Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

LaRussell's Cleaners Site
Town of Kent
Putnam County
Site Number 3-40-020

September 1998

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

LaRussell's Cleaners Inactive Hazardous Waste Site
Town of Kent, Putnam County, New York
Site No. 3-40-020

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the LaRussell's Cleaners Inactive Hazardous Waste Disposal Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the LaRussell's Cleaners Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the LaRussell's Cleaners Site and the criteria identified for evaluation of alternatives the NYSDEC has selected Alternative 2. The components of the remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Pumping of contaminated groundwater from an onsite supply well for an estimated 10 years and treatment of water through the use of a granular activated carbon treatment system.

3. Operation and maintenance of three existing point of entry carbon treatment systems at private water supplies impacted by site related contamination.

4. Long-term monitoring of groundwater using monitoring wells and private wells in the vicinity of the contaminant plume

5. Groundwater use restrictions in the area impacted by the contaminant plume.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

9/22/98
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

TABLE OF CONTENTS

FIGURES

APPENDICES

RECORD OF DECISION

LaRussell's Cleaners Inactive Hazardous Waste Site
Town of Kent, Putnam County, New York
Site No. 3-40-020

SECTION 1 SITE LOCATION AND DESCRIPTION

The LaRussell Site is an active dry cleaning facility located on Route 52 in the Town of Kent, Putnam County, New York (Figures 1 and 2). This facility is located on the western portion of a 1½ acre parcel consisting of pavement surrounding a two story building with a residential apartment on the 2nd floor and dry-cleaning operations occupying the first (Town of Kent Tax Map 106, Block 5, Lot 12). The eastern portion of this parcel consists of steep, wooded and rocky terrain which grades upward to the east. The surrounding properties are primarily residential.

The LaRussell Site lies to the east of Route 52 near the crest of a small saddle shaped valley which forms a surface water drainage divide between Lake Carmel to the north and Michael Brook to the south. Surface water drainage at the Site is predominately to the south. In the area near the Site, groundwater is the only source of drinking water. The Site includes a drinking water well and sanitary system consisting of a septic tank, two leaching pools and a leach field.

SECTION 2 SITE HISTORY

2.1 Operational/Disposal History

The LaRussell building was purchased in 1971 and has operated as a dry cleaning establishment since then. Prior to 1971, the building reportedly was used as a residential home and an electrical shop. In 1981, the Putnam County Health Department (PCHD) sampled the LaRussell drinking water well as part of an assessment of dry cleaning businesses. Data collected from LaRussell and other private wells on nearby properties showed groundwater to be contaminated with tetrachloroethene above NYS drinking water standards. Tetrachloroethene, also known as perchloroethene (PCE) , is a solvent that is commonly used in dry cleaning.

2.2 Remedial History

A response action or interim remedial measure (IRM) was conducted at this site to address contamination of private drinking water supplies. Based on a private well survey conducted in 1992 by the Putnam County Health Department (PCHD) of the LaRussell well and other private wells adjacent to the Cleaners, three granulated activated carbon (GAC) systems were installed in 1993 on the three private wells impacted by

PCE contamination. These filters continue to be maintained by NYSDEC to treat unacceptable levels of contamination.

SECTION 3 CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health and/or the environment, NYSDEC's engineering consultant has recently completed a Remedial Investigation/ Feasibility Study (RI/FS).

3.1 Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the Site. The RI was conducted between December 1996 and April 1997. A draft RI was issued in October 1997 and a final RI and draft FS was issued in January 1998.

The RI included the following activities:

- Site facilities inspection;
- aerial photography and topographic mapping;
- onsite surface soil sampling;
- onsite soil gas survey;
- sanitary system sampling;
- subsurface soil sampling;
- monitoring system installation and sampling;
- indoor air monitoring;
- private well sampling;
- storm water sediment sampling;
- groundwater pumping test; and
- groundwater elevation and flow data.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the LaRussell site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC TAGM 4030 soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil.

Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, SCGs are given for each media.

3.1.1 Nature and Extent of Contamination

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the Site require remediation. These are

summarized below. More complete information can be found in the RI Report.

3.1.1.1 Soil Gas Survey

A soil gas survey was conducted on-site in order to evaluate the concentrations of volatile organic gases in the soil. High concentrations are evaluated as possible sources of contamination.

A total of 51 soil gas samples from 51 borings penetrating the parking lot and adjacent areas were screened for VOC's. VOC's were identified in 47 of the 51 soil gas samples screened on-site. The concentrations of PCE ranged from non detectable to 36,990 parts per billion (ppb). The concentrations of trichloroethene (TCE) ranged from non detectable to 243 ppb and concentrations of 1,2-dichloroethene (DCE) ranged from non-detect to 172 ppb.

The results of portable GC analyses for the soil gas samples indicate elevated levels of VOC's extending outward from the northern and northwest ends of the building to a distance of approximately 15 feet, coincident with the location of the contaminated wastewater system.

3.1.1.2 Sanitary System

The existing septic system is located beneath the parking lot north of the LaRussell's Cleaners building where several manholes are present. The manholes provide access to two septic tanks, a distribution box and two dissipater tanks. Two sediment samples were collected from this system.

The first sediment sample (SD-1) was collected from the septic tank at manhole MH-1 (Figure 3). This tank receives liquid waste directly from the washing machines, sinks and toilets in the building. A second sediment sample (SD-2) was collected from the dissipater through manhole MH-4. The dissipater receives water and sediment pumped from the septic tank that then percolates into the soil. This portion of the system is reported to have been installed in 1995 and has very little sediment accumulation.

Laboratory analysis of Sample SD-1 showed DCE at a concentration of 198,000 ppb. No VOCs were detected above the detection limit for sediment sample SD-2. The soil cleanup objective for DCE is 250 ppb.

3.1.1.3 Surface Soils

Two surface soil samples were collected from a small unpaved area beneath the fire escape staircase located on the east side of the building near the service entrance (Figure 3). There were no VOCs detected at concentrations above SCGs.

3.1.1.4 Subsurface Soils

A total of 24 subsurface soil samples were collected from borings installed on the Site through the parking lot and floor of the LaRussell's Cleaners building (Figure 3).

Only one of the 24 soil samples collected exhibited contaminant concentrations above NYSDEC Soil Cleanup Objectives. This sample, SB-5, was obtained from a portion of the parking lot approximately 10 feet west of the front of the building. PCE was detected at a depth of 2 to 4 feet below ground surface at a concentration of 3,100 ppb. The soil cleanup objective for PCE is 1,400 ppb.

3.1.1.5 Groundwater

Monitoring wells were installed at the LaRussell's Cleaners Site to provide subsurface geologic data and to allow monitoring of groundwater elevations and quality. This information was necessary to evaluate the direction of groundwater flow and the extent of the groundwater contaminant plume. A total of 16 monitoring wells were installed for this investigation (Figure 4).

Groundwater samples were obtained and analyzed using two different methods of sample collection. The first method involved use of direct push sampling technology resulting in a discreet groundwater sample from a temporary sampling point. This method was employed in an attempt to locate locally high concentrations of groundwater contaminants that may indicate a source of contamination on the Site. The second method involved two rounds of groundwater sampling from monitoring wells installed on and near the Site. Round one of groundwater sampling occurred in November 1996 and round two was conducted in March 1997. Groundwater concentrations are presented in parts per billion (ppb). The NYS groundwater standard for PCE (and associated breakdown products) is 5 ppb.

3.1.1.5.1 Groundwater Sampling and Results

Direct Push Method

A total of five groundwater samples were collected from five soil borings on the Site. Three compounds were detected in four of the samples and included PCE, TCE and DCE. PCE exceeded groundwater standards in samples SB-2, SB-3, SB-4 and SB-5, and ranged in concentration from 60 to 160 ppb. TCE exceeded groundwater standards in two of the five samples including SB-4 and SB-5. TCE concentrations in these samples range from 10 to 13 ppb. DCE was identified at concentrations above groundwater standards in four of the five direct push samples. Concentrations of DCE range from 10 to 60 ppb in samples SB-2, SB-3, SB-4 and SB-5.

Monitoring Well Method

The first round of groundwater sampling from monitoring wells included a total of 10 samples from six well clusters. These wells include MW-1D and 1S, MW-2D and 2S, MW-3D and 3S, MW-4D and 4S, MW-5 and MW-6. The groundwater samples obtained in round 1 were analyzed for VOC's, as well as iron and manganese. Iron and manganese results will be used to design a groundwater remediation system, if necessary.

Four volatile organic compounds were detected at concentrations above NYSDEC groundwater standards in five wells. The four compounds detected were PCE, TCE, DCE and vinyl chloride. PCE was detected above groundwater standards in MW-1S (12 ppb), MW-3S (300 ppb), MW-3D (12 ppb) and MW-6 (500

ppb). TCE was detected above standards in MW-3S (52 ppb) and MW-6 (44 ppb). DCE was detected above standards in MW-1S (97 ppb), MW-1D (86 ppb), MW-3S (360 ppb), MW-3D (45 ppb) and MW-6 (97 ppb) and vinyl chloride was detected above standards in MW-1S and MW-1D at a concentration of 6 ppb.

Concentrations of iron and manganese exceeded groundwater standards in most wells. The relatively high concentrations are likely attributable to turbid samples containing soil particles that are typically not transported in groundwater, but cause metals concentrations to be high.

The second round of sampling included three monitoring well clusters installed on the home center property, located south-southwest of the Site. Of the new wells, only MW-8D exhibited contaminants in concentrations above groundwater standards. These contaminants are PCE and DCE at concentrations of 61ppb and 11 ppb respectively. Figure 5 shows the results of the groundwater sampling.

As with the first round of samples, metals results from the second round showed high metals levels, likely attributable to the high turbidity of the samples.

3.1.1.5.2 General Geology and Hydrology

LaRussell's Cleaners is situated on Route 52 along the crest of a small saddle shaped valley which forms a surface water drainage divide. Surface water near the Site flows to the north toward Lake Carmel and to the south toward Palmer Lake. In the subsurface, groundwater flow favors a southerly flow although there is a slight northerly flow component as evidenced by the low levels of site-related contaminants from groundwater samples collected to the north. Figure 6 and Figure 7 illustrate the elevation contours of the surficial and bedrock aquifer systems, respectively. The surficial aquifer consists of a glacial till composed of fine sand and silt with some gravel. In the vicinity of the Site, this aquifer ranges in thickness from 0 feet along the east side of the LaRussell parking lot where outcrop surfaces to 40 feet west of the Site, toward the center of the valley. Bedrock beneath the Site consists of a granitic gneiss, a sharply folded and fractured rock which is responsible for the regional north-south trending hill and valley topography. Regional topography and bedrock fractures largely control groundwater flow in the Site area.

The local groundwater flow, which is dominantly to the south, is reflected in the groundwater contaminant plume map (Figure 8) which shows an elongated north-south trending plume. Overall, the plume is approximately 600 feet in length with the highest levels of contamination at, and just south of, LaRussell's.

3.1.1.6 Storm Water System

Observations of surface water flow and septic system overflow at the LaRussell's Cleaners Site during the October field work indicated that contaminated waste water may have flowed through storm drainage systems along the east side of Route 52, into a catch basin near Adams Lane, under Route 52, through the home center property and into a small stream west of the home center. Based on the possibility of contaminant flow along this route, sediment samples were obtained. Sediment samples were collected from three locations including the catch basin near Adams Lane, a catch basin at the home center and the channel of the small stream west of the home center. Sediment sample locations are shown on Figure 5. The analytical results of these samples showed no VOCs at concentrations above SCGs.

3.1.1.7 Private Water Supply Wells

Private wells are the primary source of potable water in Lake Carmel in the vicinity of the LaRussell's Cleaners Site. Since the Site is located on the edge of a residential area served by private wells, private water wells were sampled during the remedial investigation. NYSDEC, working in conjunction with the New York State Department of Health (NYSDOH), sampled a total of 15 wells. No detectable concentrations of VOC's were found in any of these wells. The locations of the homes at which the samples were collected are presented in Figure 5.

Since 1981, water supply wells at the LaRussell's Cleaners and adjacent telecommunication business were sampled three to four times annually. PCE concentrations at LaRussell's have ranged from non detect to 1,000 parts per billion (ppb) over this period, with an average concentration of 281 ppb. During the same period, the telecommunications business water supply well has shown concentrations of PCE as high as 6,000 ppb with an average concentration of 2,027 ppb.

These supply wells are equipped with carbon filtration water treatment systems that were installed in 1992 and have been maintained by NYSDEC.

3.1.1.8 Aquifer Testing

A 10 hour pumping test, pumping at a rate of 3 gallons per minute, was performed on April 16 and 17, 1997, to evaluate the effects of sustained pumping on a bedrock well located on-site and to determine the applicability of groundwater extraction and treatment as a potential remedial technology for the Site.

The abandoned LaRussell's Cleaners well (referred to as the "old well") was used as the pumping well. Water levels were recorded in 12 wells during the pumping test using several data loggers.

Results of the pump test indicate that pumping the bedrock aquifer at a rate of 2 to 3 gallons per minute would effectively recover the groundwater contaminant plume in the bedrock. The pump test influenced groundwater levels at a radius of not less than 160 feet, the approximate area of the contaminant plume. Pumping in the bedrock had little influence on overburden groundwater. Given that only low levels of contamination were identified in this aquifer, this lack of connection between aquifers allows the bedrock to be addressed more effectively.

3.2 Interim Remedial Measures

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

A response action or IRM was conducted at this site to address contamination of private drinking water supplies. In January 1993, based on a private well survey conducted by the PCHD in 1992 of the LaRussell well and other private wells adjacent to the Cleaners, three granulated activated carbon (GAC) systems were installed on the three private wells impacted by PCE contamination. These filters continue to be maintained by NYSDEC to treat unacceptable levels of contamination.

The onsite wastewater treatment system will be remediated as an IRM shortly after the ROD is issued. Contaminated sediment was recently resampled for chlorinated solvents. Contaminant levels in the sanitary system still exceed soil cleanup guidelines. As such, the system will be pumped out and the contents disposed of offsite at a permitted facility.

3.3 Summary of Human Exposure Pathways

This section describes the types of human exposures that may present added health risks to persons at or around the Site. A more detailed discussion of the health risks can be found in the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Human exposure pathways known to presently exist or that have historically existed at the Site include:

- Direct contact with (dermal absorption), ingestion of and inhalation associated with contaminated groundwater through residential or commercial use.

This potential human exposure pathway at the LaRussell site includes unrestricted use of the overburden and bedrock aquifers downgradient and in the pathway of the contaminant plume where several private wells exist. This pathway will be addressed through the remedial actions to be implemented at the Site.

3.4 Summary of Environmental Exposure Pathways

No pathways for environmental exposure have been identified for this site.

SECTION 4 ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potential Responsible Party (PRP) for the Site, documented to date, include:

Mr. Eugene LaRussell, Owner

The PRP failed to implement the RI/FS at the Site when requested by the NYSDEC. After the remedy is selected, the PRP will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRP, the NYSDEC would evaluate the Site for further action under the State Superfund. The PRP is subject to legal actions by the State for recovery of all response costs the State has incurred.

SECTION 5 SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the Site through the proper application of scientific and engineering principles. The goals selected for this site are:

- Reduce, control, or eliminate contaminated media to the extent practicable.
- Eliminate the potential for human exposure to contaminated groundwater.
- Provide for attainment of SCGs for groundwater and wastewater sediment to the limits of the affected area, to the extent practicable.

SECTION 6 SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the LaRussell's Cleaners site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled "Remedial Investigation/ Feasibility Study Report, LaRussell's Cleaners Site" dated April 1998.

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy. All of the alternatives assume a long-term groundwater monitoring program of up to 30 years.

6.1 Description of Remedial Alternatives

The potential remedies are intended to achieve the established remedial goals for the contaminated media at the Site including VOC-contaminated groundwater.

Alternative 1 No Action

Present Worth:	$ 275,000
Capital Cost:	$ 0
Annual O&M:	$ 275,000
Time to Implement:	0 years

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the Site to remain in an unremediated state. This alternative would leave the Site in its present condition and would not provide any additional protection to human health or the environment.

Under the no action alternative, no measures would be taken to remove or contain the groundwater contamination. However, this alternative presumes that long-term monitoring of groundwater would be implemented including the use of existing monitoring wells and private supply wells in the vicinity of the groundwater plume. The no action alternative would also include the continued monitoring and maintenance

of existing carbon treatment units which were installed by NYSDEC to treat contaminated drinking water. Access and use restrictions would also be maintained.

Alternative 2 Treatment of Individual Water Supplies at Point of Entry and Groundwater Extraction and Treatment

Present Worth:	$ 289,000
Capital Cost:	$ 37,000
Total Present Worth O&M:	$ 252,000
Time to Implement	1 year

This alternative involves the continued operation and maintenance of existing carbon filtration systems previously installed in response to contaminated groundwater originating from the Site. The carbon systems at LaRussell's Cleaners, the telecommunications business and the apartment north of the Site would continue to be maintained until such time as groundwater remediation has resulted in contaminant concentrations of dry cleaning related VOCs including PCE, TCE and DCE, to be below drinking water standards.

Alternative 2 also includes the operation of a groundwater extraction and treatment system. The existing onsite water supply well would be utilized. The extraction well would be operated continuously to maintain a constant drawdown and flow gradient toward the Site. Contaminated groundwater would be treated using carbon filtration. An existing carbon treatment system, currently in use at LaRussell's to treat contaminated groundwater, would be upgraded to handle the additional contaminant load required for a 24 hour operation. The treatment system would be located on-site (Figure 9). Following treatment to groundwater standards, water would be discharged to the nearby storm water catch basin.

Monitoring of groundwater quality and treatment system effluent would also be conducted for this alternative. Six existing monitoring wells would be sampled and analyzed quarterly to yearly during remediation to monitor the effectiveness of remediation on the contaminant plume.

The groundwater extraction and treatment system would be operated until groundwater standards are met or until such time as the continued reduction of contaminants is determined negligible, whichever occurs first. The anticipated duration of extraction and treatment is ten years. Post remediation monitoring is expected to occur for a period of five years following system shutdown. It is anticipated that after this five year monitoring period, all monitoring activities would be complete for this site.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs) Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. The relevant SCG's for this site are drinking water standards and groundwater standards.

The no action alternative is unacceptable as it does not address the remedial action objectives for this Site. Specifically, contamination in groundwater would not be removed or contained, allowing the potential for additional impacts to downgradient commercial or private water supplies. However, this alternative presumes that long-term monitoring of groundwater would be implemented. Use of groundwater in the area of the plume would also be restricted.

Alternative 2 would remove contamination in the groundwater to the extent practicable through the use of a well proven technology: extraction and treatment of contaminated groundwater.

Both alternatives would include long-term monitoring of the groundwater contaminant plume for up to 30 years. Alternative 2 is anticipated to require only 15 years of groundwater monitoring because the plume is expected to be remediated within this time frame. Use of groundwater in the area of the plume would be restricted so long as contaminant levels exceed applicable groundwater standards.

2. **Protection of Human Health and the Environment** This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

The no action alternative would not be protective of the environment and human health as the potential to be exposed to contamination would remain. This alternative would not provide for removal or control of contaminated groundwater, allowing the potential for migration of the contaminant plume further downgradient where numerous private wells exist. However, this alternative presumes that long-term monitoring of groundwater would be implemented. Use of groundwater in the area of the plume would also be restricted.

In addition to groundwater extraction and treatment, a conventional technology which is well proven, Alternative 2 includes point of entry treatment of individual water supplies which have been affected or would potentially be affected by contaminated groundwater, which would eliminate potential impacts to human health.

Both alternatives would include monitoring of groundwater and restricting groundwater use in the vicinity of the plume, thus limiting the potential for human exposure to groundwater contaminants. The monitoring period is expected to be considerably less for Alternative 2 where an active groundwater remediation system would be operating.

3. **Short-term Effectiveness** The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Since there are no actions proposed for Alternative 1, there are no short-term effects associated with this alternative.

Alternative 2 includes the design and construction of a groundwater contamination recovery system. Implementation of this alternative would pose very limited short-term effects or disruptions to the community during work which would include well drilling and construction of a groundwater treatment system.

4. Long-term Effectiveness and Permanence This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

The no action alternative would not be effective in the long term. This alternative would not provide for removal or control of contaminated groundwater. However, this alternative presumes that long-term monitoring of groundwater would be implemented. Use of groundwater in the area of the plume would also be restricted.

Alternative 2 includes removal of PCE from contaminated groundwater using extraction and treatment technology. As such, this alternative would provide an adequate and effective level of protection over the long term by removing contaminants from the groundwater and eliminating or minimizing the potential for migration of the contaminant plume further downgradient where private water wells have been identified. This alternative also includes point of entry treatment of individual water supplies which have been affected or would potentially be affected.

5. Reduction of Toxicity, Mobility or Volume Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the Site.

The no action alternative would not reduce the toxicity, mobility or volume of the waste.

Alternative 2 would be effective for contaminated groundwater by removing PCE using an extraction and treatment technology along with a GAC treatment system.

6. Implementability The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc..

Both of the alternatives are implementable. The material and personnel for each alternative should be readily available at a reasonable cost in this region.

7. Cost Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision.

The no action alternative is the least costly alternative. This alternative has no capital costs associated with it and includes the cost for operation and maintenance of the three existing GAC systems currently in operation on those water supplies affected by site-related contamination. In addition, this alternative includes the cost for long-term sampling and analysis of existing monitoring wells as well as nearby private wells which could potentially by impacted by the contaminated groundwater plume.

Alternative 2 includes the cost for extraction and treatment of contaminated groundwater, resulting in this alternative being slightly more costly than the no action. The O&M costs for Alternative 2 would be incurred for a shorter time period (estimated at 15 years) due to active reduction of contamination in the groundwater

This final criterion is considered a *modifying criterion* and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan are evaluated. A " Responsiveness Summary" will be prepared that describes public comments received and how the Department will address the concerns raised. If the final remedy selected differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 7 SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 2, Treatment of Individual Water Supplies at Point of Entry and Groundwater Extraction and Treatment , as the remedy for this site.

Alternative 2 is being selected because it is the most cost effective remedial action which will address the remedial objectives for this site. Specifically, PCE will be eliminated from the groundwater to the extent practicable through the use of well proven technologies. In addition, the potential for migration of the contaminant plume further downgradient, where private water wells are currently being impacted and additional wells could potentially be impacted, will be eliminated or minimized. Alternative 2 also includes point of entry treatment of individual water supplies which have been affected or would potentially be affected by contaminated groundwater, which will eliminate potential impacts to human health.

The estimated present worth cost to implement the remedy is $289,000. The cost to construct the remedy is estimated to be $37,000 and the total long-term monitoring cost and operation and maintenance cost for the estimated 15 year remediation and post remediation period is $252,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Pumping of contaminated groundwater from an onsite supply well for an estimated 10 years and treatment of water through the use of a granular activated carbon treatment system.

3. Operation and maintenance of three existing point of entry carbon treatment systems at private water supplies impacted by site related contamination.

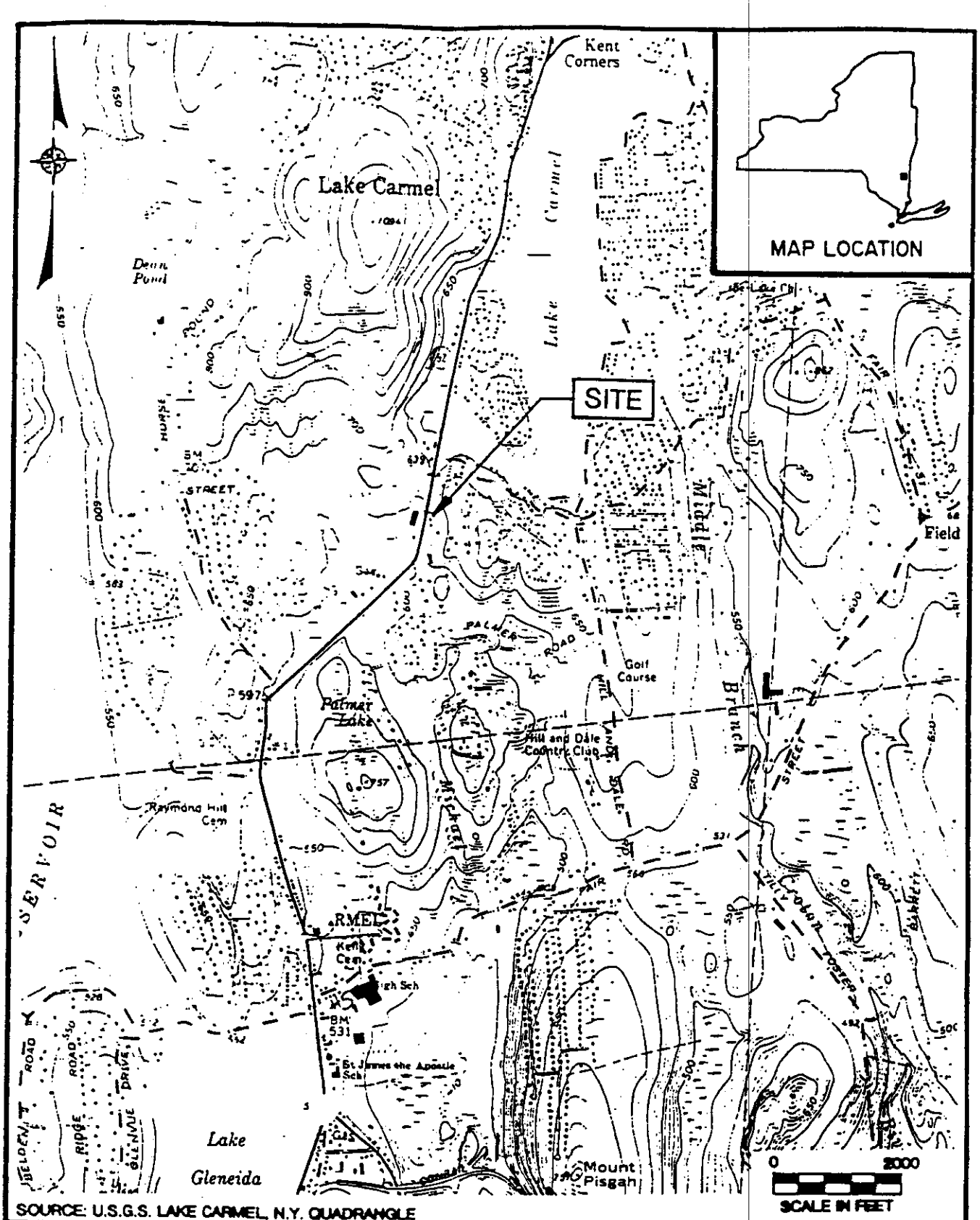
4. Long-term monitoring of groundwater using monitoring wells and private wells in the vicinity of the contaminant plume

5. Groundwater use restrictions in the area impacted by the contaminant plume.

SECTION 8 HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- A fact sheet was issued in September 1996 to summarize the Remedial Investigation/ Feasibility Study work plan.
- A fact sheet was issued and a public meeting was held on August 27, 1998 to present the Proposed Remedial Action Plan for the Site.
- In September 1998 a Responsiveness Summary was prepared and made available to the public to address the comments received during the public comment period for the PRAP, held between August 6, 1998 and September 4, 1998.



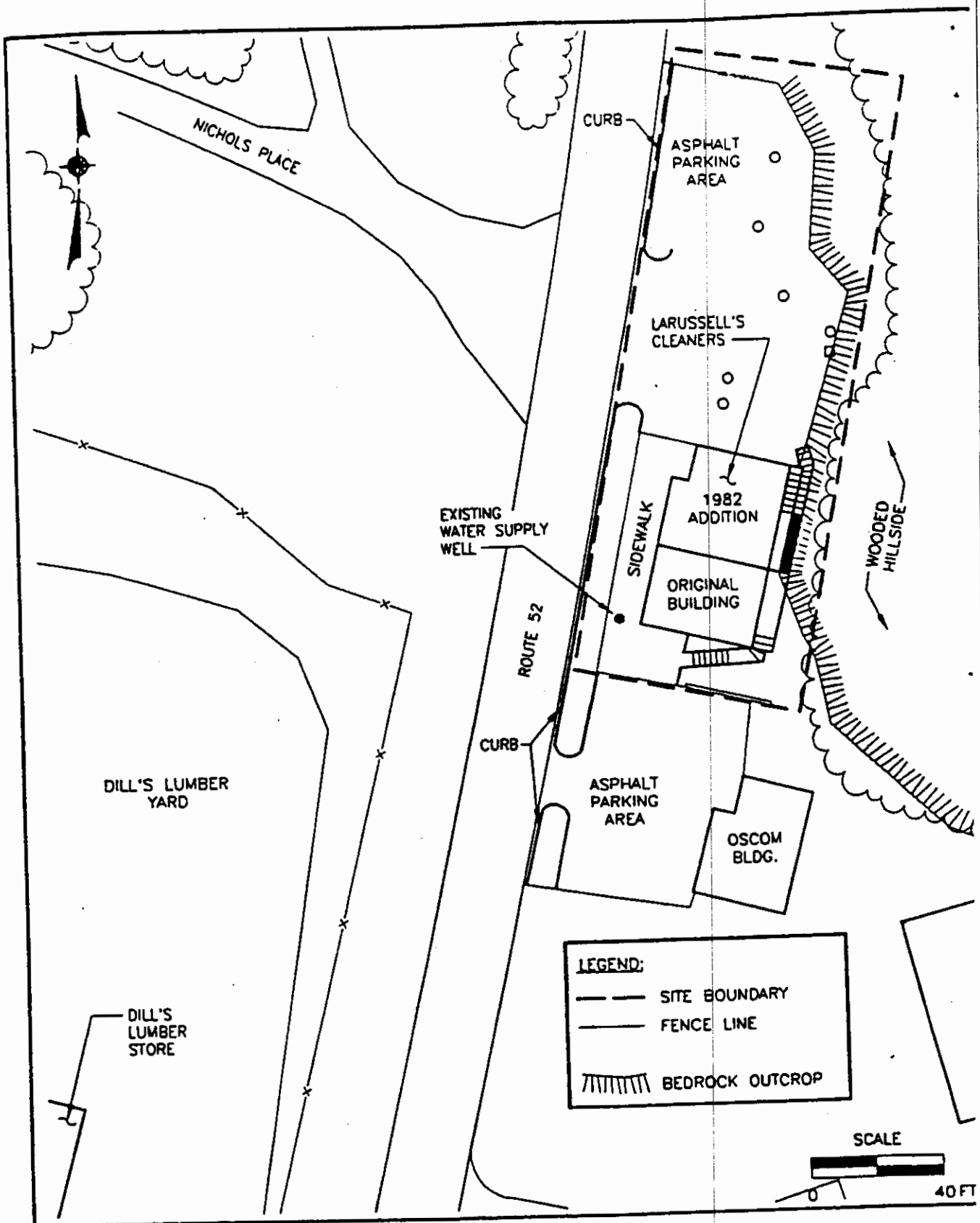
SOURCE: U.S.G.S. LAKE CARMEL, N.Y. QUADRANGLE

LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

SITE LOCATION MAP

FIGURE 1

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

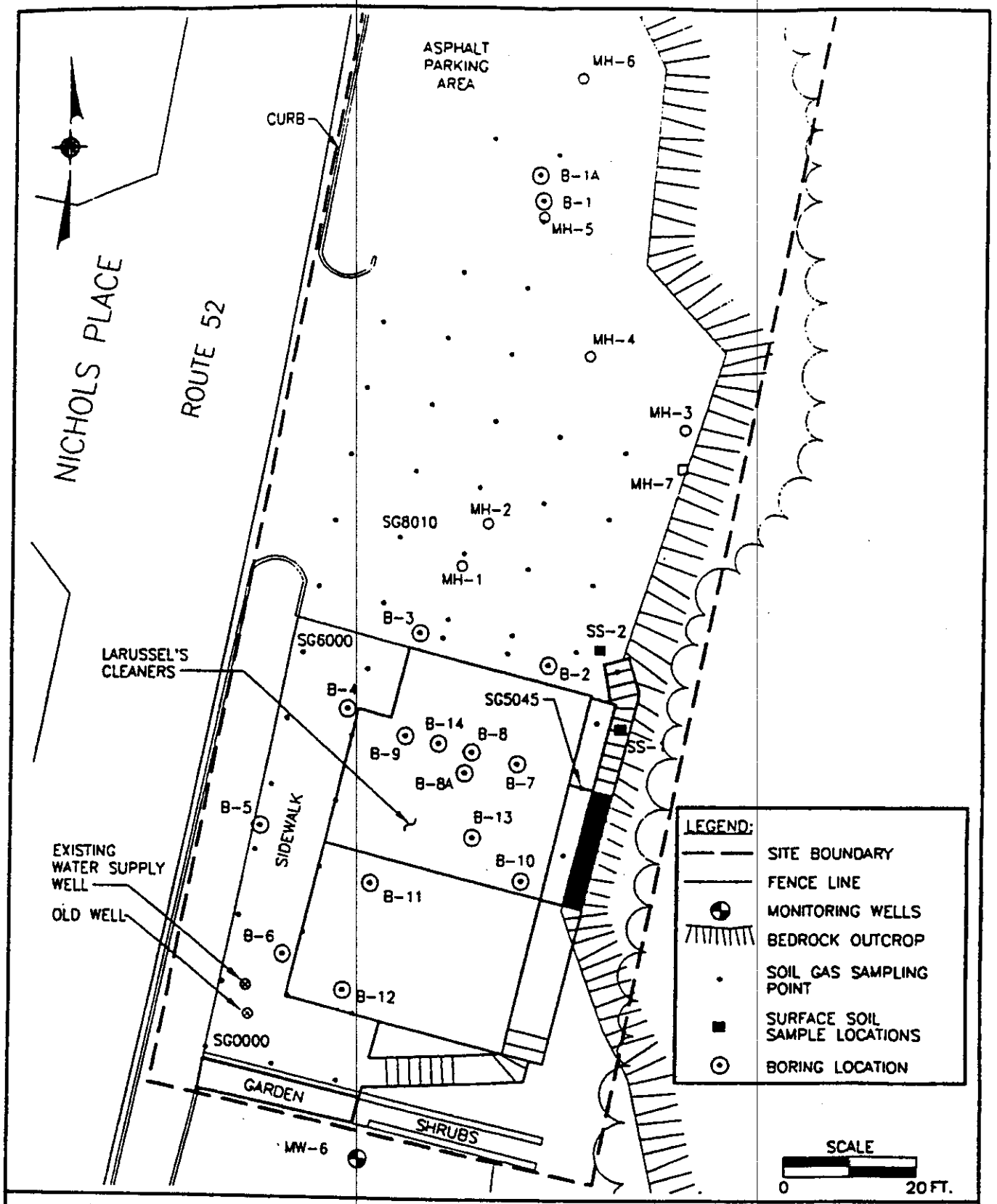


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

SITE MAP

FIGURE 2

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

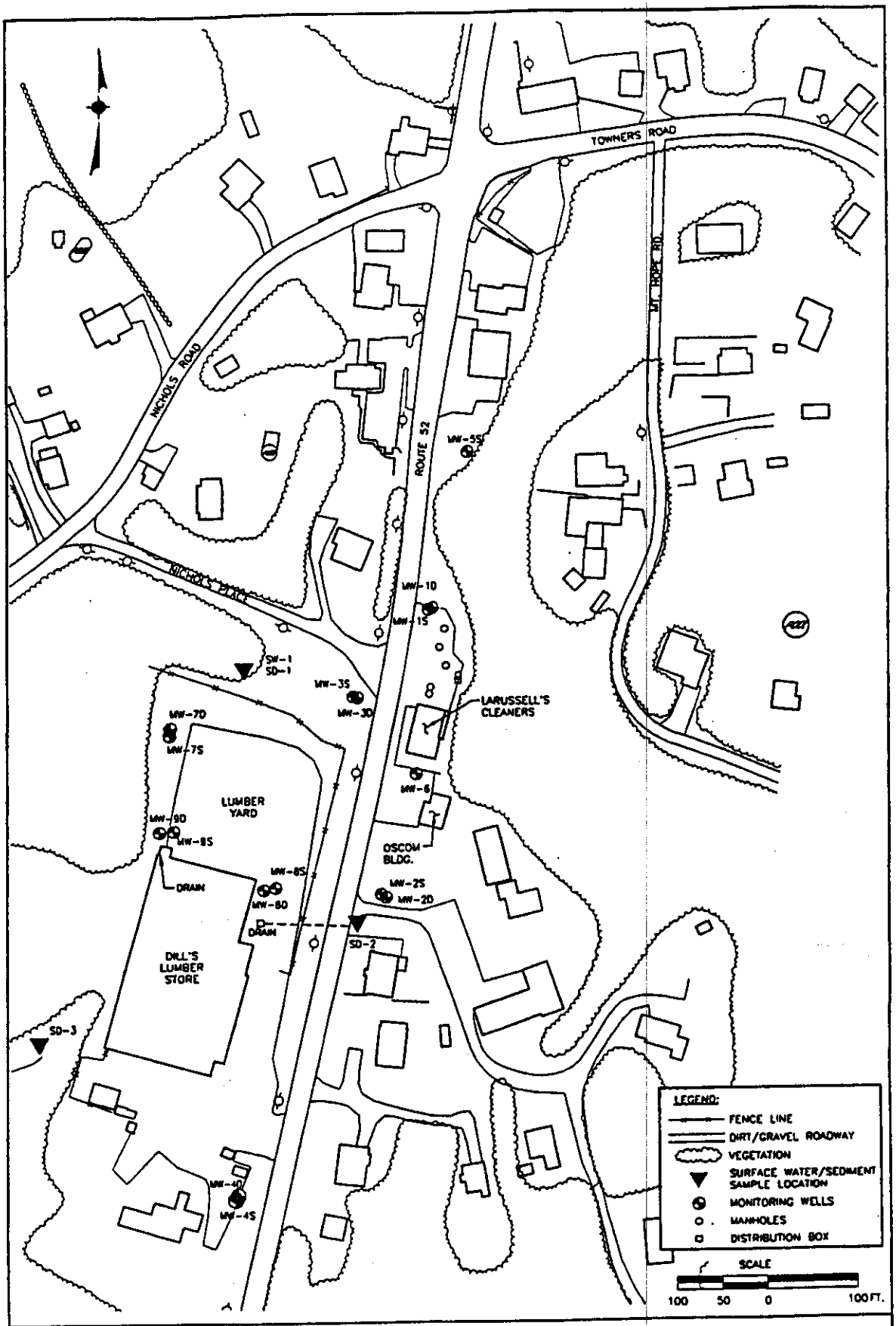


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

SOIL GAS AND SOIL BORING SAMPLING LOCATIONS

Dvirka and Bartilucci Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 3

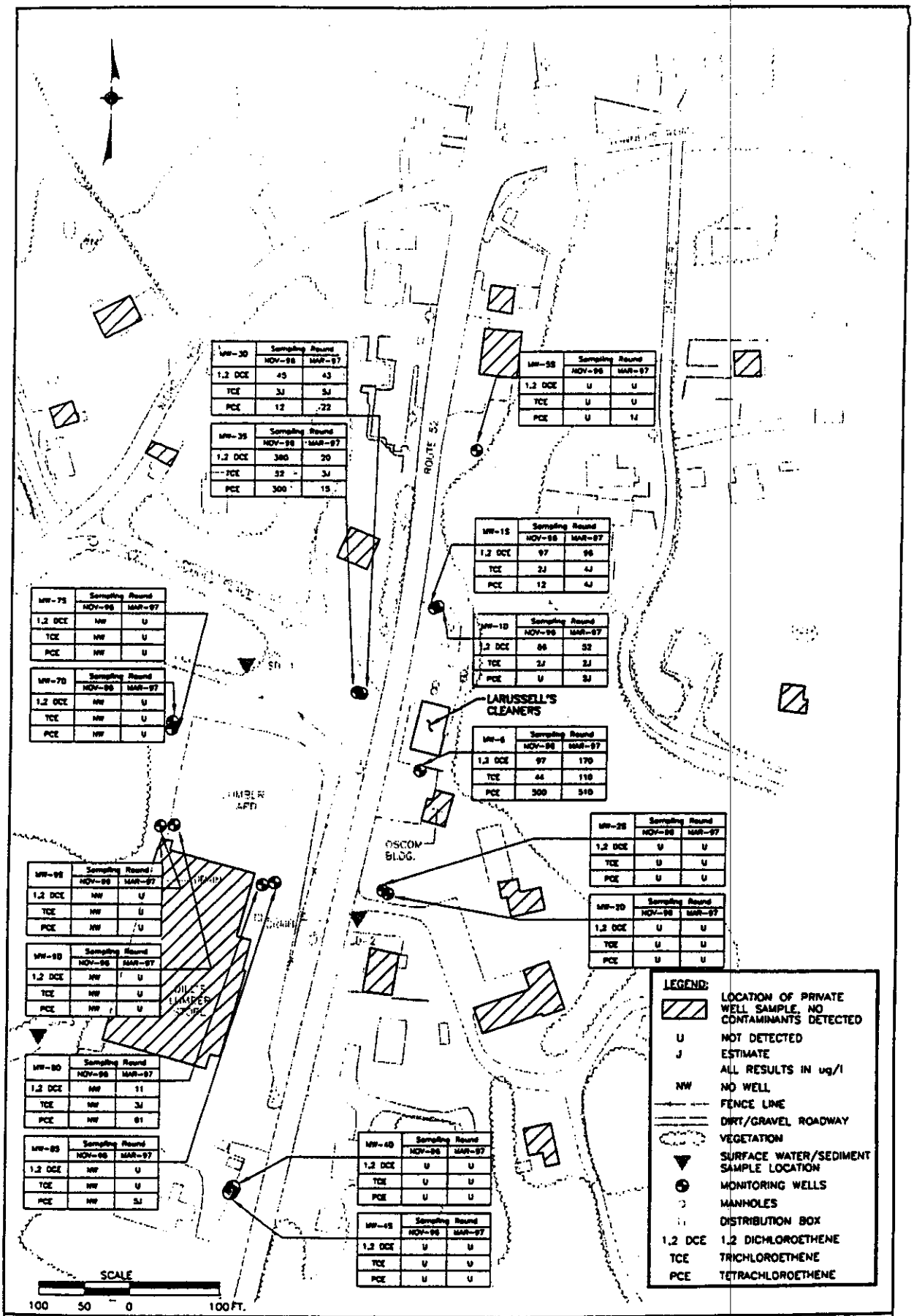


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

MONITORING WELL LOCATION MAP

FIGURE 4

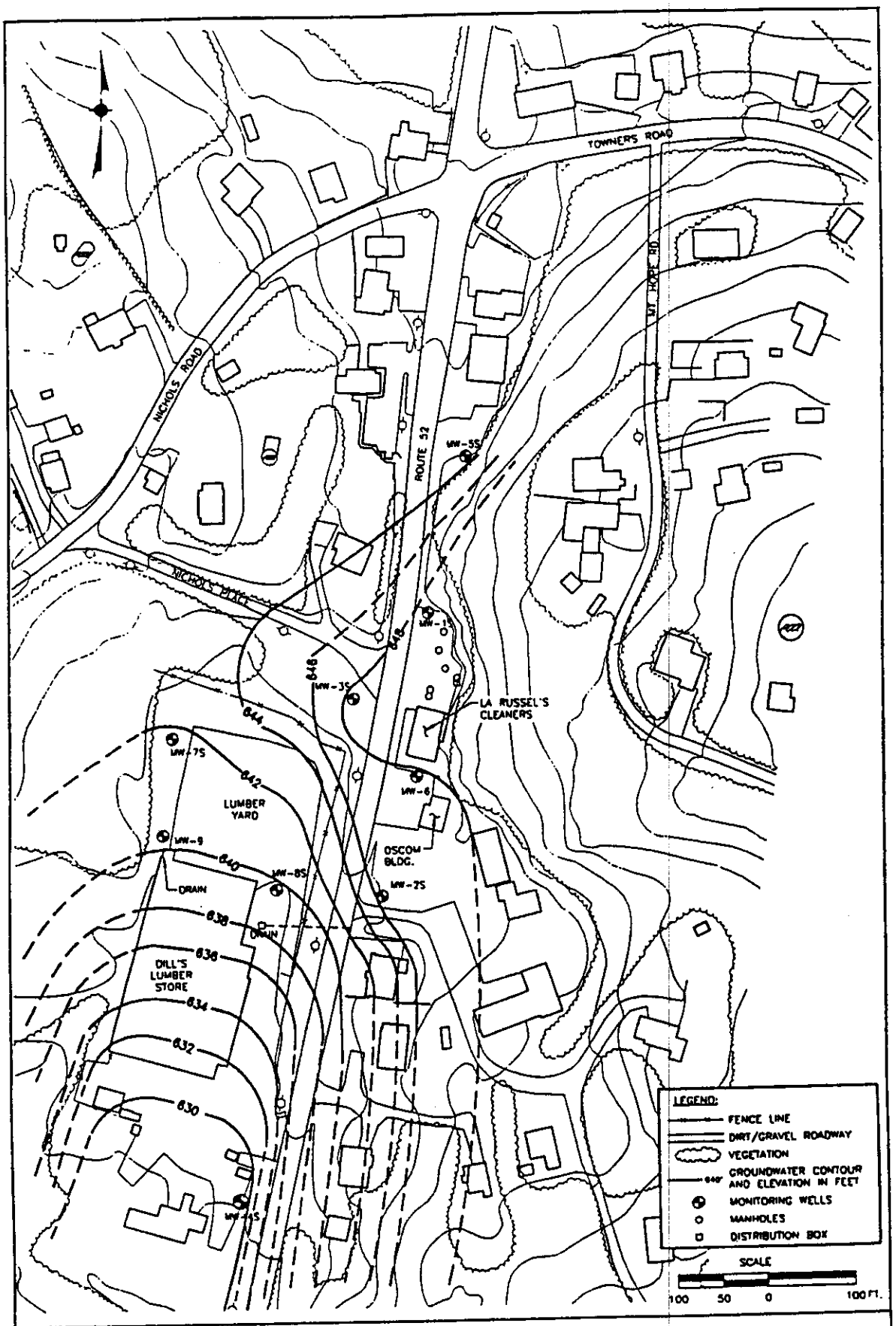


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

Dvirka and Bartilucci Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

GROUNDWATER SAMPLING RESULTS

FIGURE 5

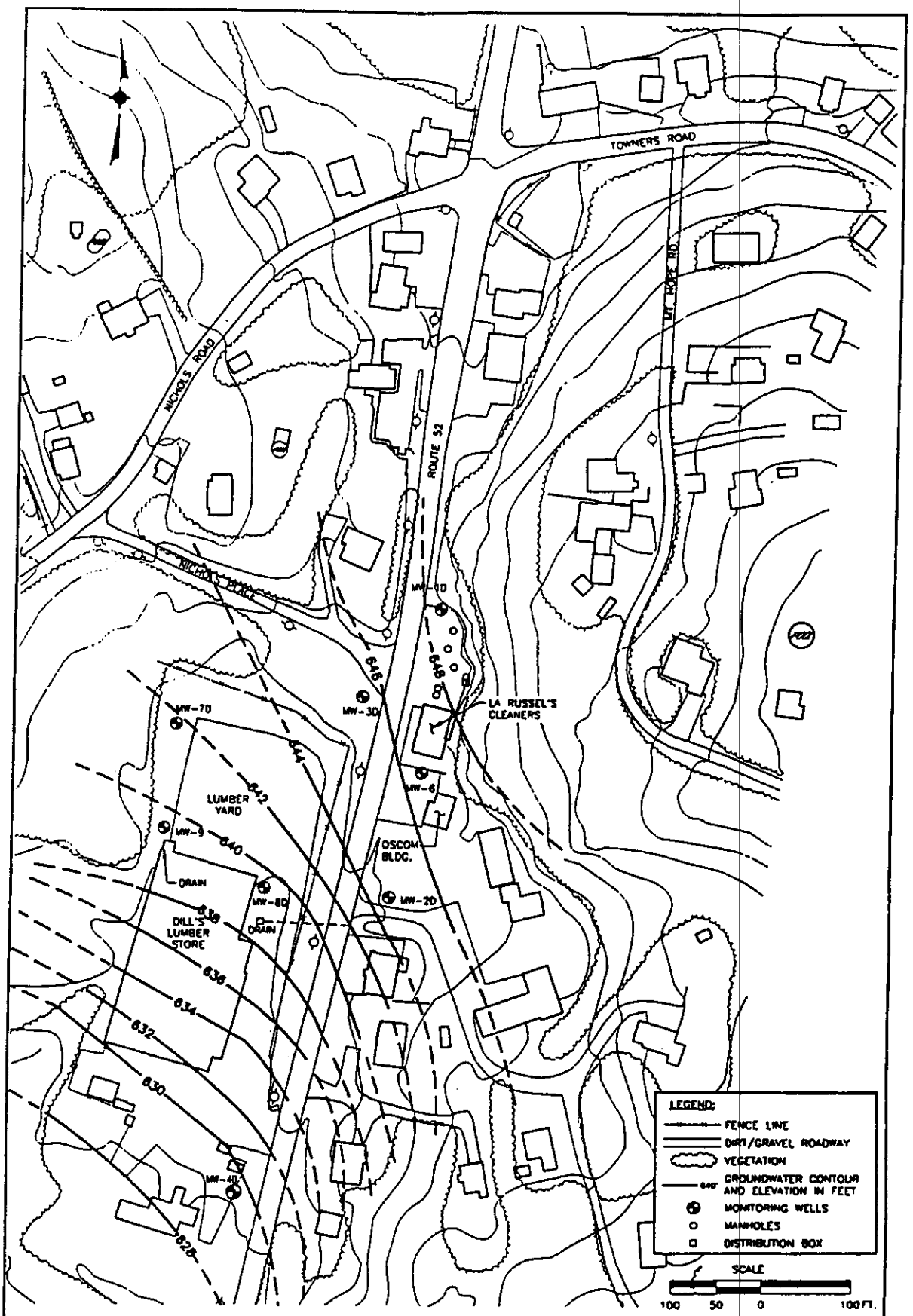


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

WATER TABLE SURFACE
MARCH 26,1997 – 7:00 A.M.

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 6

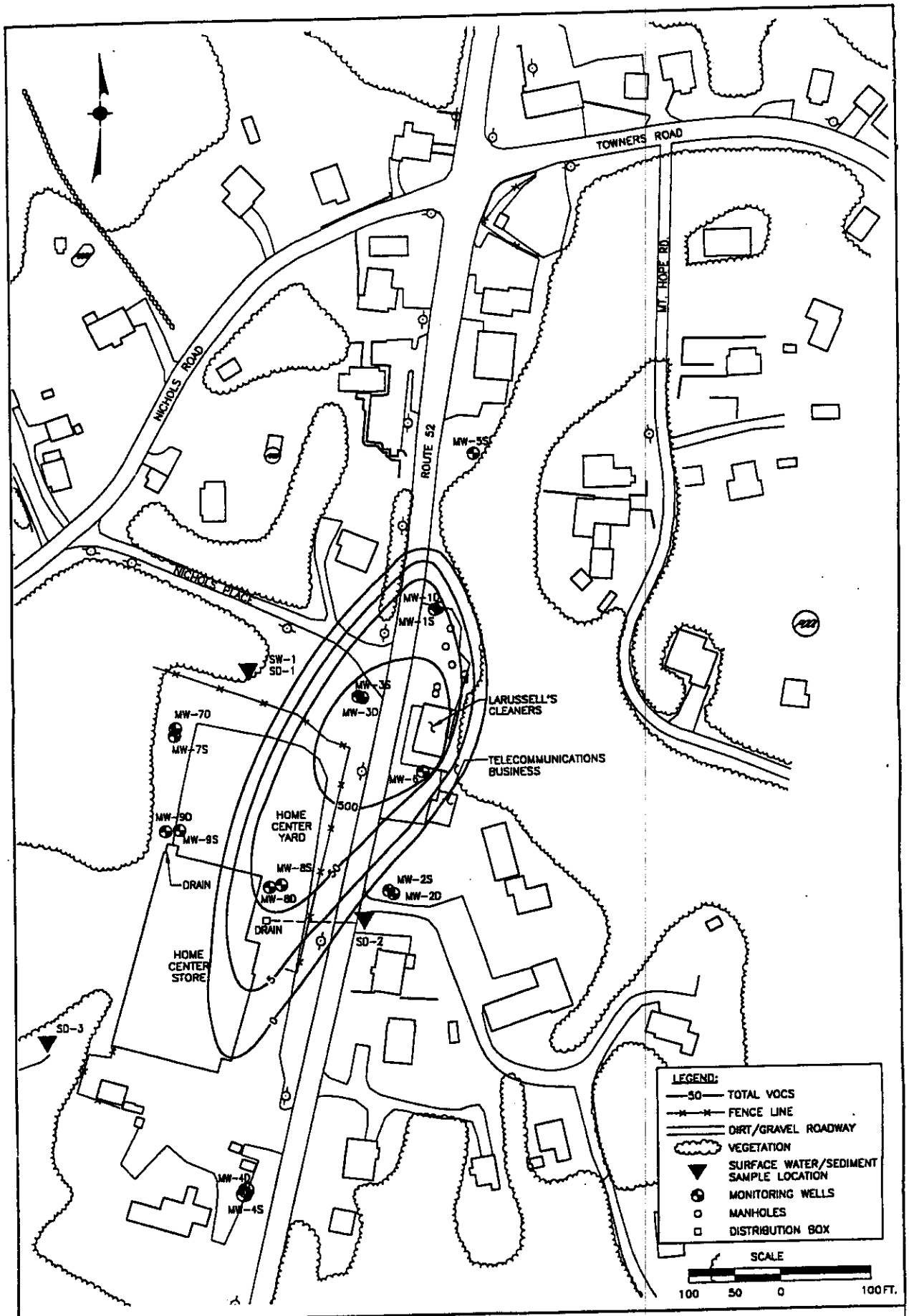


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

POTENTIOMETRIC SURFACE BEDROCK WELLS
MARCH 26,1997 – 7:00 A.M.

FIGURE 7

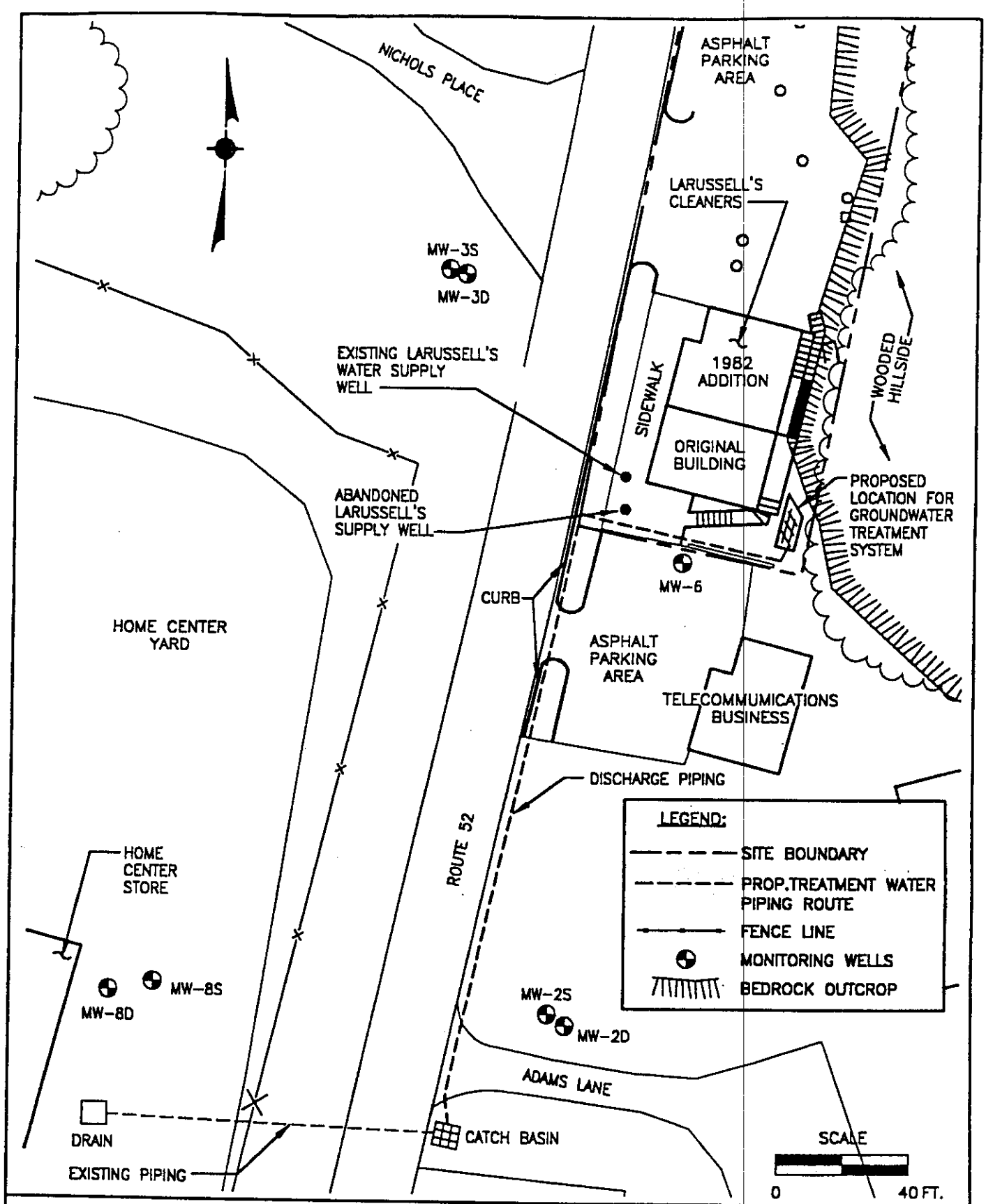


LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

Dvirka and Bartilucci Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

GROUNDWATER CONTAMINANT PLUME

FIGURE 8



LARUSSELL'S CLEANERS SITE
LAKE CARMEL, NEW YORK

Dvirka and Bartilucci Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

REMEDIATION SYSTEM LOCATION

FIGURE 9

Appendix A
Responsiveness Summary

LaRussell's Cleaners Site
Site Number 3-40-020

The issues below were raised during the public meeting for the Proposed Remedial Action Plan (PRAP) held on August 27, 1998 at the Kent Town Hall, 770 Route 52 in Carmel, New York. The purpose of the meeting was to present the PRAP for the Site and receive comments on the PRAP for consideration during the selection of a remedy. A copy of the responsiveness summary is available for public view at the Site's document repositories.

The following are verbal comments received during the public meeting on August 27, 1998:

Question: Once the contaminated water has been pumped from the ground and treated with granular activated carbon (GAC),would it be discharged to Palmer Lake?

Response: The treated water would be directly discharged to the storm drain located just south of the LaRussell Site along Route 52. This drain ultimately discharges to Palmer Lake. An underground conduit would be installed from the Site to the catch basin so that discharge water would not run directly on the ground.

Question: Is there a maximum standard for water which is discharged to surface water?

Response: The treated groundwater would be subject to the New York State Pollution Discharge Elimination System (SPDES) regulations which would establish a specific discharge standard for the treated groundwater. This standard would likely be the NYS drinking water standard of 5 ppb.

Question: Would you expect to see any detections once the contaminated groundwater has passed through the carbon?

Response: Because of the efficiency of the GAC system, it is unlikely that effluent samples would have detectable levels of perchloroethene (PCE). In addition, the GAC system is designed with a lead and a lag filter. If breakthrough occurs on the lead filter, the lag filter would serve as a back-up. Once breakthrough is detected on the lead filter, the lag filter is moved to the lead position and a new canister is put in its place. This will insure that breakthrough never occurs on both canisters.

Question: How many gallons of effluent will pass through the storm drain? I am concerned about flooding occurring in the parking lot adjacent to the building center.

Response: Based on the aquifer test that was conducted during the Remedial Investigation, the pump and treat system is expected to operate at two to three gallons per minute, 24 hours per day (a maximum of 4,320 gallons per day). This is a very low rate (less than ¼ inch of rain over a one acre area) and would not put an unacceptable load on the storm drain system and would not cause excess flooding during a storm event.

Question: Will the septic system be steam cleaned after it is pumped out?

Response: Yes. The biggest concern is the sediment in the bottom of the tank. This seems to be where most of he contamination resides. Once the sediment and water is pumped out, it will be thoroughly steam cleaned. Follow-up sampling will be conducted to insure that the system is no longer impacted by contamination.

Appendix B
Administrative Record

LaRussell's Cleaners Site
Site Number 3-40-020

1. Remedial Investigation/ Feasibility Study Work Plan, LaRussell's Cleaners Site, Town of Kent, Putnam County, New York, May 1997. Prepared for New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

2. Remedial Investigation/ Feasibility Study Report, LaRussell's Cleaners Site, Town of Kent, Putnam County, New York, August 1998. Prepared for New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

3. Remedial Investigation/ Feasibility Study Work Plan, LaRussell's Cleaners Site, Town of Kent, Putnam County, New York, May 1998. Prepared for New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

4. Proposed Remedial Action Plan, LaRussell's Cleaners Site, Town of Kent, Putnam County, New York, August 1998. Prepared by the New York State Department of Environmental Conservation.