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January 22, 1998

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Attn: Mr. John Schmeltzer
Environmental Engineer

Re: Broad Street Site
Lyndonville, Vermont (Site #95-1803)

Dear Mr. Schmeltzer:

You will find included in this package one copy of the following report from Tewhey Associates:

Initial Site Investigation
Canadian Pacific Railway
Former Railroad Freight Building Site
Village of Lyndonville, Town of Lyndon, Vermont
Vermont DEC Site #95-1803
December 1997

Should you have any questions or comments, please call me at (514) 395-6398 or Rich Fortin (Tewhey Associates) at (207) 772-2242.

Yours truly,

Claude M. David, P.Eng., P.Geol.
Staff Consultant
Environmental Affairs - East

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INITIAL SITE INVESTIGATION
CANADIAN PACIFIC RAILWAY
FORMER RAILROAD FREIGHT BUILDING SITE
Village of Lyndonville, Town of Lyndon, Vermont
Vermont DEC Site #95-1803

DECEMBER 1997

Prepared For:

Canadian Pacific Railway
Environmental Affairs - Suite 400, Windsor Station
910 Peel Street, P.O. Box 6042, Station Centre Ville
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**INITIAL SITE INVESTIGATION
CANADIAN PACIFIC RAILWAY
FORMER RAILROAD FREIGHT BUILDING SITE**

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CANADIAN PACIFIC RAILWAY
FORMER RAILROAD FREIGHT BUILDING SITE**

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**INITIAL SITE INVESTIGATION
CANADIAN PACIFIC RAILWAY
FORMER RAILROAD FREIGHT BUILDING SITE**

1.0 INTRODUCTION

On June 27, 1995, a Vermont Department of Environmental Conservation (DEC), Sites Management Section staff person visited Lyndonville to investigate a report of petroleum contamination discovered during a municipal sewer excavation. Soils contaminated with petroleum residues were inspected and checked with a photoionization detector. The excavated contaminated soil was derived from an area on Broad Street located directly in front of the railroad property and a building formerly used by the railroad for handling freight. The type of petroleum residue was not identified at that time and the source of contamination was not known.

Because this finding was made adjacent to the railroad property, the DEC requested Canadian Pacific Railway (CPR) in a letter dated December 2, 1996, received by CPR on December 19, 1996, to investigate whether or not the petroleum release was derived from past activities at the railroad site since it was the owner (as Canadian Pacific Limited) at the time the problem was found. The railroad site is now owned by Northern Vermont Railroad (Canadian American Railroad Company).

In response to this request, Tewhey Associates submitted a Work Plan on January 10, 1997 on behalf of CPR to complete an initial investigation of the site consistent with the Traditional Investigative Process identified in the DEC's Site Investigation Guidance dated August 1996. The Work Plan was reviewed and in a letter dated January 27, 1997, the DEC concurred with the proposed investigation plan. Tewhey Associates undertook the start of work on February 11, 1997. Interactions with the DEC occurred throughout the course of this project in order to provide an ongoing understanding of the site findings as the work progressed. This report presents the activities completed for the investigation and discusses the findings and recommendations resulting from the study.

1.1 Study Background

On June 16, 1995, petroleum contamination was discovered beneath an area of Broad Street at the time when a new sewer main was being installed through the area. The contamination was observed in soils located at a depth of 10 to 13 feet below ground surface. The Vermont DEC was notified of this finding and, although the source of the petroleum release was not known, the Department identified possible upgradient sources to include a Cumberland Farms Gas Station/Convenience Store and the railroad property which includes a former freight building that is now used seasonally by Carmen's Ice Cream.

The DEC requested Cumberland Farms to complete an investigation for petroleum contamination on its site which is located to the south adjacent to the railroad property. The Cumberland Farms site was investigated and various reports have been filed with the DEC. The reports indicate that

a portion of the site contains gasoline residues in soil and groundwater, and conclude that hydrocarbons have not migrated from the site toward the Broad and Center Street intersection where the sewer line excavation uncovered petroleum residue contamination. No further investigation or remedial action is being proposed by Cumberland Farms at the present time. Groundwater monitoring is ongoing in order to determine if the levels of contamination will decrease over time.

1.2 Purpose

The purpose of the Initial Site Investigation on the railroad site is to identify whether the petroleum contamination found under Broad Street is related to a petroleum source present on the railroad property or if it is associated with an off-site source. Other objectives of the study are to provide an understanding of the degree and extent of contamination, and to assess the pathways of migration and potential exposure to nearby receptors. Based on these findings, the need for further actions at the site have been considered and are discussed in this report.

1.3 Project Scope

The scope of work completed for this initial investigation was presented to the DEC in Tewhey Associates Work Plan described previously. The Work Plan included the implementation of four tasks as follows:

1. Completed a background research and file review to identify historical information and land use activities which may have involved the used of petroleum products or the storage of petroleum in underground tanks. The background research also included a search for information on existing or former underground utilities which may be acting as a preferential pathway for petroleum migration in the subsurface. Additional research was conducted in an attempt to identify the use of the building and property by others after the railroad ceased its operations at the freight building.
2. Conducted a subsurface metal detector survey to assess if any underground petroleum storage tanks may be present and warrant further investigation through the completion of an exploration program.
3. Conducted a test pit exploration program to determine if petroleum residues are present in the subsurface soils located beneath the railroad property and to assess if the residues detected under Broad Street are related and derived from a historic on-site release of petroleum product. The exploration program consisted of PID field screening of soil samples and the submittal of selected samples for laboratory chemical analysis. A follow-on investigation consisting of hand borings and PID screening was implemented in order to further delineate the area petroleum residue in the subsurface.
4. Evaluated the study findings and prepared a written report to present a description of the subsurface geology-hydrogeology, results of analytical testing and conclusions reached regarding the nature of the problem, migration pathways and potential risk to receptors.

2.0 LAND USE DESCRIPTION

The following sections present historical information that was found through our background research in relation to the handling and storage of petroleum products both on-site and in the near vicinity to the railroad site. The current land use setting and knowledge of existing or former underground utility lines is also discussed.

2.1 Historical Information

Freight Building Site. The railroad freight building dates back to at least 1884. Available fire insurance maps show the site has included the present freight building plus a warehouse extension and addition off the south end of this building. Some time between 1938 and 1958, the warehouse and addition were removed.

The freight building has been used for various purposes over the years after it no longer served the railroad. In the 1960s, the building was used by Pearce Lumber Company to store building supplies. In the late 1960s, a mobile trailer was reportedly located on the site and used as an office by Northeastern Vermont Development Association Tourist Information. In the early 1970s, REA Express leased the building for an office and warehouse. In the early 1980s, Artful Lodger Food Cooperative leased the building for a store and warehouse. Since 1984, the building has been leased for use as an ice cream shop in the warmer months of the year. The ice cream, known as Carmen's Ice Cream, uses propane which is stored in a small aboveground tank located at the northwest corner of the building. In our discussions with the present operator of the ice cream shop, we learned that a portion of the building was also used in the past as a travel agency.

Coal was reportedly used for heating in the freight building in the early 1900s. At some point in time, a 275-gallon aboveground heating oil tank was located inside the freight building. The use of the tank was reportedly discontinued about 10 years ago and heating has since been provided by electric heaters. A DEC inspection of the former tank and piping locations and area under the building following the discovery of the contamination under Broad Street revealed no evidence of a former oil release at the site.

Background research was completed to identify whether or not any petroleum products were stored at the site in one or more underground tanks. All sources of information revealed no evidence of any former existence of aboveground or underground petroleum storage tanks other than the 275-gallon tank described above. Our information sources included the following:

- An in-house records review completed by CPR including research of lease records, fire insurance maps and aerial photographs available for the site.
- A review of the DEC spill files, underground tank files and site investigation files; a review of municipal records including the Assessor's Office, Building-Code Enforcement Office and Clerk's office where historic plans are filed; conversations with the local historian, Harriet

Fisher and the former Fire Department Chief, Wendle Cassidy; and a review of historical information available in the public library.

- Conversation with Lyman Dunn, a former engineer and employee of CPR who worked in the 1970s and 1980s along the section of railroad that included the Lyndonville station. Mr. Dunn said he did not know of any underground petroleum storage tanks, aboveground storage operation or fuel handling operations being conducted historically as a regular practice of the railroad at the freight building other than the tank described previously.

Surrounding Land Use. Tewhey Associates and CPR staff researched available historic documents, plans, etc. to identify possible off-site sources for the petroleum contamination discovered under Broad Street. The information sources described previously for site-related operations were also the basis for identifying off-site petroleum-related uses.

The railroad site is bordered to the north and northwest by commercial development. To the southwest across Broad Street, the railroad property is bordered by residential houses. Historical information indicates that the commercial and residential use areas have been the same although some of the buildings in these areas have changed over the years. The key, former land use activities with petroleum-related operations located in the vicinity of the railroad property are described below. Two maps prepared by CPR showing the locations of various historical land uses and petroleum storage activity are presented in Appendix A for reference.

1. The Cumberland Farms site has been used as a gasoline station since the 1930s. The underground fuel storage tanks have always been located on the south side of the building. The pump island has been located in front of the building. No information was found in our file review pertaining to the gas station fuel storage and handling operations of prior companies. Cumberland Farms occupied the site in the early 1980s and replaced the existing tanks in 1983 with three 8,000-gallon tanks containing various grades of gasoline. Recently in April 1995, the three tanks identified were tested for tightness and found to pass the test.
2. In the commercially developed block bounded by Broad, Center, Depot and Elm Streets, there have been a number of aboveground and underground petroleum storage tanks present in the past and several aboveground tanks continue to be used at this time. The commercial building located on the corner of Broad and Depot Streets was formerly an auto sales garage and filling station. A 1938 fire insurance map indicated four underground gasoline tanks were present at this site. The tanks were reportedly removed in the 1970s when the building was renovated for other store uses. Four aboveground fuel oil tanks used for heating are located behind the building and appear to be active. In addition, aboveground fuel oil tanks are located behind the adjacent bank and post office buildings located on Broad Street and appear to be active, as well.

Other tanks identified in this commercial block include (a) a gasoline tank (status unknown) associated with the hardware store on Depot Street, (b) an underground tank (status unknown) located at a former movie theater on Elm Street, and (c) two heating oil tanks (possibly active) located at the Darling Inn Apartment building on the corner of Depot and Elm Streets. In addition, Tewhey Associates research found an 1910 post card of the former

town hall located across the street on the corner of Broad and Center Streets showing a small garage and fuel pump dispenser on the north side of the town hall which is the present location of the post office. The town hall was demolished some time between 1938 and 1958.

3. An additional commercial section of Lyndonville is located along the north side of Depot Street and is bisected by William Street. The railroad property which extends to the north beyond Depot Street is included within this section. The railroad property included the train station, reportedly existing from 1867 to 1974, and a baggage building both of which are no longer present at the site. The train station reportedly contained an aboveground storage tank located inside the building. Another building located on the property behind the train station was leased in about the 1940s to 1975 as a meat storage plant, and subsequently from 1975 to 1991 it was leased for use as a garage. In 1991, it was demolished by CPR because of its poor condition. Lease documents show two 10,000-gallon underground gasoline storage tanks were associated with this building, however, no confirmation of the existence tanks could be provided by CPR employees.

The commercial buildings located to the northwest of the railroad property along Depot Street have included a bank, drug store, dentist, tin shop, paint shop, Lodge Hall, fire station, laundromat, print shop and various business offices. Only one 6,000-gallon underground heating oil tank is known to be present in association with the large commercial building that now fronts on Depot Street.

The commercial area located to the north of the railroad property along Depot Street have included a hotel, paint shop, garage, restaurant, feed storage depot, carpet wholesale dealer, bank and warehouse. Fire insurance maps from the 1920s show an underground gasoline tank next to a former restaurant and two other tanks of unknown status. The present existence or use of these tanks is unknown.

2.2 Current Land Use

The railroad site is located on Broad Street in the central portion of the Village of Lyndonville. The railroad property consists of a long and narrow parcel of land that includes active rail lines which are oriented north-south through the property. The freight building is now used as an ice cream stand and fast-food service. The northern portion of the railroad property (i.e., north of the building) is used as a local park. In front of the building and on the south side, the gravel surface area is used for parking. Directly across Broad Street is the intersection with Center Street. The railroad property also borders on Depot Street to the north, William Street to the east and Hill Street to the south. The layout of the site features is shown in Figure 1.

Behind and across the railroad tracks to the east of the freight building is a single residential building located on William Street. A Dairy Association Company, Inc. building and office building occupy the land further to the south along William Street. Other residential properties are present uphill to the east across William Street and downslope to the west across Broad Street and along Center Street. The commercially developed areas are similar to historic land uses with the nearest commercial activities including the post office; a bank and store/office building

fronting on Broad Street; and, stores and a restaurant fronting on Depot Street. The Cumberland Farms store/gas station and a second Dairy Association building are located to the south of the freight building.

2.3 Surface and Subsurface Features

The railroad site surface consists of the crushed-stone corridor which forms the railroad track bed, grass borders along the railroad bed, grass in the park area and a gravel surface in the parking areas. The topography of the site slopes gently toward Broad Street. Because the railroad bed is slightly elevated and perpendicular to the natural topography, a narrow corridor of land along the east side slopes to the south parallel with the railroad bed.

Surface drainage is controlled on-site by the slope of the land surface. As described above, drainage is expected to flow to the west toward Broad Street and to the south along the drainage swale that parallels the railroad bed. Surface runoff from William Street and the uphill residential area flows into stormwater catch basins that subsequently discharge into the swale along the railroad tracks. The presence of this discharge of water into the swale likely results in increased recharge to groundwater as some of the water is locally ponded in low areas along the tracks.

The subsurface utilities located beneath or adjacent to the railroad property are shown in Figure 1 and are also shown on the historic background map in Appendix A. Shallow buried utilities (i.e., less than five feet) include the telephone lines, stormwater drainage lines, electrical and telephone. The individual property service lines for sewer and water are also shallow and would not be expected to intersect the water table. The two main water lines that follow the centerline of Broad Street are at about six feet deep and do not intersect the water table which was found to be in excess of nine feet deep.

Review of historical maps for the railroad property shows an older water line system connecting between the former railroad station located north of Depot Street and the freight building. A pipe line was found in the sewer excavation and Tewhey Associates also found a similar line in a test pit located nearby (i.e., TP-1). The pipeline was about three to four inches in diameter and constructed of metal, thus, it is believed to be a remnant of the old railroad water system.

In front of the freight building near the intersection of Broad and Center Streets, the sewer pipe invert in the manhole is at approximately 15 feet below ground level. At this depth, the sewer is sufficiently low to be well below the water table (i.e., 9 to 10 feet deep). The sewer pipe extension to the south of the manhole is shallow (i.e., less than ten feet) and becomes shallower further to the south along the line. The sewer pipe extension to the north also becomes shallower as it approaches the next manhole. The water table does not encounter the shallow sections of sewer pipes, therefore, the pipes do not appear to act as preferential pathways for hydrocarbon migration.

In the direction to the west along Center Street, the sewer pipe slopes down in the subsurface generally following the topographic slope of the roadway. While excavating the trench for the sewer pipe along Center Street and up to the intersection with Broad Street, a clayey soil layer

was found to exist perpendicular to the trench just west of the street intersection. The clayey soil is located downgradient with respect to the freight building and likely slows the rate of groundwater flow from east to west through this area. Thus, with the clayey soil acting in part as a barrier to groundwater flow, the potential migration of hydrocarbons is anticipated to be limited.

2.4 Regulatory File Review

Tewhey Associates visited the offices of the DEC on February 11, 1997 to review the files concerning petroleum storage tanks, spill incidents and sites subject to DEC regulatory action. No tanks or spill incidents were found concerning the freight building and past railroad operations. File information was available in connection with the Cumberland Farms tank storage facilities and the environmental studies completed to assess impact from these or former tanks (DEC File #95-1803). The state records also list a spill incident reported at the Cumberland Farms station where a few gallons of gasoline was poured onto the asphalt while testing the gas pump (DEC Spill # HMM95-074). No other spill incidents or petroleum storage tank issues were identified in the DEC files for the nearby upgradient properties. The spill incident which identified the petroleum contamination in the sewer excavation was reported as Spill # HMM95-178.

Downgradient to the west at 6-8 Center Street, the New England Telephone Company had a 500-gallon underground fuel oil tank removed in October 1992 (DEC File #92-1311). In addition, four yards of petroleum-contaminated soil were stockpiled and treated onsite. No further concerns or response actions were identified for this site.

The historical background information presented above in Section 2.1 concerning the location of existing and former petroleum storage tanks was cross-referenced with the DEC file review. None of the tanks identified in Section 2.1 were documented in the DEC files with an environmental problem. Other sources contacted for historical information also had no specific knowledge of petroleum spills in the area of the freight building.

3.0 INITIAL INVESTIGATION PROGRAM

The Initial Investigation Program consisted of (1) a metal detector survey to evaluate the possibility of underground tanks beneath the railroad site, (2) a test pit exploration program to investigate the subsurface soil and groundwater conditions, (3) field screening and laboratory analysis of soil samples to identify the nature and distribution of petroleum contamination in the subsurface, (4) and follow-on investigation using hand borings to further delineate the extent of petroleum residue in the subsurface. A description of these activities is provided in the following sections.

3.1 Metal Detector Survey

A metal detector survey was completed on the railroad property and covered the area bounded by the railroad tracks to the east, the Cumberland Farms to the south, Broad Street to the west and Depot Street to the north. The survey was conducted using a Fisher Model TW-6 subsurface metal locator and consisted of walking in parallel transects across the site while

holding the instrument about three feet above ground level. The parallel transects were spaced about three to four feet apart.

Positive metal detections were noted near the stairs at the northeast and southeast corners of the freight building and in the gravel area south of the building. Test pits or hand borings were subsequently completed at or adjacent to the positive metal detections to determine the materials present beneath the surface. A tank was not found in the ground at these locations. The metal detections were found to represent old metal/concrete foundation material, buried coal ash containing high iron residue and miscellaneous buried metal debris. The southern gravel parking area was formerly the site of other railroad buildings which are no longer present. The remnant foundation material and debris findings are consistent with the former site setting.

3.2 Test Pit Explorations

Tewhey subcontracted with D.G. Leach Construction of Lyndonville for a backhoe and operator to complete seven test pit explorations in the area around the freight building and in the gravel parking lot. Dig Safe was contacted to clear utilities prior to the start of work. The test pits were completed on May 21 and 22, 1997 and are identified as TP-1 to TP-7. Ten additional hand borings, HB-1 to HB-10, were completed on July 23 and 23, 1997 around the perimeter of the freight building. The test pit and hand boring locations are shown in Figure 2. The exploration locations were selected in an attempt to avoid subsurface utilities that are located beneath the site. The depth of the test pits ranged from 6 to 12 feet below ground surface and the hand boring depths ranged from 8 to 12 feet. The groundwater table was encountered in most of the test pits and hand borings in the range from 9 to 10 feet below ground surface. Piezometers consisting of field slotted, one-inch diameter, PVC pipe were installed in TP-2 and TP-4 to provide access for water level measurements subsequent to backfilling the test pits. One-half inch diameter, slotted, piezometer pipe installations were also completed at HB-1 and HB-6. No water samples were collected from the piezometers as part of this study. Logs of the geology observed in the test pits and hand borings are presented in Appendix B.

A Photovac Microtip Model MP-101 PID was used to screen the soil samples for petroleum hydrocarbon vapors. The PID was calibrated to 100 part per million (ppm) of isobutylene gas. The PID readings were taken in the headspace of a closed plastic zip-loc bag after the soil vapor was allowed to come to equilibrium in the bag. The PID readings are reported on the exploration logs as ppm values.

At the conclusion of the PVC piezometer installations, the riser pipe elevations were surveyed to the sewer manhole reference datum using a Topcon level. At three other hand boring locations (HB-3, HB-4 and HB-5), PVC pipes were installed temporarily to survey and measure water levels prior to backfilling the boreholes. The depth to water level measurements were made using a Slope Indicator electronic water level meter. Based on the surveyed elevations and water level readings, groundwater elevations were determined at locations TP-2, TP-4, HB-1, HB-6 and at HB-3, HB-4 and HB-5. These data were used to interpret groundwater flow as discussed in Section 4.2.

A discussion of the test pit and hand boring exploration findings in terms of geology, groundwater flow and petroleum distribution is provided in Sections 4.0 and 5.0 of this report.

3.3 Sampling and Laboratory Chemical Analysis

Soil samples were collected from the test pits and submitted to Katahdin Analytical Services of Westbrook, Maine for laboratory chemical analysis. The analytical soil samples were identified as TP-1 through TP-7 corresponding to the test pit designations. The principal focus of the analysis was to identify the nature and concentration of petroleum residue contamination at the site since the investigation was undertaken in response to the petroleum contamination discovered under Broad Street. None of the sampling activities revealed the presence of petroleum as a free product in the soils collected for field or laboratory testing.

A soil sample was collected at or below the water table (i.e., at depths 9.5 to 12 feet) from each test pit, except TP-3, which was only completed to a depth of six feet due to a sewer line interference. Each soil sample was analyzed for Gasoline Range Organics (GRO) using Method 8015M-GRO, Purgeable Aromatics - benzene, toluene, ethylbenzene and xylenes (BTEX) and methylterbutyl ether (MTBE) using Method SW8020, and Total Petroleum Hydrocarbons (TPH) using Method Mod.8100.

The GRO and TPH analytical results are reported in units of mg/kg dry weight and the BTEX/MTBE results are reported in ug/kg dry weight. Laboratory analytical reports are presented in Appendix C. A summary of the data are provided in Table 1 and the findings are discussed in further detail in Section 5.0.

4.0 HYDROGEOLOGIC SETTING

4.1 Geology

The Broad Street and village area of Lyndonville have surficial geologic deposits that were derived in a glacial fluvial or water-lain environment, i.e., in glacial and post-glacial lakes that covered this area more than 11,000 years ago. The surficial deposits were laid down over a limestone bedrock identified as the Waits River Formation. The bedrock formation was not observed to outcrop on the railroad site or in the near vicinity to the site.

The subsurface explorations provided an opportunity to observe the subsurface geology to a depth of 12 feet below ground surface at the railroad site. In most explorations, a thin (approximately one foot) layer of gravelly sand fill was found as a base for vehicular traffic. The shallow native soils consists of either a dark brown sandy loam or light brown silty sand. A root zone and oxidation were also observed in this unit. At approximately four feet below ground surface, the silty sand changed to a fine to medium sand with coarse sand and fine gravel in the upper portion of the unit. The sand unit was generally found in the range from 4 to 9 feet below ground surface. At TP-1, TP-2 and in HB-5, a coarse gravelly sand layer was observed in the range from 9 to 10 feet below the sand. In one location (TP-6), the sand unit was found to change at 6.5 feet below ground surface to a layer of stratified fine sand, silt and clayey silt. In

TABLE 1
LABORATORY ANALYTICAL SOIL DATA
FORMER RAILROAD FREIGHT BUILDING SITE

		TP-1	TP-2	TP-4	TP-5	TP-6	TP-7
Analysis	Units						
GRO	mg/kg	61 B	8.5 B	5.5 B	5.7 B	3.6 B	< 3.3
Benzene	ug/kg	< 80	< 75	< 0.7	< 0.7	< 0.6	< 0.6
Toluene	ug/kg	< 160	< 150	< 1.3	< 1.3	< 1.2	< 1.2
Ethylbenzene	ug/kg	< 160	< 150	< 1.3	< 1.3	< 1.2	< 1.2
Xylenes	ug/kg	< 240	< 230	< 2	< 2	< 1.8	< 1.8
MTBE	ug/kg	< 80	< 75	< 0.7	< 0.7	< 0.6	< 0.6
TPH	mg/kg	560	500	< 6.5	< 6.5	6.1	< 6

Notes:

1. "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of GRO in the method blank was 4.2.
2. Samples collected at or slightly below the water table at depths ranging from 9.5 to 12 feet below ground surface.

other locations (TP-4 and TP-5), the sand unit changed to silt and clay at a depth of about 8.5 to 9 feet below ground surface. Similarly, the upper surface of the silt and clay unit was observed at HB-1, HB-2, HB-3, HB-4 and HB-6 between 6.8 and 8 feet below ground surface. A representative geologic cross-section of the site is shown in Figure 3.

Groundwater seepage was observed at the bottom of the sand unit in several of the test pits and hand borings. Groundwater is more readily available in the sand and gravelly sand units due to the permeable nature of these deposits in comparison to the lower stratified fine sand, silt and clay unit. The permeable sand and saturated conditions were targeted for sampling, as described previously, in order to determine the presence or absence of petroleum residues at the site.

4.2 Hydrogeology

A groundwater contour map was prepared for the site based on the water level data collected on July 24, 1997. The interpreted direction of groundwater flow is shown in Figure 4.

Figure 4 shows the direction of groundwater flow from east to west beneath the site, i.e., from the railroad tracks toward Broad Street. In addition, the flow pattern is consistent with the general topography of the area where the higher topographic elevations occur to the east of the site and the lower elevations and surface water discharge features are located to the west. Subtle variations in flow are possible due to localized recharge and subsurface geologic conditions. For example, recharge along the railroad tracks and the clayey soils encountered under Center Street were discussed previously as local features which may be reflected in the pattern of groundwater flow observed on the railroad and adjacent areas.

5.0 CONTAMINATION FINDINGS

5.1 Vapor Phase - PID Screening Results

PID field screening data were collected for soil samples collected in the initial test pit exploration program. Test pits were not completed close to the building due to a concern for the stability of the structure and foundation. Therefore, a subsequent round of PID screening was completed at ten hand boring locations to further define the extent of contamination in close proximity to the freight building. The findings based on the field PID data are discussed below.

The PID field screening results show elevated readings were detected in soil samples collected at the water table at TP-1, HB-5, HB-8 and HB-9 in the range from 165 to 597 ppm. Both odor and visual observation of these samples indicated that a petroleum-type residue was present in the sample. Low to moderate PID readings in the range of 25 to 94 ppm were observed in soil samples collected at or a short distance above the water table at TP-2, HB-5, HB-6, HB-8, HB-9 and HB-10. At HB-10, a PID reading of 88 ppm was recorded for the sample depth collected at five feet. In this sample and for other soil samples showing PID readings below 25 ppm, field observations indicated no evidence of petroleum residues.

In summary, the PID results show that volatile residues of petroleum are likely present in front of the freight building and extend the full length of the building. This finding is consistent with the prior observation of petroleum residues in the sewer trench located along Broad Street directly in front of the freight building.

5.2 Petroleum Hydrocarbon Distribution in Soil

Soil samples were collected from the test pit exploration program and analyzed as described previously for the presence of gasoline residues (GRO), for specific constituents of gasoline, i.e., benzene, toluene, ethylbenzene and xylenes (BTEX) and methyltertbutyl ether (MTBE) and total petroleum hydrocarbons (TPH). All samples were collected at a depth in the range from 9.5 to 12 feet which was at or slightly below the water table. The test results are presented in Figure 5. Also shown in Figure 5 are the locations of elevated PID detections in hand borings completed subsequent to the initial test pit explorations.

The soil samples identified as TP-1, TP-2, TP-4, TP-5, TP-6 and TP-7 were found to contain GRO in the range from no detection at TP-7 to 61B at TP-1. The "B" qualifier indicates a corresponding detection of GRO at 4.2 mg/kg in the laboratory method blank that was analyzed concurrently with this sample. A note on the laboratory report indicates that these detections do not resemble the fingerprint of gasoline although the data are reported as a GRO method result. All samples were listed as values less than the sample-specific reporting limits for BTEX and MTBE since sample dilution prevented the laboratory from achieving the Practical Quantitation Level (PQL). Based on these results, BTEX and MTBE are shown as not detected (ND) on Figure 5.

The same soil samples were analyzed for TPH and found to contain detections in the range from 6.1 to 560 mg/kg. No detections were reported for the samples collected from TP-4, TP-5 and TP-7. The highest TPH values were found at TP-1 (560 mg/kg) and TP-2 (500 mg/kg). The laboratory report notes that the results do not resemble the chromatographic patterns for fuel products used for calibration although the sample chromatograms fall within the range for #2 fuel oil (i.e., diesel).

Tewhey Associates forwarded the laboratory data and supporting chromatographic information provided by the laboratory to a firm in Seattle, Washington to conduct a further analysis of the type of TPH product found in these samples. The firm of Freidman and Bruya, Inc. reviewed the data and reported the following findings:

- The TPH residue corresponds to the boiling point range for diesel #1 and or kerosene.
- The TPH residue is reasonably weathered and degraded.

The elevated TPH detections were found to occur in the soils at the water table primarily in front of the freight building. The supplemental PID readings and field observations made at the hand borings located around the building perimeter revealed no evidence of petroleum contamination behind the building near the railroad tracks and low to moderate detections on the north and south

sides of the building. Therefore, the boundaries of the impacted zone on the railroad property are interpreted to be limited to the area extending from the building to Broad Street.

6.0 DISCUSSION OF INITIAL INVESTIGATION FINDINGS

6.1 Petroleum Hydrocarbon Source

One objective of this study was to identify the possible source of the petroleum contamination that was discovered at the intersection of Broad and Center Streets in June 1995. One of the tasks completed by CPR and Tewhey Associates was to conduct an extensive review of the background history pertaining to the former railroad freight building in order to identify if the source originated on-site or migrated onto the site from an off-site location. Based on our background research, discussions with various representatives from Lyndonville and investigative work completed at the site, no evidence of an existing or former underground petroleum storage tank was found in connection with this site.

About 10 years ago, the use of an aboveground heating oil tank located inside the northwest portion of the existing building was discontinued and removed. No reports of spills or leaks have been identified in connection with the former use of this tank. At the time of the discovery of petroleum contamination under Broad Street during the sewer line excavation, the former tank location and area under the building were reportedly inspected by the DEC and no evidence of a fuel oil leak was observed.

Although a significant effort has been made to find the cause of the problem, the source of the discharge into the subsurface is unknown. However, no evidence was found to suggest that a source or release of petroleum is still ongoing at the site. In addition, since the distribution of petroleum at the site is now known and is limited in extent, the potential threat to human health and the environment can be addressed. The following section discusses the significance of the study findings in terms of the local land use and potential receptors located on and adjacent to the site.

6.2 Identification of Potential Receptors and Exposure Risk

The railroad property is used passively for parking and walking. The freight building is used principally in the summer months to serve food, beverages and ice cream to the public. The building has no cellar and the foundation consists of field stone and mortar. Public water and sewer services are provided to the site. Groundwater beneath the site is not being used for any purpose. Based on the site conditions and intermittent use of the property, the public and part-time workers in the building are not likely to be exposed to the petroleum-contaminated soils which have been found at a depth of 9 to 12 feet below the site surface. The site use does not involve access to the subsurface area of contamination located in front of the building, and petroleum vapors are not expected to be emitted upward into the building in the absence of any cellar and closed foundation beneath the building.

Contamination is known to be present beneath the intersection of Broad and Center Streets based on the discovery made in June 1995 while excavating for the new sewer pipes. However, use of the paved roadway in this area is limited to surface travel on foot or in automobiles. Contact with subsurface contamination or soil vapor is not expected to occur. A possible threat of exposure exists in the event that workers related to the railroad property, roadway or underground utilities excavate to the depth of soil contamination. However, the sewer mains are newly installed and not likely to require excavation in the foreseeable future. Other utilities occur at a shallow depth (i.e., less than six feet) and are not expected to intercept the zone of contamination if excavation is needed for repair work. Therefore, workers are not receptors of concern at this site, particularly since the area of concern is known and worker activities can be monitored and directed in a way to avoid any potential exposure.

Groundwater flows beneath the site from east to west. Petroleum constituents may have become dissolved in groundwater and moved in the direction of flow. Based on the descriptions provided in the DEC June 27, 1995 Trip Report, no contamination was found beneath Center Street at a distance of about 75 yards down the street. A clayey soil deposit was reported at this point along the sewer trench excavation suggesting that the soil formed a barrier to migration and thus has limited the movement of dissolved petroleum in the downgradient direction of groundwater flow. In the event that some migration does occur beyond this point, the downgradient pathway of flow to the west is generally coincident with the alignment of Center Street. No use or receptors of groundwater are present along Center Street. In addition, no potential receptor points for groundwater discharge to the surface occur in the immediate area.

Based on the existing site setting, land use, subsurface hydrogeology and depth of contamination, the potential for receptor impacts are minimal. In the absence of potential receptors of concern, the identified zone of contamination is not expected to pose a threat to human health or the environment. The contamination was identified as a fuel oil-type material with no measurable levels of benzene and other volatile and toxic compounds that are present in other petroleum products. The petroleum residue should degrade naturally and attenuate slowly over time in the subsurface. The asphalt pavement along Broad and Center Streets provides an impervious cap to prevent rainfall infiltration and mitigate further mobilization of petroleum residues. If an effort were undertaken to excavate and remove the contaminated soil, significant disruption of the streets and village area would occur, and potential exposure to human receptors would be a concern.

7.0 CONCLUSIONS

On the basis of the scope of work completed for the study of the railroad site, Tewhey Associates has reached the following conclusions regarding the nature of the site setting and environmental conditions:

1. An extensive research for background information concerning the railroad site found no evidence of any significant petroleum handling activity or storage of petroleum products in aboveground or underground tanks. Historically, one aboveground heating oil tank was used

inside the northwest portion of the freight building and no leaks or spills have been reported in connection with this tank.

2. Evidence of a release of a petroleum product was discovered in June 1995 while a new sewer system was being constructed through the intersection of Broad and Center Streets. Further study on the adjacent railroad property near the intersection has revealed a limited extent of contamination located between the freight building and Broad Street.
3. The zone of contamination has been found to occur at the water table which was measured at a depth of about nine feet below ground surface.
4. The water table and associated contamination occur in a sandy deposit. At several locations on-site, the sandy soil is underlain by a fine sand, silt and clay deposit that is less permeable to groundwater and dissolved petroleum migration. At one location off-site beneath Center Street, the clayey deposit was also observed during the sewer trench excavation.
5. No source (i.e., tanks or documented release) was found in connection with the identified area of contamination in our review of historical-background information and discussions with various individuals familiar with the history of Lyndonville and the railroad property site.
6. Given the present understanding of the limited distribution of contamination in the subsurface and absence of any potential receptors of concern, the threat of exposure to human health and the environment is minimal, if any, therefore an immediate response action does not appear to be warranted.
7. The degree of contamination should diminish with time through degradation and natural attenuation. Therefore, a monitoring program could be considered as the next appropriate action to be taken at this site.

8.0 RECOMMENDATIONS

Tewhey Associates makes the following recommendations to be considered by the Vermont Department of Environmental Conservation with respect to follow-on actions at this site:

1. Develop a program to monitor the natural degradation process of the petroleum contamination identified at the site. Petroleum degradation is anticipated to be more easily documented by monitoring the degree of weathering in the soil over time. Define the sampling frequency and methods of analysis.
2. Obtain concurrence from the DEC regarding the monitoring program and considerations for achieving final closure on this project.

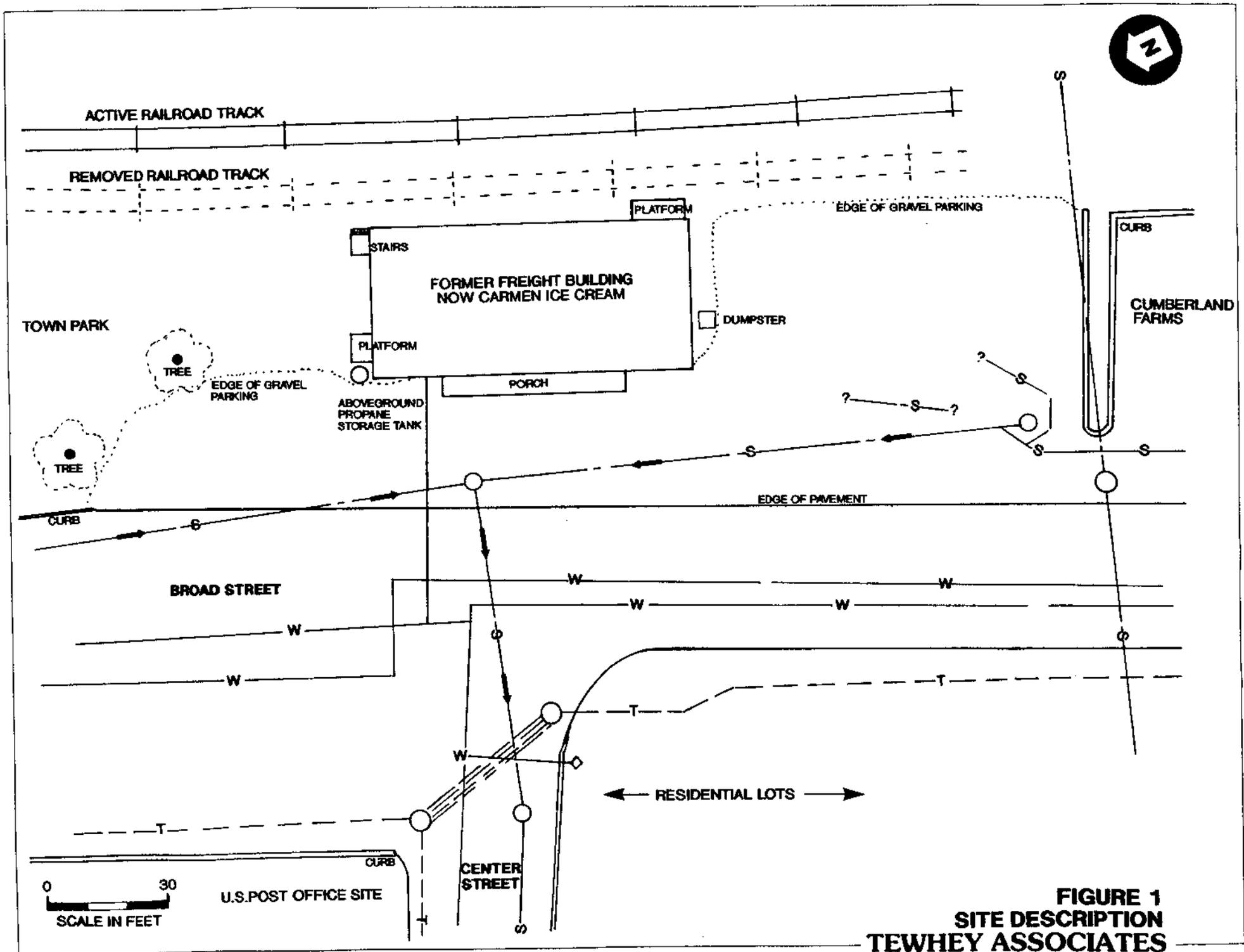


FIGURE 1
SITE DESCRIPTION
TEWHEY ASSOCIATES

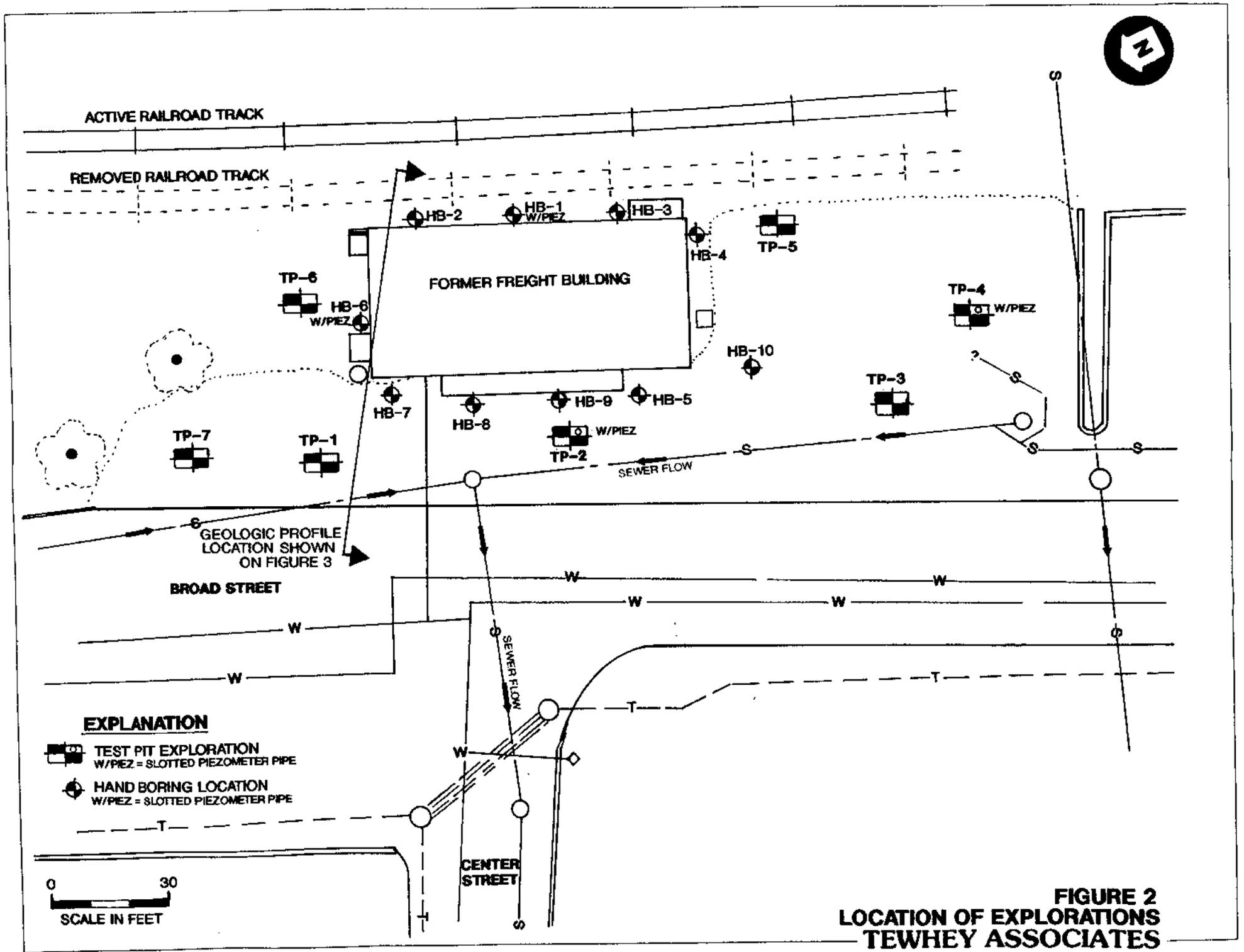


FIGURE 2
LOCATION OF EXPLORATIONS
TEWHEY ASSOCIATES

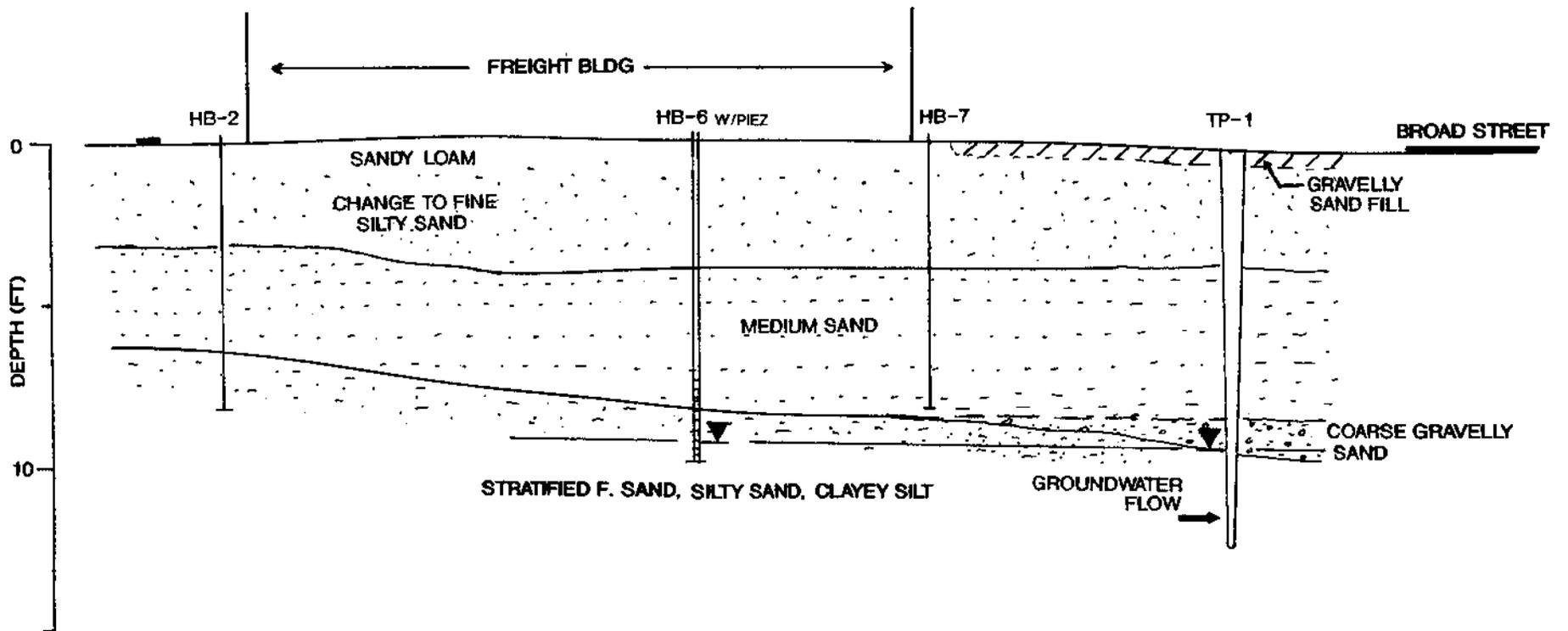


FIGURE 3
INTERPRETIVE GEOLOGIC PROFILE
TEWHEY ASSOCIATES

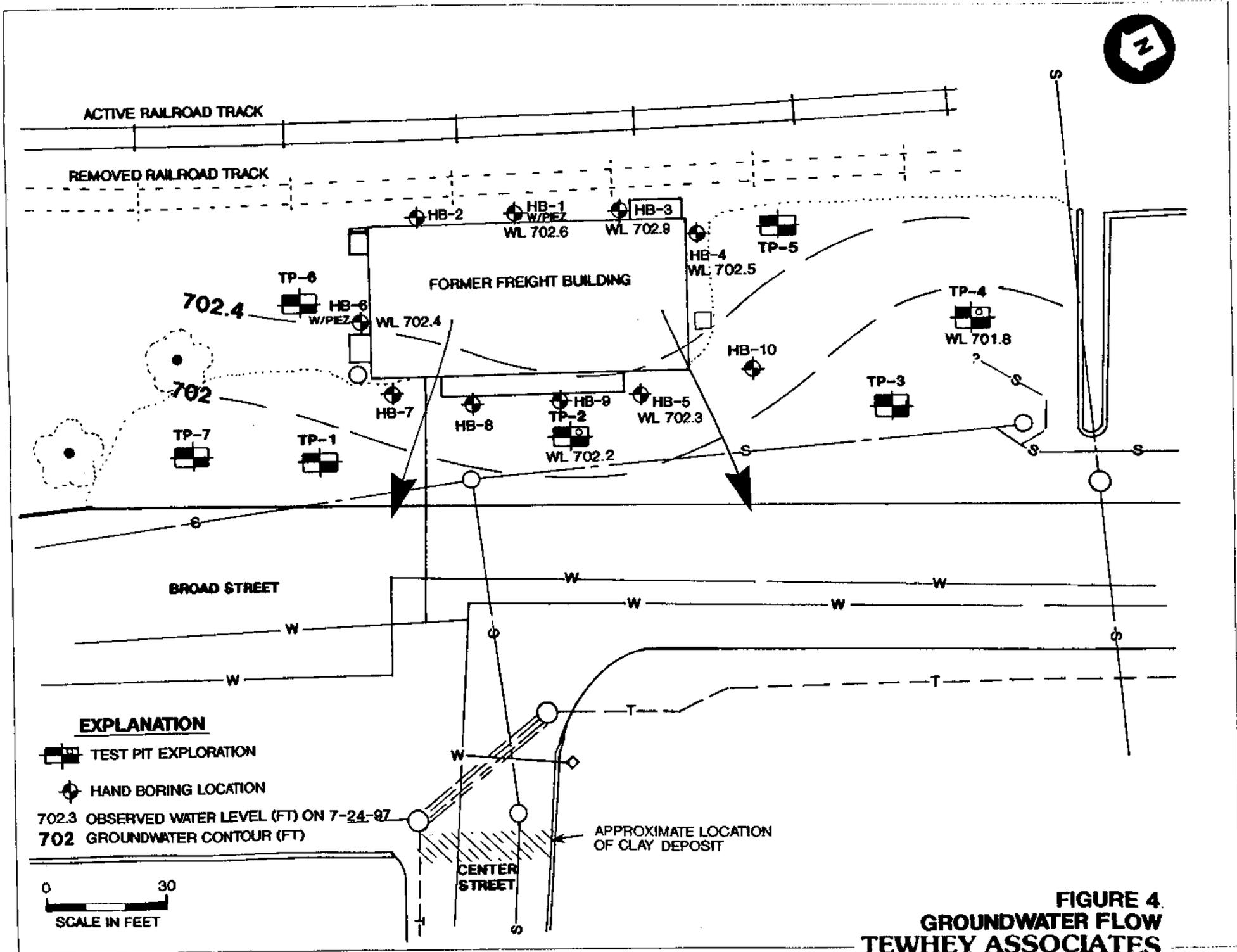


FIGURE 4.
GROUNDWATER FLOW
TEWHEY ASSOCIATES

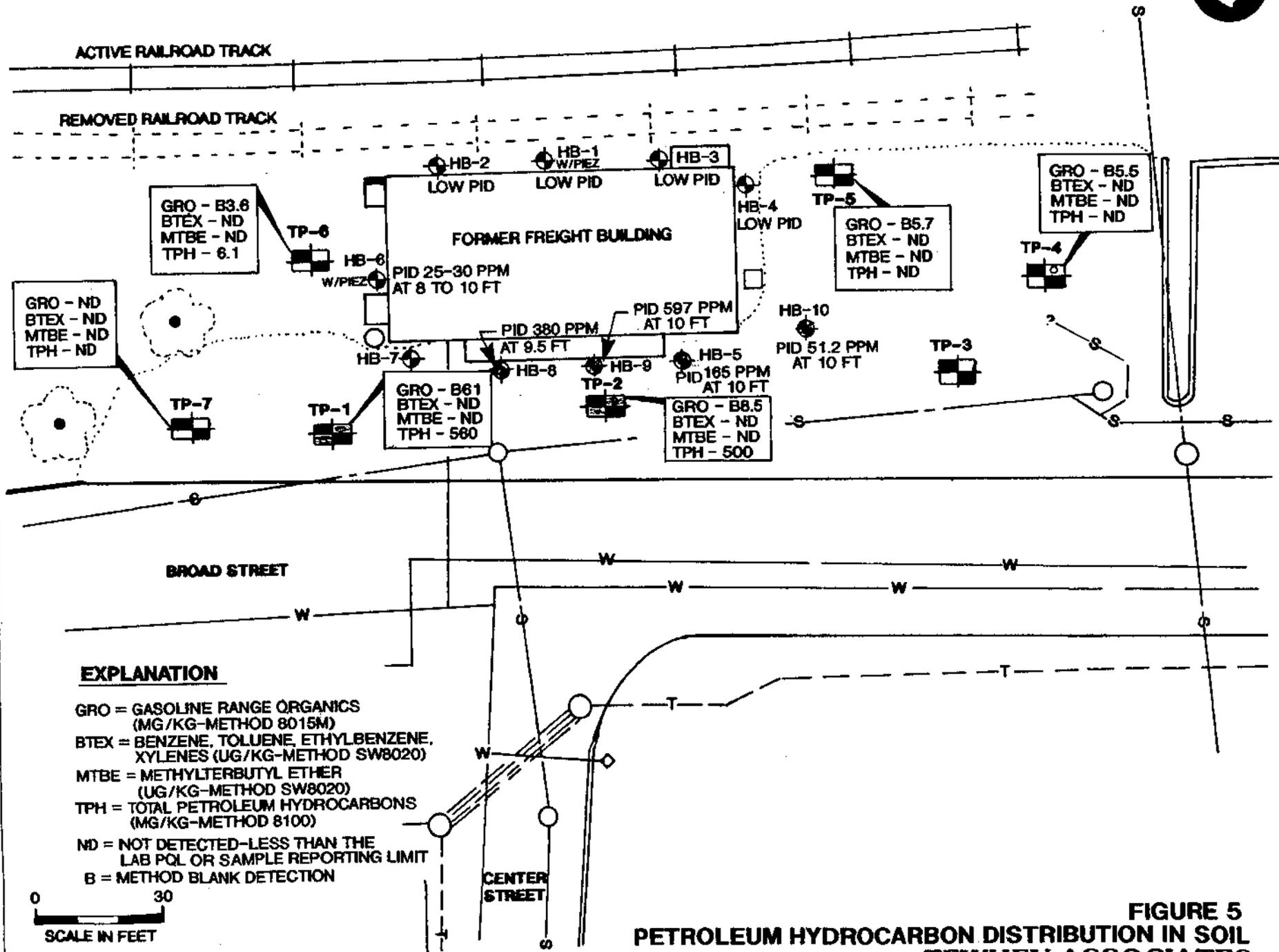
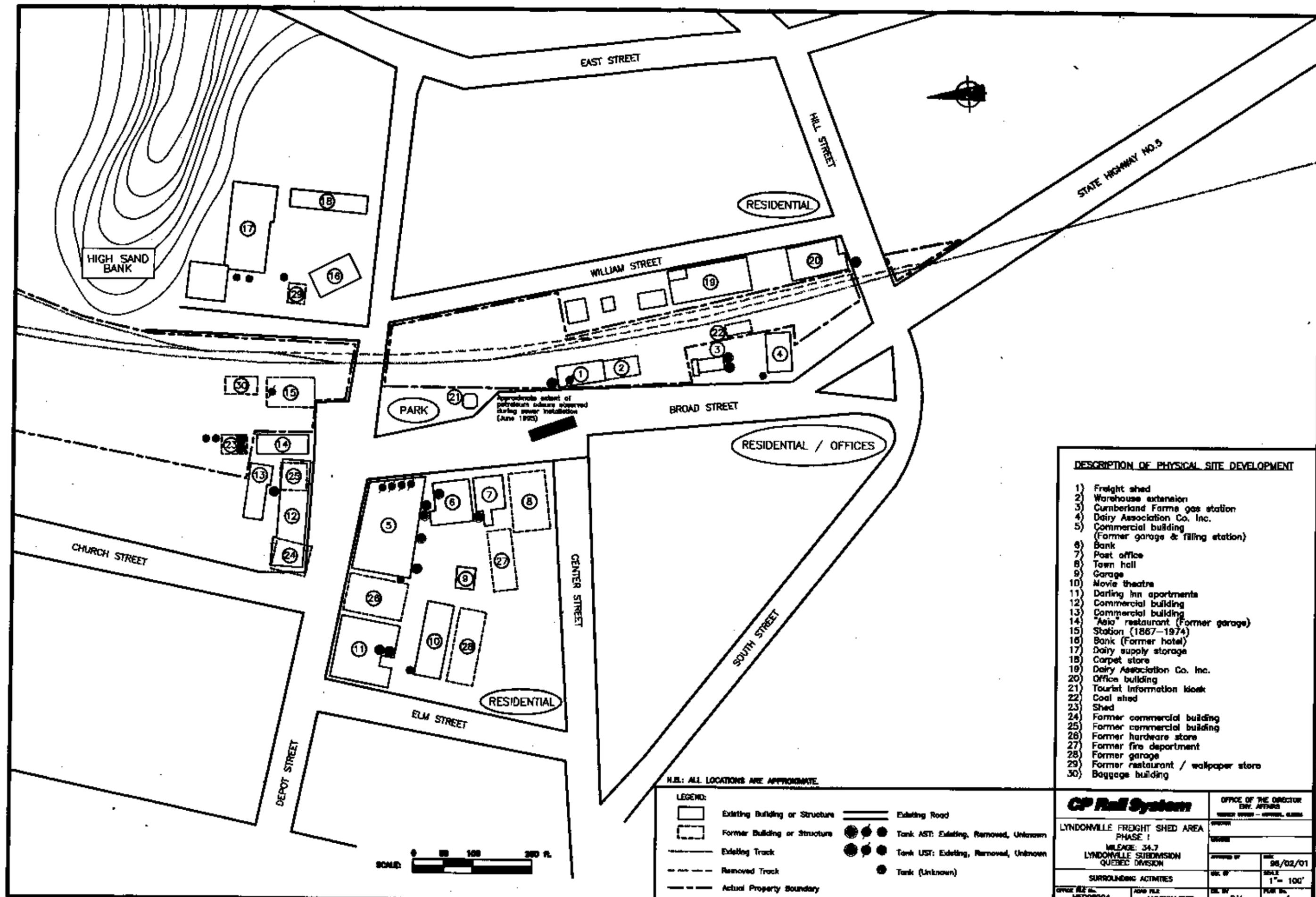


FIGURE 5
PETROLEUM HYDROCARBON DISTRIBUTION IN SOIL
TEWHEY ASSOCIATES



DESCRIPTION OF PHYSICAL SITE DEVELOPMENT

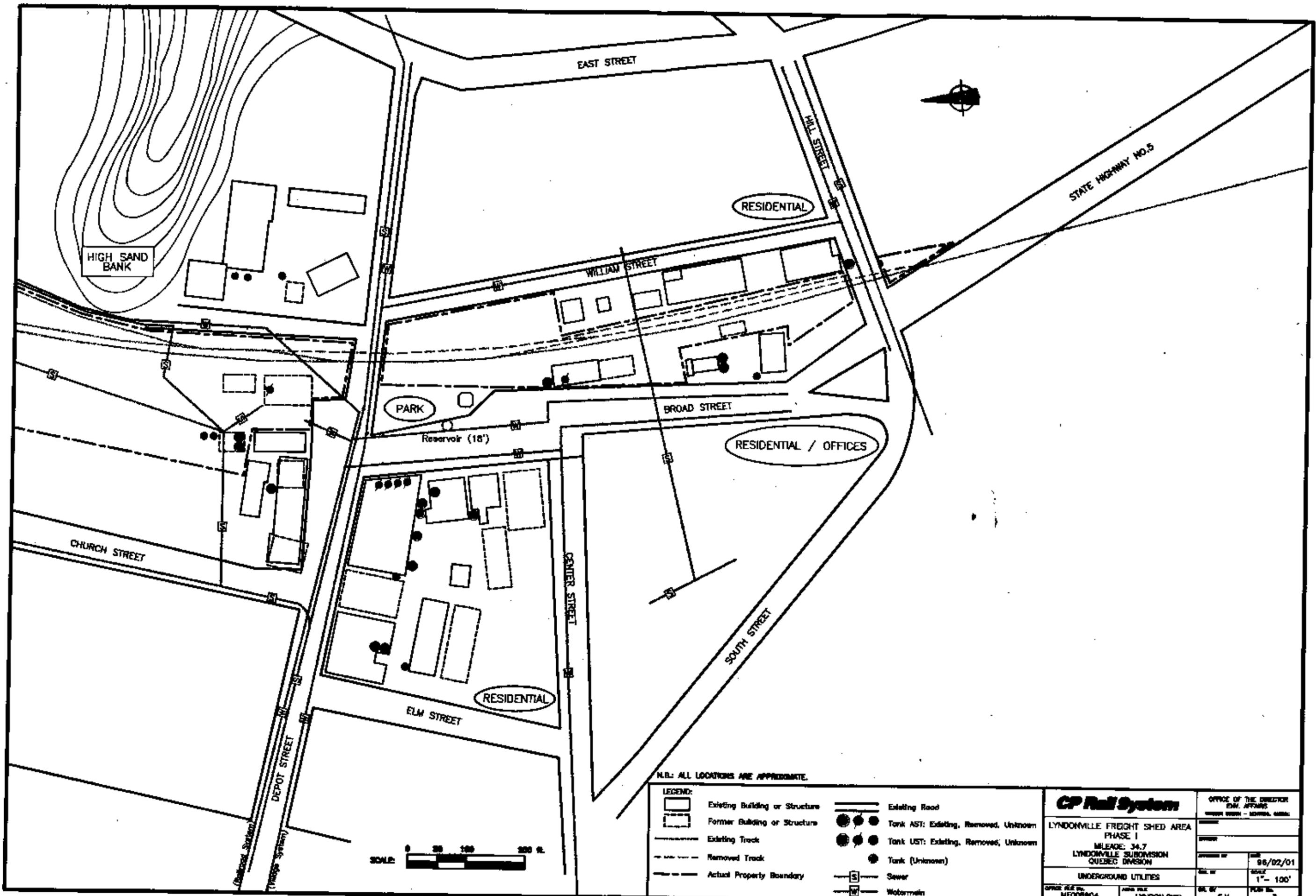
- 1) Freight shed
- 2) Warehouse extension
- 3) Cumberland Farms gas station
- 4) Dairy Association Co. Inc.
- 5) Commercial building (Former garage & filling station)
- 6) Bank
- 7) Post office
- 8) Town hall
- 9) Garage
- 10) Movie theatre
- 11) Darling Inn apartments
- 12) Commercial building
- 13) Commercial building
- 14) "Aeio" restaurant (Former garage)
- 15) Station (1867-1974)
- 16) Bank (Former hotel)
- 17) Dairy supply storage
- 18) Carpet store
- 19) Dairy Association Co. Inc.
- 20) Office building
- 21) Tourist information kiosk
- 22) Coal shed
- 23) Shed
- 24) Former commercial building
- 25) Former commercial building
- 26) Former hardware store
- 27) Former fire department
- 28) Former garage
- 29) Former restaurant / wallpaper store
- 30) Baggage building

N.B.: ALL LOCATIONS ARE APPROXIMATE.

LEGEND:

	Existing Building or Structure		Existing Road
	Former Building or Structure		Tank AST: Existing, Removed, Unknown
	Existing Track		Tank UST: Existing, Removed, Unknown
	Removed Track		Tank (Unknown)
	Actual Property Boundary		

CP Rail System		OFFICE OF THE DIRECTOR ENV. AFFAIRS RUEEY STREET - QUEBEC, QUEBEC	
LYNDONVILLE FREIGHT SHED AREA PHASE I			
MILEAGE: 34.7 LYNDONVILLE SUBDIVISION QUEBEC DIVISION			
SURROUNDING ACTIVITIES		DATE: 98/02/01	SCALE: 1" = 100'
OFFICE FILE NO.: MED08904	APP. FILE: LYNDON.DWG	DATE: S.V.	PAGE NO.: 1



N.B.: ALL LOCATIONS ARE APPROXIMATE.

LEGEND:	
	Existing Building or Structure
	Former Building or Structure
	Existing Track
	Removed Track
	Actual Property Boundary
	Existing Road
	Tank AST: Existing, Removed, Unknown
	Tank LST: Existing, Removed, Unknown
	Tank (Unknown)
	Sewer
	Watermain

CP Rail System		OFFICE OF THE DIRECTOR EM. AFFAIRS <small>WORK ORDER - GENERAL</small>	
LYNDONVILLE FREIGHT SHED AREA PHASE I			
MILEAGE: 34.7			
LYNDONVILLE SUBDIVISION QUEBEC DIVISION			
APPROVED BY	DATE	SCALE	PLN No.
	96/02/01	1" = 100'	3
UNDERGROUND UTILITIES			
OFFICE FILE No. ME005804	AREA FILE LYNDON.DWG	DATE BY S.V.	PLN No. 3

APPENDIX A
Historical Background Maps

APPENDIX B

Test Pit and Hand Boring Logs

TEWHEY ASSOCIATES

TEST PIT LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 5-21-97

INVESTIGATOR R. Fortin

PIT NO: TP-1

LOCATION Off NW Corner of Freight Building

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
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		Top 4 inches - gray to brown gravelly SAND 4 to 8 inches - gray to black silty gravelly SAND dry, loose to compact	0.5
		Change at 8 inches to light brown, fine silty SAND with orange oxidation and a root zone, dry, compact	1.0
11.3	S-1		1.5
			2.0
			2.5
			3.0
			3.5
9.3	S-2		4.0
		8 inch layer of brown coarse sandy GRAVEL dry, dense	4.5
		Change to fairly uniform brown fine to medium SAND, with some coarse sand, dry, loose w/caving	5.0
			5.5
11.5	S-3		6.0
			6.5
		Old 3 to 4 inch pipe, possible water line, found at 7 ft	7.0
			7.5
14.2	S-4		8.0
			8.5
			9.0
15.3	S-5	Some stratification of brown fine sandy and gray clayey SILT beginning at 9 ft, wet, compact	9.5
		West side of pit contains very coarse SAND layer	10.0
12.4	S-6	Groundwater seepage at 9.5 to 10 ft	
256	S-7	Analytical samples collected at 12 ft	
Bkgd = 4.2			

Bottom of test pit at 12 ft

Comments:

Petroleum residue noted at depth in groundwater; no evidence of petroleum observed above water table.

Water Table Present:

OBSERVED at 9.5 to 10 feet below ground surface

TEWHEY ASSOCIATES

TEST PIT LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 5-21-97

INVESTIGATOR R. Fortin

PIT NO: TP-2

LOCATION In front center of Freight Building

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
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		Top 6 inches - gray gravelly SAND 6 to 10 inches - light brown fine silty SAND 10 to 14 inches - gray silty gravelly SAND dry, loose to compact, w/ash-cinders ?	0.5 1.0
11.7	S-1	Change at 14 inches to light brown, fine silty SANDY LOAM and fine silty SAND with orange-red oxidation, dry, compact	1.5 2.0 2.5 3.0 3.5
12.9	S-2	Change to gray-brown fine to medium SAND to sandy GRAVEL, dry, loose	4.0 4.5 5.0 5.5 6.0 6.5
11.6	S-3	All fairly uniform gray-brown fine to medium SAND with some coarse sand to fine gravel, dry, loose w/caving Increasing moisture - damp	7.0 7.5
12.4	S-4		8.0 8.5 9.0
25.1	S-5	Groundwater seepage at 10 ft	9.5
48	S-6	Analytical samples collected at 11 ft	10.0

Bkgd = 7.6

Bottom of test pit at 12 ft

Comments:

Petroleum residue noted at depth in groundwater; no evidence of petroleum observed above water table; a one-inch diameter slotted pipe was installed to measure water levels.

Water Table Present:

OBSERVED at 10 feet below ground surface

TEWHEY ASSOCIATES

TEST PIT LOG

PROJECT: Lyndonville, Vt. Freight Building
PROJECT NO: 97-001
DATE: 5-21-97
INVESTIGATOR: R. Fortin

PIT NO: TP-3
LOCATION: 56 ft off SW corner of Freight Bldg.

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
10.8	S-1	Top 6 inches - gray gravelly SAND	0.0 - 0.5
		6 to 9 inches - gray to black silty gravelly SAND dry, loose to compact	0.5 - 1.0
10	S-2	Change at 9 inches to light brown, fine silty SAND with orange oxidation, dry, compact	1.0 - 1.5
		Change to gray-brown fine to medium SAND to sandy GRAVEL, dry, loose	1.5 - 4.0
		Plastic sewer pipe broken at 4 ft and repaired Moved over and continued	4.0 - 5.0
Bkgd = 1.0		Stopped digging due to nearby sewer pipe	5.0 - 6.0
			6.0 - 10.0

Bottom of test pit at 6 ft

Comments:	No evidence of petroleum observed. No samples collected.
Water Table Present:	None OBSERVED

TEWHEY ASSOCIATES

TEST PIT LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 5-21-97

INVESTIGATOR R. Fortin

PIT NO: TP-4

LOCATION 70 ft South of Freight Building

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
		Top 6 inches - gray gravelly SAND 6 to 9 inches - gray to black silty gravelly SAND dry, loose to compact	0.5
		Change at 9 inches to light brown, fine silty SAND with orange oxidation, dry, compact Old circular cement foundation structure found at 7 inches below ground surface	1.0
			1.5
			2.0
			2.5
			3.0
			3.5
13.2	S-1	All fairly uniform gray-brown fine to medium SAND with some coarse sand to fine gravel, dry, loose w/caving	4.0
			4.5
			5.0
			5.5
18.2	S-2		6.0
			6.5
			7.0
			7.5
			8.0
			8.5
17.2	S-3	Some stratification of brown fine sandy SILT beginning at 9 ft, increasing moisture content Groundwater seepage at 10 ft	9.0
			9.5
16.9	S-4		10.0
23.8	S-5	Analytical samples collected at 11 ft	
Bkgd = 1.4			

Bottom of test pit at 11 ft

Comments:

No obvious evidence of petroleum; a one-inch diameter slotted pipe was installed and backfilled in the test pit to measure water level.

Water Table Present:

OBSERVED at 10 feet below ground surface

TEWHEY ASSOCIATES		HAND BORING LOG	
PROJECT:	Lyndonville, Vt. Freight Building	PIT NO:	HB-1
PROJECT NO:	97-001	LOCATION:	Behind Freight Building -Center
DATE:	7-23-97		
INVESTIGATOR:	R. Fortin		

PID (ppm)

Ref. Soil Samples

Description

Depth (Feet)

			0.5
		Dark organic fine Sandy Loam w/roots, dry, loose changing to orange-light brown slightly silty, very fine SAND, dry, compact	1.0
			1.5
3.1	S-1		2.0
			2.5
			3.0
			3.5
4.9	S-2	Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact	4.0
			4.5
			5.0
			5.5
4.8	S-3		6.0
			6.5
			7.0
			7.5
1.9	S-4		8.0
			8.5
2.3	S-5	Brown to gray very fine, slightly clayey, silty SAND, moist to wet, firm to compact	9.0
			9.5
			10.0

Bottom of hand boring = 10 ft

Comments:	No obvious evidence of petroleum Set 1/2-inch diameter slotted pipe at 10 ft to measure water levels
Water Table Present:	OBSERVED at 8.8 ft below ground surface

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 7-23-97

INVESTIGATOR: R. Fortin

PIT NO: HB-2

LOCATION: Behind Freight Building - North End

PID (ppm)

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
		Dark organic fine Sandy Loam w/roots, dry, loose changing to orange-light brown slightly silty, very fine SAND, dry, compact	0.5 1.0 1.5 2.0 2.5
7.7	S-1	Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact	3.0 3.5 4.0 4.5
8.5	S-2		5.0 5.5 6.0 6.5
7.1	S-3	Brown to gray very fine, silty SAND, moist to wet, firm to compact	7.0 7.5
		Bottom of hand boring = 8 ft	8.0 8.5 9.0 9.5 10.0

Comments:	No obvious evidence of petroleum
Water Table Present:	Wetness observed at bottom of boring

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 7-23-97

INVESTIGATOR: R. Fortin

PIT NO: HB-3

LOCATION: Behind Freight Building -South End

PID (ppm)

Ref. Soil Samples

Description

Depth (Feet)

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
		Brown to black gravelly silty SAND FILL, dry, loose	0.5
		Orange-light brown very fine silty, loamy SAND w/roots, dry, compact	1.0
			1.5
			2.0
			2.5
			3.0
			3.5
			4.0
15.5	S-1	Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact	4.5
15.2	S-2		5.0
			5.5
			6.0
			6.5
11.1	S-3		7.0
			7.5
5.2	S-4	Brown to gray stratified very fine, slightly clayey, silty SAND, moist to wet, firm to compact	8.0
			8.5
			9.0
			9.5
			10.0

Bottom of hand boring = 10 ft

Comments:	No obvious evidence of petroleum Temporarily set 1/2-inch diameter slotted pipe at 10 ft to measure water levels
Water Table Present:	OBSERVED at 8.3 ft below ground surface

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 7-23-97

PIT NO: HB-4

INVESTIGATOR: R. Fortin

LOCATION: Southeast Corner of Freight Building

PID (ppm)

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
		Down to black gravelly silty SAND FILL, dry, loose	0.5
		Orange-light brown very fine silty, loamy SAND w/roots, dry, compact	1.0
			1.5
			2.0
			2.5
			3.0
			3.5
			4.0
5.5	S-1	Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact	4.5
			5.0
			5.5
4.8	S-2		6.0
			6.5
			7.0
			7.5
5.4	S-3		8.0
			8.5
5.5	S-4	Brown to gray stratified very fine, slightly clayey, silty SAND, moist to wet, firm to compact	9.0
			9.5
			10.0

Bottom of hand boring = 10 ft

Comments:

No obvious evidence of petroleum
Temporarily set 1/2-inch diameter slotted pipe at 10 ft to measure water levels

Water Table Present:

OBSERVED at 8.7 ft below ground surface

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 7-23-97

INVESTIGATOR: R. Fortin

PIT NO: HB-5

LOCATION: Southwest Corner of Freight Building

PID (ppm)

Ref. Soil Samples

Description

Depth (Feet)

PID (ppm)	Ref. Soil Samples	Description	Depth (Feet)
		Down to black gravelly silty SAND FILL, dry, loose	0.5
		Orange-light brown very fine silty, loamy SAND w/roots, dry, compact	1.0
			1.5
			2.0
			2.5
			3.0
			3.5
11.5	S-1	Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact	4.0
			4.5
			5.0
			5.5
9.8	S-2		6.0
			6.5
			7.0
			7.5
6.3	S-3		8.0
			8.5
5.2	S-4	Coarse gravelly sand, loose, wet	9.0
			9.5
40	S-5	10.5 to 12 ft	
165	S-6	Gray uniform fine, slightly silty SAND, wet, loose	10.0

Bottom of hand boring = 12 ft

Comments:	Petroleum residue noted at depth in groundwater, no evidence of petroleum observed above water table. Temporarily set 1/2-inch diameter slotted pipe at 10 ft to measure water levels.
Water Table Present:	OBSERVED at 9.4 ft below ground surface

TEWHEY ASSOCIATES		HAND BORING LOG	
PROJECT:	Lyndonville, Vt. Freight Building	PIT NO:	HB-7
PROJECT NO:	97-001	LOCATION:	Northwest Corner of Freight Building
DATE:	7-23-97		
INVESTIGATOR:	R. Fortin		

PID (ppm)

Ref. Soil Samples

Description

Depth (Feet)

13.3

S-1

Dark organic fine Sandy Loam w/roots, dry, loose changing to orange-light brown slightly silty fine SAND

Light brown, slightly silty SAND, dry, loose to compact

Medium brown fine to medium SAND, with little coarse sand, dry, loose to compact

17.4

S-2

Bottom of hand boring = 8 ft

Comments:	Could not advance boring deeper due to large rocks.
Water Table Present:	No wetness observed.

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building
PROJECT NO: 97-001
DATE: 7-23-97
INVESTIGATOR: R. Fortin

PIT NO: HB-8
LOCATION: Front Side of Freight Building

PID (ppm) **Ref. Soil Samples** **Description** **Depth (Feet)**

			0.5
		Brown to black gravelly silty SAND FILL, dry, loose	1.0
		Orange-light brown very fine silty, loamy SAND w/roots dry, compact	1.5
			2.0
			2.5
			3.0
			3.5
14	S-1	Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact	4.0
			4.5
			5.0
			5.5
			6.0
			6.5
24.6	S-2		7.0
			7.5
			8.0
			8.5
			9.0
94	S-3	At 9.2 ft changed to gray uniform fine, slightly silty SAND, wet, loose	9.5
380	S-4		10.0

Bottom of hand boring = 10 ft

Comments:	Petroleum residue noted at depth in groundwater; no evidence of petroleum observed above water table.
Water Table Present:	OBSERVED at 9.4 ft below ground surface

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 7-23-97

INVESTIGATOR: R. Fortin

PIT NO: HB-9

LOCATION: Front Side of Freight Building

PID (ppm)

Ref. Soil Samples

Description

Depth (Feet)

16

S-1

Brown to black gravelly silty SAND FILL, dry, loose

Orange-light brown very fine silty, loamy SAND w/roots, dry, compact

Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact

20.2

S-2

26.8

S-3

39.5

S-4

At 9.5 ft found coarse gravelly SAND, wet, loose

At 10.5 feet found gray uniform, slightly silty SAND

597

S-5

Bottom of hand boring = 12 ft

Comments:

Petroleum residue noted at depth in groundwater; no evidence of petroleum observed above water table.

Water Table Present:

OBSERVED at 9.6 ft below ground surface

TEWHEY ASSOCIATES

HAND BORING LOG

PROJECT: Lyndonville, Vt. Freight Building

PROJECT NO: 97-001

DATE: 7-23-97

INVESTIGATOR: R. Fortin

PIT NO: HB-10

LOCATION: Front Side of Freight Building

PID (ppm) Ref. Soil Samples Description Depth (Feet)

88

S-1

Brown to black gravelly silty SAND FILL, dry, loose

Orange-light brown very fine silty, loamy SAND w/roots, dry, compact

Medium brown, slightly silty, fine to medium SAND, with little coarse sand to fine gravel, dry, loose to compact

36

S-2

At 9 ft found coarse gravelly SAND, wet, loose

35
51.2

S-3
S-4

At 10.5 feet found gray uniform, slightly silty SAND

Bottom of hand boring = 12 ft

Comments:

Petroleum residue noted at depth in groundwater; no evidence of petroleum observed above water table.

Water Table Present:

OBSERVED at 9 ft below ground surface

APPENDIX C

Laboratory Analytical Reports



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-1
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

Page 1 of 15

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-101 TP-1	Solid	R.FORTIN		05/21/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	80.	wt %	1.0	0.10	CLP SOW 788	05/21/97 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 05/23/97 by JF

06/09/97

LJO/ejnejn



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-1
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

Page 2 of 15

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
TP-101 TP-1	Solid	R.FORTIN		05/21/97	05/22/97			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Gasoline Range Organics								1,2
Gasoline Range Organics	B61	mg/kgdrywt	1.2	2.5	8015M-GRO	06/03/97	DG	
4-Bromofluorobenzene	79.	%	1.2		8015M-GRO	06/03/97	DG	
a,a,a-Trifluorotoluene (%)	77.	%	1.2		8015M-GRO	06/03/97	DG	
Purgeable Aromatics+MTBE								3
Benzene	<80.	µg/kgdrywt	160	0.50	SW8020	06/03/97	LB	
Toluene	<160.	µg/kgdrywt	160	1.0	SW8020	06/03/97	LB	
Ethylbenzene	<160.	µg/kgdrywt	160	1.0	SW8020	06/03/97	LB	
Xylenes	<240.	µg/kgdrywt	160	1.5	SW8020	06/03/97	LB	
Methyltertbutyl ether	<80.	µg/kgdrywt	160	0.50	SW8020	06/03/97	LB	
a,a,a-Trifluorotoluene (%)	109.	%	160		SW8020	06/03/97	LB	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of GRO in the method blank was 4.2.
 - (2) This sample does not resemble the fingerprint of gasoline.
 - (3) Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

06/09/97

LJO/jcbkjp(dw)/rh



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-1
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

Page 3 of 15

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-101 TP-1	Solid	R.FORTIN		05/21/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
TPH							1,2,3,4,5
TPH	560.	mg/kgdrywt	12	5.0	Mod.8100	06/05/97 RH	
o-Terphenyl	DL	%	12		Mod.8100	06/05/97 RH	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) Sample Preparation on 05/27/97 by KRT using SW3550
 - (2) Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
 - (3) "DL" flag denotes inability to calculate surrogate recovery due to sample dilution.
 - (4) The pattern does not resemble any of the fuel products specified during ICAL.
 - (5) However, the sample pattern does reside in the window for fuel oil #2 (diesel).

06/09/97

LJO/jcbkp(dw)/rh



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-2
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

Page 4 of 15

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-102 TP-2	Solid	R.FORTIN		05/21/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	82.	wt %	1.0	0.10	CLP SOW 788	05/27/97 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 05/23/97 by JF

06/09/97

LJO/ejnejn

CLIENT: RICH FORTIN
JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Lab Number : WN-1296-2
Report Date: 06/09/97
PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

Page 5 of 15

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
TP-102 TP-2	Solid	R.FORTIN		05/21/97	05/22/97			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Gasoline Range Organics								1,2
Gasoline Range Organics	B8.5	mg/kgdrywt	1.2	2.5	8015M-GRO	06/04/97	DG	
4-Bromofluorobenzene	83.	%	1.2		8015M-GRO	06/04/97	DG	
a,a,a-Trifluorotoluene (%)	71.	%	1.2		8015M-GRO	06/04/97	DG	
Purgeable Aromatics+MTBE								3
Benzene	<75.	µg/kgdrywt	150	0.50	SW8020	06/03/97	LB	
Toluene	<150.	µg/kgdrywt	150	1.0	SW8020	06/03/97	LB	
Ethylbenzene	<150.	µg/kgdrywt	150	1.0	SW8020	06/03/97	LB	
Xylenes	<230.	µg/kgdrywt	150	1.5	SW8020	06/03/97	LB	
Methyltertbutyl ether	<75.	µg/kgdrywt	150	0.50	SW8020	06/03/97	LB	
a,a,a-Trifluorotoluene (%)	109.	%	150		SW8020	06/03/97	LB	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of GRO in the method blank was 4.2.
 - (2) This sample does not resemble the fingerprint of gasoline.
 - (3) Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

06/09/97

LJO/jcbkp(dw)/rh

CLIENT: RICH FORTIN
JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Lab Number : WN-1296-2
Report Date: 06/09/97
PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
TP-102 TP-2	Solid	R.FORTIN		05/21/97	05/22/97			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TPH								1,2,3,4,5
TPH	500.	mg/kgdrywt	12	5.0	Mod.8100	06/05/97	RH	
o-Terphenyl	DL	%	12		Mod.8100	06/05/97	RH	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) Sample Preparation on 05/27/97 by KRT using SW3550
 - (2) Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
 - (3) "DL" flag denotes inability to calculate surrogate recovery due to sample dilution.
 - (4) The pattern does not resemble any of the fuel products specified during ICAL.
 - (5) However, the sample pattern does reside in the window for fuel oil #2 (diesel).

06/09/97

LJO/jcbkp(dw)/rh



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-3
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-104 TP-4	Solid	R.FORTIN		05/21/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	78.	wt %	1.0	0.10	CLP SOW 788	05/27/97 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 05/23/97 by JF

06/09/97

LJO/ejnejn



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-3
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT REPORT OF ANALYTICAL RESULTS Page 8 of 15

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
TP-104 TP-4	Solid	R.FORTIN		05/21/97	05/22/97			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Gasoline Range Organics								1,2
Gasoline Range Organics	B5.5	mg/kgdrywt	1.3	2.5	8015M-GRO	06/04/97	DG	
4-Bromofluorobenzene	84.	%	1.3		8015M-GRO	06/04/97	DG	
a,a,a-Trifluorotoluene (%)	69.	%	1.3		8015M-GRO	06/04/97	DG	
Purgeable Aromatics+MIBE								
Benzene	<0.7	µg/kgdrywt	1.3	0.50	SW8020	06/03/97	LB	
Toluene	<1.3	µg/kgdrywt	1.3	1.0	SW8020	06/03/97	LB	
Ethylbenzene	<1.3	µg/kgdrywt	1.3	1.0	SW8020	06/03/97	LB	
Xylenes	<2.	µg/kgdrywt	1.3	1.5	SW8020	06/03/97	LB	
Methyltertbutyl ether	<0.7	µg/kgdrywt	1.3	0.50	SW8020	06/03/97	LB	
a,a,a-Trifluorotoluene (%)	108.	%	1.3		SW8020	06/03/97	LB	
TPH								3
TPH	<6.5	mg/kgdrywt	1.3	5.0	Mod.8100	06/04/97	RH	
o-Terphenyl	77.	%	1.3		Mod.8100	06/04/97	RH	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of GRO in the method blank was 4.2.

(2) This sample does not resemble the fingerprint of gasoline.

(3) Sample Preparation on 05/27/97 by KRT using SW3550

06/09/97
 LJO/jcbkp(dw)/rh



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-4
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-105 TP-5	Solid	R.FORTIN		05/21/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	75.	wt %	1.0	0.10	CLP SCW 788	05/27/97 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 05/23/97 by JF

06/09/97

LJO/ejnejn



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-4
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
TP-105- TP-6	Solid	R.FORTIN	05/21/97	05/22/97

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Gasoline Range Organics								1,2
Gasoline Range Organics	B5.7	mg/kgdrywt	1.3	2.5	8015M-GRO	06/04/97	DG	
4-Bromofluorobenzene	81.	%	1.3		8015M-GRO	06/04/97	DG	
a,a,a-Trifluorotoluene (%)	73.	%	1.3		8015M-GRO	06/04/97	DG	
Purgeable Aromatics+MIBE								
Benzene	<0.7	µg/kgdrywt	1.3	0.50	SW8020	06/03/97	LB	
Toluene	<1.3	µg/kgdrywt	1.3	1.0	SW8020	06/03/97	LB	
Ethylbenzene	<1.3	µg/kgdrywt	1.3	1.0	SW8020	06/03/97	LB	
Xylenes	<2.	µg/kgdrywt	1.3	1.5	SW8020	06/03/97	LB	
Methylterbutyl ether	<0.7	µg/kgdrywt	1.3	0.50	SW8020	06/03/97	LB	
a,a,a-Trifluorotoluene (%)	113.	%	1.3		SW8020	06/03/97	LB	
TPH								3
TPH	<6.5	mg/kgdrywt	1.3	5.0	Mod.8100	06/04/97	RH	
o-Terphenyl	81.	%	1.3		Mod.8100	06/04/97	RH	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of GRO in the method blank was 4.2.
 - (2) This sample does not resemble the fingerprint of gasoline.
 - (3) Sample Preparation on 05/27/97 by KRT using SW3550

06/09/97

LJO/jcbkp(dw)/rh



CLIENT: RICH FORTIN
JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Lab Number : WN-1296-5
Report Date: 06/09/97
PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-166 TP-6	Solid	R.FORTIN		05/21/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	80.	wt %	1.0	0.10	CLP SOW 788	05/27/97 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/23/97 by JF

06/09/97

LJO/ejnejn



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-5
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

Page 12 of 15

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
TP-106 TP-6	Solid		R.FORTIN		05/21/97	05/22/97	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Gasoline Range Organics							1,2
Gasoline Range Organics	B3.6	mg/kgdrywt	1.3	2.5	8015M-GRO	06/04/97 DG	
4-Bromofluorobenzene	80.	%	1.3		8015M-GRO	06/04/97 DG	
a,a,a-Trifluorotoluene (%)	69.	%	1.3		8015M-GRO	06/04/97 DG	
Purgeable Aromatics+MIIBE							
Benzene	<0.6	µg/kgdrywt	1.2	0.50	SW8020	06/03/97 LB	
Toluene	<1.2	µg/kgdrywt	1.2	1.0	SW8020	06/03/97 LB	
Ethylbenzene	<1.2	µg/kgdrywt	1.2	1.0	SW8020	06/03/97 LB	
Xylenes	<1.8	µg/kgdrywt	1.2	1.5	SW8020	06/03/97 LB	
Methyltertbutyl ether	<0.6	µg/kgdrywt	1.2	0.50	SW8020	06/03/97 LB	
a,a,a-Trifluorotoluene (%)	102.	%	1.2		SW8020	06/03/97 LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

- (1) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of GRO in the method blank was 4.2.
- (2) This sample does not resemble the fingerprint of gasoline.

06/09/97

LJO/jcbkp(dw)/rh



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-5
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
TP-106 TP-6	Solid	R.FORTIN	05/21/97	05/22/97

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TPH								1,2
TPH	6.1	mg/kgdrywt	1.2	5.0	Mod.8100	06/04/97	RH	
o-Terphenyl	66.	%	1.2		Mod.8100	06/04/97	RH	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 05/27/97 by KRT using SW3550
 (2) Chromatogram does not resemble a typical fuel oil pattern.

06/09/97

LJO/jcbkp(dw)/rh



CLIENT: RICH FORTIN
 JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Lab Number : WN-1296-6
 Report Date: 06/09/97
 PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
TP-107 TP-7	Solid	R.FORTIN		05/22/97	05/22/97		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	80.	wt %	1.0	0.10	CLP SCW 788	05/27/97 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 05/23/97 by JF

06/09/97

LJO/ejnejn

CLIENT: RICH FORTIN
JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Lab Number : WN-1296-6
Report Date: 06/09/97
PO No. : 701

WIC#: LYNDONVILLE VT

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
TP-107 TP-7	Solid	R.FORTIN		05/22/97	05/22/97			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Gasoline Range Organics								
Gasoline Range Organics	<3.3	mg/kgdrywt	1.3	2.5	8015M-GRO	06/04/97	DG	
4-Bromofluorobenzene	84.	%	1.3		8015M-GRO	06/04/97	DG	
a,a,a-Trifluorotoluene (%)	66.	%	1.3		8015M-GRO	06/04/97	DG	
Purgeable Aromatics+MIBE								
Benzene	<0.6	µg/kgdrywt	1.2	0.50	SW8020	06/03/97	LB	
Toluene	<1.2	µg/kgdrywt	1.2	1.0	SW8020	06/03/97	LB	
Ethylbenzene	<1.2	µg/kgdrywt	1.2	1.0	SW8020	06/03/97	LB	
Xylenes	<1.8	µg/kgdrywt	1.2	1.5	SW8020	06/03/97	LB	
Methyltertbutyl ether	<0.6	µg/kgdrywt	1.2	0.50	SW8020	06/03/97	LB	
a,a,a-Trifluorotoluene (%)	114.	%	1.2		SW8020	06/03/97	LB	
TPH								
TPH	<6.	mg/kgdrywt	1.2	5.0	Mod.8100	06/04/97	RH	
o-Terphenyl	61.	%	1.2		Mod.8100	06/04/97	RH	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/27/97 by KRT using SW3550

06/09/97

LJO/jcbkp(dw)/rh