and checked daily to ensure that it is operable. The power unit should be operated only by authorized and qualified personnel.

Equipment will be shut down during manual lubrication and while repairs or adjustments are being made. Equipment such as internal combustion engines will not be refueled while running. Where practical, the gasoline tank should be positioned or shielded to avoid accidental spillage of fuel on the engine or exhaust manifold during refueling operations. Hazardous gears and moving parts also should be shielded to prevent accidental contact.

A dry chemical or carbon dioxide fire extinguisher, rated 5 pounds or larger, should be carried on the unit and removed to a position within 25 feet of the work site during drilling operations. Extinguishers will be inspected and tagged at least once every 3 months.

Engine exhaust systems should be equipped with spark arresters when operated in areas where sparks constitute a fire hazard.

2.4.2 Overhead and Underground Utilities

Special precaution must be taken when using a drill rig on a site within the vicinity of electrical power lines and other utilities. Electricity can shock, burn, and cause death.

Overhead and underground utilities should be located, noted, and emphasized on all boring location plans and assignment sheets. When overhead electrical power lines exist at or near a drilling site, all wires should be considered dangerous.

A check should be made for sagging power lines before a site is entered. Power lines should not be lifted to gain entrance. The appropriate utility company should be contacted and a request should be made that it lift or raise and cut off power to the lines.

The area around the drill rig should be inspected before the drill rig mast (derrick) is raised at a site in the vicinity of power lines. The minimum distance from any point on the drill rig to the nearest power line should be determined when the mast is raised or is being raised. The mast should not be raised and the drill rig should not be operated if this distance is less than 20 feet, because hoist lines and overhead power lines can be moved toward each other by the wind.

The existence of underground utilities, such as electric power, gas, petroleum, telephone, sewer, and water lines, should always be suspected. These underground electric lines are as dangerous as overhead lines, so a utility locating service should always be contacted.

There are generally two types of utility locating services. One is a "free" service that is paid for by companies with underground pipes, lines, etc., to protect the public and to prevent costly repairs. However, these services have access only to drawings for primary pipes or lines, typically on public property or right-of-way easements, but not to drawings showing supply or feeder lines from a primary system to the interior of a property. Therefore, they are not required, and in fact hesitate, to locate interior lines. Sites can be cleared for drilling by such services, but without the drill operator's knowledge of the locations of underground feeder or supply lines.

A second type of locating service is provided by a paid subcontractor who physically sweeps or clears interior locations using locating equipment. Locating costs can be minimized by obtaining all available maps, drawings, and employee interview information before contracting with the locating company. This is especially important at large industrial plants or military bases, which can have an intricate network of underground utilities. It is important that every location be cleared, even those for hand-auger borings.

If a sign warning of underground utilities is located on a site boundary, it should not be assumed that underground utilities are located on or near the boundary or property line under the

sign; they may be a considerable distance from the sign. The utility company should be contacted to check it out.

The owners of utility lines or the nearest underground utility location service should always be contacted before drilling is started. However, remember that some services provide information on utilities going to, but not within, a site. Metal detectors or other locating equipment may be necessary to determine the presence of shallow (surface) utilities onsite. The utility personnel should mark or flag the location of the underground lines and determine what specific precautions must be taken to ensure safety.

2.4.3 Site Selection and Working Platforms

In preparing a work site located on adverse topography, precautions must be taken against cave-ins, slides, and loose boulders. The drill platform should be stabilized by outriggers or adequate timbering.

Prior to drilling, adequate site clearing and leveling should be performed to accommodate the drill rig and supplies and to provide a safe working area. Drilling should not commence when tree limbs, unstable ground, or site obstructions result in unsafe tool-handling conditions.

Suitable storage locations should be provided that allow for the convenient handling of tools, materials, and supplies without danger that they could fall and injure anyone. Storing or transporting tools, materials, or supplies within or on the drilling mast (derrick) should be avoided. Pipes, drill rods, bits, casings, augers, and similar drilling tools should be securely stacked in an orderly manner on racks or sills.

Penetration hammers or other types of driving hammers should be placed at a safe location on the ground or secured when unattended on a platform. Work areas, platforms, walkways, scaffolding, and other accessways should be kept free of obstructions and substances such as ice, grease, or oil that could create a hazardous surface. All controls, control linkages, and warning and operation lights and lenses also should be kept free of ice, grease, or oil.

In the vicinity of power transmission or distribution lines, drills should be adequately grounded and set with at least a 15-foot clearance between any part of the drill or mast and the power lines.

Toilet facilities will be convenient to drill crews, or transportation will be readily available to nearby toilet facilities. Toilets will be either the chemical type or constructed over ground pits, which will be backfilled when abandoned. They should be fly tight and maintained in a sanitary condition.

Mud pits and drainage excavations should be safely sloped and located to provide minimum interference with work. Where necessary, suitable barricades, catwalks, etc., should be provided to reduce the possibility of personal injury. Ladders will be positioned in pits or excavations that are 5 or more feet deep. Such excavations should be periodically inspected to ensure safe operation and adequate maintenance.

Truck-mounted drills will be equipped with a "safetyline" or with clearly marked and conspicuously located emergency switches. The safetyline emergency stop consists of a taut wire that runs around the back of the machine and connects to a special switch that turns off the power unit when the line is contacted. When emergency switches are used in lieu of a safetyline, there should be a minimum of two switches--one located within easy reach of the operator, and one located within easy reach of workers at ground level near the drill or auger head.

Trucks should not be moved backward unless the driver has personally inspected the area behind the truck. In restricted or congested areas, or areas where workmen are located, the assistance of a "spotter" is mandatory. Also, trucks will be equipped with serviceable automatic backup alarms.

Before the mast is raised, personnel will be cleared from the immediate area--with the exception of the operator and a helper, when necessary. A check should be made to ensure safe clearance from energized power lines or equipment. Unsecured equipment must be removed from the mast, and cables, mud lines, and catline ropes must be adequately secured to the mast before raising. After it is raised, the mast must be secured to the rig in an upright position with steel pins.

Drill equipment will not be moved until a thorough inspection has been made to ensure that the mast, drill rods, tools, and other equipment are secured. A check will also be made of the steering mechanism, brakes, lights, load limits, and proper flagging and lighting of load extensions. Applicable traffic laws will be observed when moving drill equipment over public roads.

2.5 Surface Drilling Operations

Before the mast of a drill rig is raised and drilling is commenced, the drill rig must first be leveled and stabilized with leveling jacks and/or solid cribbing. The drill rig should be releveled if it settles after the initial setup. The mast should only be lowered when the leveling jacks are down, and the leveling jack pads should not be raised until the mast is completely lowered. Before drilling operations start, the mast should be secured or locked, if required by the drill's manufacturer.

Before the power unit is started, all gears should be disengaged, the cable drum brake should be set, and no rope should be in contact with the cathead.

Before the mast is raised, a check should be made for overhead obstructions. Everyone (with the exception of the operator) should be cleared from the areas immediately to the rear and sides of the mast and informed that the mast is being raised. The drill rig should not be driven from hole to hole with the mast in the raised position.

The drill rig should only be operated from the position of the controls. The operator should shut down the drill engine before leaving the vicinity of the drill. "Horsing around" in the vicinity of the drill rig and tool and supply storage areas is strictly prohibited, even when the drill rig is shut down. Caution should be taken when mounting/dismounting the platform.

Drill operations should be terminated during an electrical storm.

The consumption of alcoholic beverages, depressants, stimulants, or any other chemical substance while on the job is strictly prohibited. All unattended boreholes must be adequately covered or protected to prevent people or animals from stepping or falling into the hole. When the drilling project has been completed, all open boreholes should be adequately covered, protected, or backfilled, according to local or state regulations.

A safety chain and cable arrangement should be used to prevent water swivel and mud line whip. All water swivels and hoisting plugs should be checked for possible frozen bearings and should be properly lubricated before use. A frozen bearing could cause mud line whip, which could injure the operator.

Only drill operators should brake or set the chucks to prevent engagement of the transmission prior to removal of the chuck wrench. Also, the chuck jaws should be periodically checked and replaced as necessary.

A string of drill rods should not be braked by the chuck jaws during lowering into the hole. A catline or hoisting cable and plug should be used for braking prior to tightening of the chuck. Failure to follow this procedure could result in steel slivers on the rods, possible hand injuries, and loss of the rods into the hole. Following braking, drill rods should be allowed to drain completely before removal from the working area.

Drill rods will not be lowered into the hole with a pipe wrench. Serious back and hand injuries may result if the rods are lowered by this method.

When using drilling fluids, a rubber or other suitable wiper should be used to remove the material from the drill rods when removing them from the drill hole. When drilling with air, the exhaust and cuttings should be directed away from workers with devices such as diverter heads, the use of which should be stipulated on drilling agreements where appropriate.

Care must be exercised by the operator to avoid a sudden hoist release of the drill rod while the rod is being carried from the hole. The hoisting capacity and weight of the drill rod must be known to prevent collapse of the mast during drill string removal from the hole. The operating capacity of the mast and hoist also must be known and must not be exceeded.

When tool joints are broken on the ground or on a drilling platform, fingers should be positioned so they will not be caught between the wrench handle and the ground or the platform if the wrench slips or the joint suddenly lets go. Pipe wrench jaws should be checked periodically and replaced as they become worn.

2.6 Use of Augers

The use of mismatched auger sections should be avoided. Different brands and different weights should not be used in the same auger flight.

Because some pins lose their temper after very little use, causing the spring or clip section to fail, only tight-fitting pins designed for the auger should be used.

A daily inspection--to include a thorough check of the hydraulic hoses, connections, and valves--will be made before equipment is used. Deficiencies should be corrected or safe condition verified before the equipment is started.

A durable sign containing the following wording should be installed on all equipment in full view of the operator:

- All personnel must be clear before starting this machine
- Stop the auger to clean it
- Stop engine when repairing, lubricating, or refueling
- Do not wear loose-fitting clothing or gauntlet-type gloves.

The following general procedures should be used when advancing a boring with continuous flight or hollow-stem augers:

- An auger boring should be started with the drill rig level, the clutch or hydraulic rotation control disengaged, the transmission in low gear, and the engine running at low revolutions per minute (rpm).
- A system of responsibility should be established for the series of activities required for auger drilling, such as connecting or disconnecting auger sections and inserting or removing the auger fork. The operator must be sure that the tool handler is well away from the auger column and that the auger fork has been removed before rotation is started.
- Only the manufacturer's recommended method of securing the auger to the power coupling should be used. The coupling or the auger should not be touched with the hands, a wrench, or any other tool during rotation.
- Tool hoists should be used to handle auger sections whenever possible. Hands or fingers should never be placed under the bottom of an auger section when the auger is being hoisted over the top of the auger section in the ground or other hard surface, such as the drill rig platform. Feet should never be allowed to get under the auger section that is being hoisted.
- Workers should stay clear of the auger and other rotating components of the drill rig. Workers should never reach behind or around a rotating auger for any reason.
- Hands or feet should never be used to remove cuttings from the auger.
- Augers should be cleaned only when the drill rig is in neutral and the augers have stopped rotating. A special paddle should be designed for cleaning auger flights; if available, pressurized water is recommended for jet cleaning.

3.0 REMEDIATION SYSTEM EQUIPMENT

LBG operates remediation system equipment at various sites. Remediation equipment includes but is not limited to pump and treat, soil vapor extraction, two-phase vapor extraction, liquid and vapor phase granular activated carbon, thermal destruction and air stripping tower systems. This brief list of safety requirements cover hazards specific to this type of operation. The list assumes that safety requirements for standard operations inherent in SVE operations are already being followed, such as 29 CFR 1910.120 "Hazwoper" planning, training, and other requirements; or drilling, trenching, and shoring safety practices.

The components of a typical remediation system equipment can include an electric or gasoline powered motor, a carbo absorption bed, and various filters, piping, and controls.

3.1 Basic Requirements

3.1.1 General

Employees will not proceed with work on, or in the proximity of, the remediation equipment until they have been properly trained and have attended a safety briefing covering the hazards involved. This may in the form of a "tailgate" safety briefing or a more extensive session, depending upon the extent of the hazards, the employees' safety knowledge, and site-specific exposures.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly and, if found to be defective, immediately removed from use and repaired or replaced.

Employees should be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers or radio frequencies for emergency assistance must also be prominently posted and kept current.

3.1.2 Housekeeping

Good housekeeping practices should be observed in and around the work area. Suitable storage should be provided for all materials and supplies.

Any work surfaces, platforms, stairways, walkways, scaffolding, or accessways should be kept free of obstructions. Any debris should be collected and stored in piles or containers for removal and proper disposal.

3.1.3 Flammable Liquids

All highly flammable liquids should be stored and handled only in approved containers. Portable containers must be of the approved, red safety container type, equipped with flame arresters and self-closing lids.

Approved hand pumps should be used to dispense gasoline from drums. Gasoline must not be used for degreasing or starting fires. Also, gasoline containers should be clearly labeled, and any storage areas should be posted with "No Smoking" signs. Fire extinguishers should be installed in all areas that contain flammable liquids.

3.1.4 Public Safety

Work areas should be regulated so that the public will be protected from injury or accident. Adequate danger signs, barriers, etc., should be placed to effectively warn the public of hazards as well as to restrict access to dangerous areas.

3.1.5 Drilling Safety

Construction of soil-vapor extraction systems requires installation of soil-vapor extraction wells and separate air inlet wells. Safety requirements for drilling operations should be followed.

3.2 Specific Requirements

3.2.1 Chemical Hazards

Some of the primary chemical hazards at remediation operations are site contaminants related to volatile organic compounds. Typically, contaminants are drawn from extraction wells and treated with carbon absorption units and/or are incinerated. Additional chemical hazards associated with these treatment technologies include fuel for the incinerator and activated carbon saturated with site contaminants. Manufacturers' Material Safety Data Sheets should be available on site for all neat chemical compounds used.

Personnel can be exposed to site contaminants during sampling and equipment maintenance. Because soil-vapor extraction systems are typically closed systems terminating in contaminant oxidization or absorption apparatus, chances of exposure incidents during normal operations are minimal. If chemical exposure occurs, however, it is most likely during sampling or equipment

maintenance. Sampling typically includes sampling of site soils or ground water to measure the long-term effectiveness of remediation activities, or sampling process water or vapors to determine the efficiency of treatment technologies in capturing or destroying the contaminants.

A potential for exposure exists during maintenance procedures because of cleaning sediment from knockout pots and from general piping system repairs.

In order to minimize the potential hazards associated with chemical exposure, all site workers should have a knowledge of particular site hazards and contaminants. Based upon site conditions, proper personal protective equipment should be worn such as hard hats, chemical protective clothing, and safety shoes.

3.2.2 Physical Hazards

Physical hazards can be managed by general housekeeping in work areas and routine equipment maintenance. Scaffolding may be erected around water stripping towers and incinerators and should be inspected periodically, as part of a routine maintenance procedure.

3.2.3 Pressure

Remediation systems typically recover soil vapors or ground water from beneath the ground surface. Remedial equipment should be shut off when maintenance activities or repairs occur.

3.2.4 Electric Hazards

Because several types of equipment in remediation systems are commonly powered by electricity, electrical hazards exist at these remedial sites. Liquid ring vacuum pumps, knockout pumps, air stripper holding tanks and pumps, and other elements of the treatment units are frequently powered by electricity. General housekeeping and equipment maintenance are necessary to prevent electrical safety hazards. Worn switches and wiring should be quickly repaired, use of water should be controlled, and unnecessary spills prevented. Ground fault interrupters (GFI) should be used on all circuits carrying power from a nearby indoor source to outdoor equipment or from an outdoor portable generator to equipment. Equipment should also be properly grounded as a protection against shocks, static electricity, and lightning if an electrical storm occurs.

3.2.5 Lighting

In addition to providing required or recommended illumination intensities of at least 5 foot-candles for nighttime operation, consideration should be given to the selection and placement of lighting equipment. Proper lighting should provide minimum glare, eliminate harsh shadows, and provide adequate illumination to perform work efficiently and safely. Light bulbs should be of the heavy duty, outdoor, nonshattering type.

All lighting circuits, including extension cords, should be grounded and have GFI protection. Circuits and extension cords should be inspected periodically.

3.2.6 Incinerator/Treatment System

Thermal hazards exist with incinerators, and boundaries should be set up to prevent contact with headed surfaces. Additionally, proper thermal protection should be available for personnel working at the incinerator. Vapor extractor pumps should be set to shut off automatically if the incinerator shuts off, to prevent accumulation of high concentrations of volatile compounds that could result in an explosion hazard.

3.2.7 Carbon Bed Temperature

A hazard related to carbon absorption units is the heat of reaction, which is high for some materials, such as ketones, treated in high concentrations. SVE equipment should be designed to take this into account when carbon absorption is employed and the bed temperature must be monitored.

Typically, but not limited to, two carbon units will be piped in series to treat the recovered vapors. Carbon units will be changed out according to the air permit guidelines.

When carbon units are changed out, the primary unit will be taken off line, the secondary unit will become the primary unit, and a fresh carbon vessel will become the secondary unit.

All field activities will be initiated in Level D. If the action levels specified in Table 5-1 are reached, an upgrade will be made to Level C.

3.2.8 Vapor Emission Response Plan

If the air concentration of (chlorinated) organic vapors exceeds 5 ppm above background in the exhaust of the treatment system, the system exhaust will be continuously monitored and necessary actions will be taken to reduce system emissions to 5 ppm--for example, by bleeding air into the system, changing carbon canisters, etc. If the organic vapor levels measured in the treatment system exhaust are between 5 ppm and 50 ppm above background, continue site activities and perform continuous monitoring. If the organic vapor level exceeds 50 ppm above background in the treatment system exhaust, shut down work activities until the system is repaired.

Prior to beginning construction activities, notify fire departments and police as well as the local emergency facility of planned site activities. These organizations should be briefed on the nature of planned site work and given a schedule of the proposed tasks. Changes or modifications to the planned work or schedule which could affect the need for emergency services shall be communicated to these organizations. LBG shall communicate to the local hospital and fire department what types of materials may be encountered at the site.

Should the level of total (chlorinated) hydrocarbons exceed 100 ppm for any single reading, or should the explosimeter indicate in excess of 10 percent of the lower explosive limit on any single reading, work in that area will be shut down and personnel will be evacuated upwind. Work will not resume there until authorized by the Site Safety Officer.

3.2.9 System Start-Up and Initial Operating Period

The VE system is designed to operate unattended 24 hours per day, 7 days per week. Once the electrical connections are complete, LBG will begin system start-up.

LBG will monitor the system on a weekly basis during the month of operation. LBG field personnel will use a photoionization detector (PID) to monitor the VE system emissions before GAC treatment. LBG will monitor between GAC units and at the point of vapor emissions to determine GAC breakthrough and compare those concentrations to air emissions standards. These measurements will be used to estimate the amount of VOCs removed from the soil and the rate at which the GAC is being used to treat vapor phase emissions. As part of the daily monitoring, LBG will follow the Vapor Emission Response Plan.

3.2.10 Continued Operations and Maintenance

After the first month of operation, LBG will monitor the system biweekly for the second and third month. From the beginning of the fourth month to the remainder of the treatment period, LBG will monitor the system once a month. The following data will be recorded on each visit:

- Operating time
- Applied vacuum at blower inlet
- Induced vacuum at air inlet wells
- Vapor temperature at blower inlet
- Vapor temperature at blower outlet
- Pressure at blower outlet
- Concentrations of VOCs at blower outlet
- Concentrations of VOCs in treated emissions.

LBG field personnel will analyze and record the vapor-phase VOC concentrations before and after GAC treatment.

dmd
July 29, 2002
reports\keanebeane\healthandsafety\general hspappc.rpt

APPENDIX D

DECONTAMINATION PROCEDURES

Procedure for Level C Decontamination

Level C decontamination, if required, will take place on plastic sheeting so all contaminated material can be contained for proper disposal.

Station 1: Segregated Equipment Drop

Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

Station 2: Suit/Safety Boot Wash

Thoroughly wash splash suit and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
decon solution
or
detergent/water
2-3 long-handle, soft-bristle scrub brushes

Station 3: Suit/Safety Boot Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)

or

high-pressure spray unit

water

2-3 long-handle, soft-bristle scrub brushes

Station 4: Canister or Mask Change

If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canisters will be exchanged, depositing the old canisters in containers with plastic liners. The worker will enter the work area and return to duty.

Equipment: canister (or mask)

boot covers

gloves

Station 5:

Step 1 - Tape, Safety Boot and Outer Glove Removal

Remove safety boots and gloves and deposit in container with plastic liner.

Equipment: container (30-50 gallons)

plastic liners

bench or stool

boot jack

Step 2 - Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)

bench or stool

liner

Step 3 - Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit facepiece in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners

Masks will be collected at a central location. Decontamination will be performed as follows:

- remove all cartridges, canisters and filters, plus gaskets or seals not affixed to their seats;
- remove elastic headbands;
- remove exhalation cover;
- remove speaking diaphragm or speaking diaphragm-exhalation valve assembly;
- remove inhalation valves;
- wash facepiece and breathing tube in cleaner mixed with warm water, preferably at 120°F to 140°F; wash components separately from the face mask; remove heavy soil from surfaces with a hand brush;
- remove all parts from the wash water and rinse twice in clean warm water;
- air dry parts in a designated clean area; and,
- wipe facepiece, valves and seats with a damp lint-free cloth to remove any remaining soap or other foreign materials.

Station 6: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 7: Inner Clothing Removal (optional)

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing offsite if there is a possibility small amounts of contaminants might have been transferred in removing splash suit.

Equipment: container (30-50 gallons)
plastic liners

Station 8: Field Wash (optional)

Shower if highly toxic, skin-corrosive or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
tables
wash basins/buckets
field showers

Station 9: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Procedure for Level B Decontamination

Level B decontamination, if required, will take place on plastic sheeting so all contaminated material can be contained for proper disposal.

Station 1: Segregated Equipment Drop

Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

Station 2: Suit/Safety Boot Wash

Thoroughly wash chemical-resistant splash suit, SCBA, gloves, and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Wrap SCBA regulator (if belt-mounted type) with plastic to keep out water. Wash backpack assembly with sponges or cloths.

Equipment: container (30-50 gallons)
decon solution
or
detergent/water
2-3 long-handle, soft-bristle scrub brushes
sponges or cloths

Station 3: Suit/SCBA/Boot/Glove Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
small buckets
2-3 long-handle, soft-bristle scrub brushes
sponges or cloths

Station 4: Tank Change

If worker leaves Exclusion zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged and worker returns to duty.

Equipment: air tanks
tape
boot covers
gloves

Station 5: Tape, Safety Boot and Outer Glove Removal

Remove safety boots and gloves and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool
boot jack

Station 6: SCBA Backpack Removal

While still wearing facepiece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.

Equipment: table

Station 7: Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment: container (30-to gallons)
plastic liners
bench or stool

Station 8: Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners

Masks will be collected at a central location. Decontamination will be performed as follows:

- remove all cartridges, canisters and filters, plus gaskets or seals not affixed to their seats;
- remove elastic headbands;
- remove exhalation cover;
- remove speaking diaphragm or speaking diaphragm-exhalation valve assembly;
- remove inhalation valves;
- wash facepiece and breathing tube in cleaner mixed with warm water, preferably 120°F to 140°F; wash components separately from the face mask; remove heavy soil from surfaces with a hand brush;
- remove all parts from the wash water and rinse twice in clean warm water;
- air dry parts in a designated clean area; and,
- wipe facepiece, valves and seats with a damp lint-free cloth to remove any remaining soap or other foreign materials.

Station 9: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 10: Inner Clothing Removal (optional)

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing offsite since there is a possibility small amounts of contaminants might have been transferred in removing fully encapsulating suit.

Equipment: container (30-50 gallons)
plastic liners

Station 11: Field Wash (optional)

Shower if highly toxic, skin-corrosive, or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
small tables
basins or buckets
field showers

Station 12: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Equipment: tables
chairs
lockers
clothes

Procedures for Level A Decontamination

(to be formulated on a case-by-case basis)

APPENDIX IV

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

Introduction

This Community Air Monitoring Plan addresses community concerns of possible offsite airborne migration of suspected contaminants that may be generated during the performance of onsite field activities. The scope of work for the Community Air Monitoring Plan is based on guidelines contained in the New York State Department of Environmental Conservation (NYSDEC) Region 2 document titled "Community Air Monitoring Plan". Actions to be taken addressing suspected chemical hazards to onsite workers performing the above field activities have been established in the Onsite Health and Safety Plan.

Site Description

The subject Site is located in a commercial and industrial area in Brooklyn, New York. The Site consists of a two-story building with a partial basement. The building is approximately 55,000 square feet in area. The property is approximately 55,000 square feet in area. Prevailing winds are from the west.

Suspected Onsite Contaminants

Previous investigations have revealed concentrations of volatile organic compounds (VOCs) in the soil and ground water.

Scope of Work

The Scope of Work of the approved Work Plan consists of intrusive and non-intrusive activities in excavating and removing some impacted soil from trenches and other areas.

Non-Intrusive Activities

Real-time air monitoring, for volatile compounds and particulate levels at the perimeter of the work area will be accomplished as follows.

- VOCs will be monitored at the downwind perimeter of the work area daily at 2 hour intervals. If total organic vapor levels exceed 5 ppm (parts per million)

above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings will be recorded and available for State (DEC and DOH) personnel to review.

- Particulates will be continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations. If the downwind particulate level is 150 ug/m^3 greater than the upwind particulate level, then dust suppression techniques will be employed. All readings will be recorded and available for State (DEC and DOH) personnel to review.

Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.
- more frequent intervals of monitoring, as directed by the Safety Officer, are conducted.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts relating to the above are unsuccessful and if the following levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect if organic vapor levels have approached 5 ppm above background. However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

A. All emergency Response Contacts as listed in the Health and Safety Plan will be notified.

B. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.

C. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

Ground Intrusive Activities

Real-time air monitoring, for volatile compounds and particulate levels at the perimeter of the work area will be accomplished as follows:

- VOCs must be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings will be recorded and available for State (DEC and DOH) personnel to review.
- Particulates should be continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations. If the downwind particulate

level is 150 ug/m^3 greater than the upwind particulate level, then dust suppression techniques will be employed. All readings will be recorded and available for State (DEC and DOH) personnel to review.

Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts related to a major vapor emission source are unsuccessful and if the following levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor emission Response Plan shall automatically be placed into effect if organic vapor levels are approached

5 ppm above background. However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

A. All emergency Response Contacts as listed in the Health and Safety Plan will be notified.

B. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.

C. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

dmd
July 29, 2002
reports\keanebeane\healthandsafety\communityairmonitoringplan

AIR MONITORING

General Information

Name(s): _____ Background Level: _____

Date: _____ Weather Conditions: _____

Time: _____ _____

Project: 230 Kent Avenue
Brooklyn, NY 11211
Index #W2-0873-00-10

Equipment Calibration

PID _____ DUST _____

Sample No.	Time	PID Reading			Dust Reading		
		Upwind (ppm)	At Boring (ppm)	Downwind (ppm)	Upwind (mg/m^3)	At Boring (mg/m^3)	Downwind (mg/m^3)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

dmd
July 29, 2002
reports\keanebeane\healthandsafety\airmonfrms1.rpt