FOCUSED FEASIBILITY STUDY REPORT

FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

OCTOBER 1994

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CONESTOGA-ROVERS & ASSOCIATES

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1.0 INTRODUCTION

Norplex Oak previously submitted to the New York State Department of Environmental Conservation (NYSDEC) the report entitled, "Site Remediation Work Plan, Former Schmigel Site", dated October 1991. Since submission of the above report, Norplex Oak has re-evaluated potential remedial alternatives for the Former Schmigel Site (Site). The re-evaluation is presented in this report.

The Site is located northeast of Hoosick Falls, New York. Various waste materials (i.e. construction and demolition debris) including approximately 165 partially full drums of waste products were placed at the Site in a limited area of approximately 90 feet by 110 feet. Groundwater at the Site is contaminated with primarily Volatile Organic Compounds (VOCs) based on groundwater monitoring and Site investigations performed by Norplex Oak.

This report presents a Focused Feasibility Study (FFS) of remedial alternatives for contaminated media at the Site. This FFS report contains the following:

i) Section 1.0 describes the purpose and organization of the report;

ii) Section 2.0 describes the Site background, summarizes the Site investigation data collected to date, and identifies data gaps;

iii) Section 3.0 identifies remedial goals and objectives;

iv) Section 4.0 identifies feasible technologies and develops remedial alternatives for further consideration;

v) Section 5.0 preliminarily evaluates selected remedial alternatives and identifies a preferred remedial alternative for the Site; and

vi) Section 6.0 presents recommendations for additional investigative work or studies.

2.0 SITE BACKGROUND INFORMATION

2.1 SITE LOCATION

The Site is located in a rural area to the north of Route 67 approximately 2.5 miles northeast of Hoosick Falls, New York. The former fill area is located on the east side of the entrance road which services a small residential area (one house and several mobile home sites). The former fill area is approximately 200 feet from Route 67 in a low area situated between the entrance road and a steep slope to the east and covers approximately 1,000 square yards. Figure 2.1 illustrates the location of the Site and Figure 2.2 presents the Site layout.

2.2 SITE HISTORY

The property was originally a sand and gravel pit. The fill area was reportedly used by Mr. Alex Schmigel for the disposal of fill material that included drummed materials from Norplex Oak Materials Group's Hoosick Falls facility. Mr. Schmigel has indicated that approximately 165 drums were taken from the plant over a two week period. The contents of the drums were emptied into a natural depression in the rock; the empty drums were subsequently crushed and placed in the depression as fill material. Other fill material deposited at the Site consisted of demolition debris.

The area is approximately 110 feet (north-south) by 90 feet (east-west) and is bounded on the west by the entrance road which services one house and several mobile homes, on the south by an adjacent residence, on the east by bedrock outcroppings and on the north by an access road to uphill residences. The Site is somewhat bowl-shaped, sloping from the north and east down to the south and west. Due to the presence of bedrock at shallow depths, it is assumed that fill deposition was not extensive and that fill generally extends to a maximum depth of 10 to 12 feet below the existing ground surface.

In 1986, Conestoga-Rovers & Associates (CRA) conducted a preliminary Site investigation program which involved the installation of three groundwater monitoring wells and the collection and analyses of the following:

i) two rounds of groundwater samples from the three new monitoring wells (OW27-86, OW28-86, OW29-86);

ii) groundwater samples from adjacent residential wells;

iii) surface water and sediment samples from a seep area and a drainage swale which runs along the western end of the Site; and

iv) subsurface soil samples collected during the installation of the new groundwater monitoring wells.

The results of the program were presented to the NYSDEC in the report entitled "Site Investigation - Former Schmigel Site - Oak Materials Group, Inc.", dated March 1987. The study did not identify any significant chemical contamination at the Site. The full extent of fill placement, however, could not be defined based on the data collected. The data collected in the 1986 Site Investigation is summarized in Appendix A. Figure 2.2 illustrates the historical sampling locations. Appendix B presents the stratigraphic and instrumentation logs for the three monitoring wells installed.

In December 1987, a Supplemental Excavation Investigation (SEI) was performed in order to determine whether any drummed wastes were present and to better define the nature and extent of fill material. During the SEI, test pits were excavated at the Site in areas suspected to contain buried metal objects as determined from scans of the area with an electronic metal-locating device. One partially full drum and two crushed drums were found during the investigation. Figure 2.3 illustrates the test pit/trenching locations.

Soil and surface water samples and a sample of the material contained in the drum were collected and analyzed as part of the SEI. The results of the SEI, presented in the report entitled "Supplemental Investigation, Former Schmigel Site, Norplex Oak, Hoosick Falls, New York", dated June 1989, identified the presence of VOCs, mainly acetone and methyl cellosolve, in the soil and surface water at the western end of the Site. These compounds were not detected in significant concentrations in previous sampling programs conducted at the Site.

In early 1989, additional environmental samples were collected to define the extent of the acetone and methyl cellosolve. Surface water and groundwater samples were collected and analyzed for VOCs, methyl cellosolve, and selected metals. The results of the program were presented in the report entitled "Supplementary Sampling Program, Former Schmigel Site, Norplex Oak", dated June 1989.

Norplex Oak continued monitoring groundwater at the Site. The results of these monitoring events were previously reported to the NYSDEC. Table 2.1 identifies all of the historical sampling events performed at the Site and the corresponding sample locations. Appendix A presents all of the historical groundwater, surface water, soil and sediment data collected to date at the Site.

2.3 REGIONAL CHARACTERISTICS

The Site is located in a mountainous region near the New York/Vermont State line, within Rensselaer County. The area is located on the side of a relatively steep slope approximately 1,500 feet from the Walloomsac River. The elevation of the former disposal area is on the order of 600 feet AMSL (Above Mean Sea Level), National Geodetic Vertical datum of 1929. (It is to be noted that the reference datum used in surveying the wells is assumed - 100 feet equals the top of casing at OW28-86).

The overburden soils on the slope in the vicinity of the former disposal area are very shallow, having many outcrops of rock and some springs. Some of the rock outcrops are stained and rusty brown in color due to the oxidation of the rock constituents. The principal formation which makes up the upper bedrock of the area is the Walloomsac Formation which includes slate, phyllite, schist and meta gray wackle.

Runoff from the steep slope above the investigation area is collected by small swales on the hillside, one of which crosses the former disposal area. Runoff, due to springs and precipitation, descends the slope via these swales and a culvert beneath the entrance road to a low swampy area. A small stream exits the southwest corner of the low swampy area and flows south into the embankment to Route 67 (a culvert was not apparent at the location where the stream flowed into the embankment).

2.4 SITE OVERBURDEN SOILS

The soil stratigraphy at each of the monitoring wells was determined through examination of split spoon samples (see Appendix B). The fill layer at OW27-86 and OW28-86 is from four to eight feet deep and consists of gravelly, silty sand and wood fragments. The native soil immediately beneath the fill consist of coarse to medium sand and some gravel. A layer of silty clay, approximately two feet in thickness was encountered below the sand and gravel at OW27-86 and this was underlain by coarse sandy gravel. The clay layer was not encountered at OW28-86.

The overburden soils at OW29-86 consisted of silty clay and clayey silt. Figure 2.4 presents a geologic cross-section of the area including the former disposal site.

A metal detection device was used in an effort to determine the areal extent of the former disposal area. Measurements were somewhat distorted by the high mineral content of the rock outcrops and shallow bedrock. Visual inspections of the disposal areas in April and August 1986 and March 1987 were used to further refine the estimated limits of waste disposal. It is estimated that the former disposal area covers approximately 1,100 square yards (110 feet by 90 feet) including a portion of the entrance roadway as illustrated by Figure 2.2. The available borehole information is insufficient to adequately define the areal extent and total depth of buried waste based on a description of the disposal area provided by Mr. Alex Schmigel. A test pit excavation or borehole installation program would be necessary to accurately define the areal and vertical extent of the buried waste.

2.5 SITE GROUNDWATER CONDITIONS

The groundwater in the area of the former disposal area originates mainly from springs on the side of the slope above the Site. The spring water originates from the bedrock and descends the slope through the shallow overburden layer. Some of the spring water runs downslope along the surface, a portion of which infiltrates back into the overburden soils.

The groundwater surface elevation at monitoring wells OW27-86 and OW28-86 is approximately 89 and 94 feet, respectively, some 15 feet above the water surface at OW29-86 which is approximately 75 feet (see Table 2.2). These elevations are based upon an assumed elevation of 100 feet for the top of casing of OW28-86. The actual elevation in the area is on the order of 600 feet AMSL, National Geodetic Vertical Datum of 1929. The groundwater gradient through the former disposal area is therefore very steep although actual rates of water movement may be restricted due to the presence of clayey soil beneath the Site. Based upon the monitoring well information and the steep slope of the ground surface in the area, it is believed that the general overburden and shallow bedrock groundwater gradient is southerly toward the Walloomsac River.

2.6 NATURE AND EXTENT OF CONTAMINATION

2.6.1 Groundwater/Surface Water Quality

Since 1986, groundwater or surface water samples were collected from the three overburden monitoring wells installed at or near the monitoring well OW-28. Acetone has been detected sporadically at low concentrations in monitoring well OW-29, which is hydraulically downgradient from the Site.

In monitoring well OW-27, the concentration of toluene, ethylbenzene and xylene decreased with time while the methylene chloride concentration increased from 4 μg/L in 1986 to 170 μg/L in 1994. The above compounds were not detected in either of monitoring wells OW-28 and OW-29 except for ethylbenzene (2 μg/L) and methylene chloride (2 μg/L) in the May 1986 samples.

As shown on Table 2.4, no organic chemical compounds have been detected in the residential wells except for one detection of 1,1-dichloroethene in RW-3 (19 μg/L in August 1986) and one detection of phenol in RW-2 (20 μg/L in August 1986).

As shown on Table 2.5, a few organic compounds have been detected in the surface water collected from the ditch at the downgradient edge of the Site (Ditch-3) and in the ditch (Ditch-4) immediately downstream of Ditch-3.

MIBK and xylene were also detected in the December 1993 samples from the cistern but were not detected in prior samples or in the September 1994 samples.

2.6.2 Sediment Quality

Sediment samples were collected on one occasion from four locations (Ditch-1, Ditch-2, Ditch-3, and Ditch-4) in the drainage ditch which traverses the Site. Table 2.8 presents the data for compounds detected in the sediment samples. No VOCs were detected in the sediment samples. Low levels of phenol were detected in the sediment samples. However, the sediment sample collected from upstream of the Site (at location Ditch-1) contained phenol at 1.6 mg/kg which is higher than all of the downstream sediment samples.

Detected metals concentrations in sediment samples collected from Ditch-2, Ditch-3, and Ditch-4 were generally consistent with those concentrations found in the upstream (background) samples collected at location Ditch-1.

2.6.3 Site Soil Quality

Soil samples were collected for analysis during the installation of the monitoring wells and during the December 1988 SEI (see Table 2.8). The most predominant VOC detected in the soil samples was acetone which was found in concentrations ranging up to 190 mg/kg. Methyl cellosolve (2-ethoxyethanol) was only detected in one sample at a concentration of 110 mg/kg. Other VOCs (detected below 1 mg/kg) found in the Site soils consisted of toluene, 2-butanone, methylene chloride, ethylbenzene, 2-hexanone, 1,1-dichloroethene and 1,1-dichloroethane.

The only VOCs which exceeded the NYSDEC recommended cleanup objectives (see Table 2.8) were methylene chloride, acetone, and 2-butanone. No cleanup level was provided for methyl cellosolve. Zinc was the only metal detected at concentrations greater than one order of magnitude above the NYSDEC recommended cleanup objectives.

2.7 DATA GAPS

Additional information required to better assess appropriate remedial alternatives for the Site are as follows:

i) the horizontal and vertical extent of contaminated fill/soils at the Site needs to be better defined;

ii) additional information is also required to determine the bedrock surface topography beneath the fill;

iii) additional analytical data on the fill materials/soils at the Site are required for waste disposal characterization purposes;

iv) hydraulic and chemistry data for the groundwater in the bedrock beneath the Site is required to determine the vertical extent of groundwater contamination, if any; and

v) analytical data for soluble (dissolved) Site-specific metals are required to determine if metals are of concern at the Site.

3.0 REMEDIATION GOALS

3.1 GENERAL

Based on information collected to date, it is believed that the contaminants of concern at the Site are VOCs with the most predominant chemical being acetone. As such, remedial alternatives evaluated will focus on addressing VOC contamination at the Site.

The general goal of remedial activities at the Site are as follows:

i) to remediate Site-related contaminated soils and groundwater to the point where leachate from soils and on-Site groundwater does not present an unacceptable health risk;

ii) to prevent or mitigate the migration of Site-related volatile organic contaminants in soils and groundwater downwind or downgradient from the Site; and

iii) to minimize the need for future or on-going remediation and operation and maintenance activities by implementing solutions or technologies that will be reliable and effective over the long-term.

Remediation of the contaminated soil and/or groundwater at the Site would mitigate or prevent any future impact to the surface water quality in the drainage ditch/swale since the presence of any contaminants in the surface water is likely attributable to the migration of contaminated groundwater from the Site.

3.2 POTENTIAL SCGs/ARARs

Standards, Criteria and Guidelines (SCGs) are used to develop remedial action objectives and to scope and formulate remedial action technologies and alternatives. SCGs are applicable or relevant and appropriate New York State Standards, Criteria and Guidelines. SCGs may also include Federal Applicable or Relevant and Appropriate Requirements (ARARs) or standards if they are more stringent than State standards. SCGs are categorized as:

i) chemical-specific requirements that define acceptable exposure levels and may therefore be used in establishing preliminary remediation goals;

ii) location-specific requirements that may set restrictions on activities within specific locations, such as floodplains or wetlands; and

iii) action-specific requirements which may set regulatory controls or restrictions for particular treatment and disposal activities related to the management of hazardous wastes.

Chemical-specific SCGs define health- or risk-based concentration limits in various environmental media for hazardous substances and contaminants. Concentration limits provide protective cleanup levels or may be used as a basis for estimating appropriate cleanup levels for the chemicals of concern in the designated media. Chemical-specific SCGs may be used to determine treatment system discharge requirements or disposal restrictions for remedial activities and to assess the effectiveness or suitability of a remedial alternative. Chemical-specific SCGs are generally promulgated standards or other applicable or relevant and appropriate requirements. Applicable or relevant and appropriate guidance values may be appropriate where a promulgated standard for a particular substance is not available.

Chemical-specific SCGs for groundwater and surface water at the Site consist of the New York State water quality standards and criteria identified on Table 2.6. Potential chemical-specific SCGs for soils are identified on Table 2.9. These chemical-specific SCGs will be considered as the remediation goals for the purposes of this evaluation. It is recognized that the chemical-specific SCGs may not be attainable after implementation of a remedial program. Therefore, the actual Site-specific cleanup levels will be based on potential risks to human health and the environment presented by the presence of the Site-specific chemical of concern at the Site.

4.0 SELECTION OF REMEDIAL TECHNOLOGIES AND DEVELOPMENT OF REMEDIAL ALTERNATIVES

4.1 IDENTIFICATION AND SCREENING OF FEASIBLE TECHNOLOGIES

General response actions which will satisfy the Site remediation goals are identified on Table 4.1. Table 4.1 also contains a brief description of each process option. The general response actions identified on Table 4.1 were screened to identify feasible technologies for further evaluation as remedial alternatives for the Site. Remedial technologies were screened based on the three screening criteria: effectiveness; implementability; and cost, as required in the National Contingency Plan (NCP) and NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4030 for the Selections of Remedial Actions at Inactive Hazardous Waste Sites. These three screening criteria are defined as follows:

Effectiveness

This criterion addresses the ability for a remedial technology to satisfy remedial action objectives and contribute substantially to the protection of public health, welfare and the environment. For the Schmigel Site, this means alternatives which remediate subsurface soils and groundwater contamination to the maximum extent practicable. The ability for a remedial technology to accomplish short- and long-term effectiveness and a reduction in toxicity, mobility and volume of contaminants is evaluated. Each technology was rated in its ability to meet ARARs and/or SCGs and the performance-oriented remedial action objectives.

Implementability

This criterion addresses the ability for a remedial technology to be constructed in a reasonable time frame using accepted technologies. The technical feasibility to construct and reliably operate a remedy is evaluated, and each alternative will be rated as either readily implemented, implemented with moderate concerns addressed or difficult to implement.

Cost

Relative costs (i.e. low, moderate, or high) of the remedial technologies for each of the technologies were used in the evaluation. No single remedial technology was eliminated solely because of costs.

Tables 4.2 and 4.3 present the initial screening results for the groundwater and soil technologies, respectively.

4.2 DESCRIPTION OF SELECTED REMEDIAL ALTERNATIVES

The remedial technologies retained for further evaluation were assembled into remedial alternatives and are presented on Table 4.4. Descriptions of the remedial alternatives selected for further evaluation are described in the following sections.

4.2.1 Alternative 1 - No Action

The no action alternative is primarily used as a basis for comparison with other alternatives. Under this alternative, no remedial action or measures are taken to improve environmental conditions at the Site. This alternative does not actively reduce the volume, mobility or toxicity of hazardous constituents in the Site media.

4.2.2 Alternative 2 - Institutional Controls and Monitoring

Institutional controls and monitoring activities are not intended to reduce the volume, mobility or toxicity of hazardous constituents at the Site but to reduce the potential of human and wildlife exposure to those constituents. Institutional controls for the Site may involve deed restrictions and access restrictions.

Under this alternative, a deed restriction or record notice would be added as an addendum to an existing deed for the Site. This deed restriction would inform the property owner of the Site history and restricted land and groundwater use on the property, and would require the owner to obtain regulatory approvals before the installation of wells or performance of subsurface construction activities within the fill areas of the property. Any future conveyance of the property would be subject to these restrictions. The restrictions or restrictive covenants must be drafted in accordance with applicable and relevant state and municipal legal codes to be enforceable.

Alternative 2 would also involve access restrictions through the installation and maintenance of a fence around the Site. Maintenance of the fence would be included as a condition of conveyance until contaminant concentrations have attained acceptable levels.

Long-term monitoring of groundwater and/or surface water would be performed to evaluate the effectiveness of natural attenuation and biodegradation at the Site and to track contaminant migration and transport. For evaluation purposes it has been assumed that the monitoring program will consist of the three existing monitoring wells, the cistern, the surface sample location Ditch-4 and residential well RW-2. A sampling frequency of quarterly for years one to five and semi-annually for years six to thirty years has been assumed. All collected groundwater samples will be analyzed for the Site-specific VOCs (acetone, toluene, ethylbenzene, xylene, and methylene chloride. Since methyl cellosolve has never been detected in the Site overburden groundwater and only once in a 1988 surface water sample, it is proposed to delete methyl cellosolve from the analytical parameter list).

4.2.3 Alternative 3 - Excavation and Off-Site Disposal

Alternative 3 consists of the excavation of all contaminated soil and debris and the off-Site disposal of excavated soils and debris.

The excavation of soil and debris involves the removal of all soil and debris containing contaminants above soil cleanup objectives from the fill area.

Debris to be excavated at the Site will consist of drums, concrete, wood and miscellaneous demolition debris. Excavated soil and debris would be characterized and disposed of at an appropriate off-Site disposal facility. Large pieces of excavated debris may be decontaminated on-Site, if possible, and disposed of at an appropriate non-hazardous waste landfill.

For the purposes of this evaluation, it is assumed that the excavated materials can be landfilled in a secure hazardous waste landfill. However, in actuality, in order to comply with the Resource Conservation and Recovery Act (RCRA) hazardous waste land disposal restrictions, some of the excavated soils may have to be incinerated based upon the results of future waste characterization analysis.

This alternative also includes groundwater monitoring which would be performed for a period of two years after removal.

4.2.4 Alternative 4 - In Situ SVE and Air Sparging

Alternative 4 consists of in situ Soil Vapor Extraction (SVE) with air sparging and groundwater monitoring.

The SVE process is a technique for removing and venting VOCs from the unsaturated soil zone. The technology would involve the installation of two shallow extraction trenches at the Site. A vacuum system would induce air flow through the soil medium, stripping and volatilizing the VOCs from the soil into the air stream. Any residual liquids in the air stream would be condensed and separated from the air stream. If necessary, the contaminated air stream would be treated through an air treatment system such as vapor phase activated carbon for odor control. Activated carbon would not be very effective in the removal of acetone from the airstream. However, it would be effective in the removal of other residual VOCs at the Site. In addition, because the air discharge criteria for acetone is high due to the low toxicity of acetone, treatment of the air stream for acetone may not be necessary.

The most effective SVE treatment occurs in the unsaturated soils (vadose zone). In order to enhance the removal of VOCs in the saturated soils and in the groundwater, air sparging would also be performed. Treated air from the SVE air treatment system would be injected into the soils via two injection wells to force VOCs trapped in the saturated soils and VOCs in the groundwater to volatilize into the soil vapor. The contaminated soil vapor would then be extracted by the SVE vacuum system for removal of the VOCs.

It is anticipated, based on information presented in literature, that the SVE with air sparging alternative could reduce the concentrations to acceptable levels in about two to five years.

4.2.5 Alternative 5 - Bioventing

Alternative 5, bioventing involves the use of in situ bioremediation technology and groundwater monitoring.

Bioventing is the process of delivering oxygen to the subsurface soils by aerating to stimulate in-situ aerobic biological degradation of organic contaminants. Unlike the physical process of SVE with air sparging where large volumes of air are forced through the contaminated media, bioventing utilizes low air flow rates to provide only the necessary amount of oxygen to enhance biodegradation while minimizing volatilization. The objective of bioventing is biodegradation and the destruction of the organics. Because bioventing utilizes low air flow rates, volatilization rates of organics to the atmosphere are very low and should not be of concern.

The alternative involves the installation of two infiltration trenches which will be used to add nutrients and biological culture to the subsurface as required. Groundwater from the Site will be pumped from an extraction well to the infiltration trenches to circulate the nutrients. Air will be injected to the subsurface via two air injection wells.

It is anticipated, based on information presented in literature, that bioventing will reduce the organic contaminant concentrations in the soil and groundwater to acceptable levels in about two to five years.

4.2.6 Alternative 6 - Intermittent Pumping and Treatment

Alternative 6 involves complete or partial dewatering of the fill area at selected time intervals.

Groundwater would be periodically pumped from an extraction well or wells installed at the Site. Intermittent dewatering of the Site would enhance contaminant removal by increasing the contact time between groundwater and the contaminated soil/debris. At high or continuous pumping rates, the leaching of contaminants from the soil/debris is transport-limited because the contact time between the groundwater and soil is insufficient to allow the compound to diffuse through the soil and into the groundwater to equilibrium. As such, contaminant concentration in groundwater pumped during continuous operation is low. Since contact time is increased by turning off the pumping system and allowing sufficient time for the dissolution of the compounds into the groundwater, contaminant concentration in the extracted water from the intermittent operation would be higher. As a result, intermittent pumping would minimize the volume of groundwater pumped and maximize the contaminant concentrations.

For the purposes of this evaluation, it is assumed that the groundwater would be pumped at an average rate of five gallons per minute (GPM) for a period of 24 hours until 5,000 gallons has been pumped. Pumping will be performed every two weeks. Pumping tests need to be performed to determine the optimal pumping durations and frequencies.

Preliminary evaluations indicate that the pumped groundwater will be on-Site treated by UV oxidation and discharged to the drainage swale downstream of the Site. UV oxidation was selected to address the acetone which was not effectively removed by activated carbon. However, bench-scale treatability studies would be required to confirm whether UV oxidation or activated carbon would be more appropriate.

5.0 DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

5.1 CRITERIA FOR SCREENING OF ALTERNATIVES

The remedial alternatives retained for detailed analysis are identified in Table 4.4 and described in Section 4.2. The evaluation of these alternatives consists of a detailed analysis against statutory requirements, goals and objectives of CERCLA, the NCP and the NYSDEC. This detailed evaluation is performed consistent with NYSDEC TAGM 4030.

The nine evaluation criteria are as follows:

i) overall protection of human health and the environment;
ii) compliance with ARARs/SCGs;
iii) long-term effectiveness and permanence;
iv) reduction of toxicity, mobility or volume;
v) short-term effectiveness;
vi) implementability;
vii) cost;
viii) State acceptance; and
ix) community acceptance.

The evaluation criteria of State acceptance and community acceptance cannot be evaluated at the feasibility study stage because they are based upon agency and public comments regarding the FS report. Consequently, no further discussion of these two criteria is provided.

The remaining seven evaluation criteria are divided into two primary groups, namely threshold criteria and balancing criteria.

The threshold criteria include overall protection of human health and the environment, and compliance with ARARs/SCGs. With the exception of the no action alternative, all remedial alternatives must meet the threshold criteria to be eligible for further consideration.

The remaining five evaluation criteria are considered the balancing criteria. Each of the remedial alternatives is assessed and analyzed on a comparative basis using these evaluation criteria. Ultimately, a remedial action plan is proposed that incorporates the alternative which provides the best solution with respect to the balancing criteria. A list of factors considered under each evaluation criteria is presented on Table 5.1.

Cost estimates prepared for each of the retained remedial alternatives are considered to be accurate within a range of plus 50 percent to minus 30 percent. Detailed cost estimates are presented in Appendix C.

5.2 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

Each remedial alternative was evaluated separately using the seven evaluation criteria. Table 5.2 presents the results of this evaluation. This section presents an evaluation of each of the alternatives relative to each other.

5.2.1 Compliance with ARARs/SCGs

Alternatives 1 and 2 would not comply with chemical-specific SCGs for soils and groundwater. Alternative 3 would comply with chemical-specific SCGs in the quickest timeframe. Alternative 6 would take the longest time to comply with chemical-specific SCGs.

Alternative 4 may require treatment of the extracted soil vapors prior to discharge to atmosphere in order to comply with chemical-specific SCGs for air.

Alternative 3 which consists of excavation and off-Site landfilling of excavated materials may not fully comply with action-specific SCGs such as the land disposal regulations. All other alternatives would comply with action-specific and location-specific SCGS.

5.2.2 Overall Protection of Human Health and the Environment

The overall protection of human health and the environment provided by the six remedial alternatives range from no protection provided by Alternative 1 to maximum protection provided by Alternative 3. Alternatives 4, 5 and 6 are equally protective. Alternative 3 provides maximum protection of human health and environment since all debris/soil containing unacceptable contaminant levels would be removed from the Site.

5.2.3 Short-Term Effectiveness

The short-term effectiveness of the remedial alternatives range from no risk to the community, workers or the environment during implementation of Alternatives 1 and 2 to low potential risk from Alternatives 4, 5 and 6. Alternative 3 would pose the greatest additional risks to workers and the community during excavation activities. However, use of appropriate construction practices can control the potential risks.

Alternative 3 would achieve the remedial objectives in the quickest timeframe. Alternatives 4 and 5 would achieve the remedial objectives in a slightly quicker timeframe than Alternative 6. Alternative 6 would take the longest timeframe to achieve the remedial objectives.

5.2.4 Long-Term Effectiveness and Performance

Alternatives 1 and 2 do not provide for the active remediation of contaminated groundwater and soil and therefore are minimally effective. Contaminant levels would be slowly reduced by natural attenuation and degradation after implementation of Alternatives 1 or 2.

Alternative 3 involves the off-Site land disposal of contaminated soil and debris and is not considered as a preferred remedy by the NYSDEC (as defined in NYSDEC TAGM 4030) since the contaminants are not destroyed or contaminant toxicity is not reduced. Residual contamination in the groundwater would be addressed by natural attenuation.

Alternatives 4 and 5 provide for the active in situ remediation of both contaminated soil and groundwater. Alternative 6 relies on the active leaching and natural attenuation process to remediate contaminated soils. Some residual contamination may remain after the completion of remedial Alternatives 3, 4, 5 and 6.

Alternative 4 may not be as effective as Alternative 5 in the removal/destruction of acetone in groundwater. Because of the high solubility of acetone in water, it would be difficult to remove acetone from the groundwater to the required levels via volatilization. However, acetone is readily biodegradable in the environment.

5.2.5 Reduction of Toxicity, Mobility or Volume

Alternatives 1 and 2 do not provide for any active reduction of contaminant toxicity, mobility or volume at the Site. Alternative 3 provides for the maximum reduction of toxicity, mobility and volume of Site contaminants at the Site since all contaminated soil/debris would be removed from the Site. However, the volume, and toxicity of contaminated soils would not actually be destroyed or reduced, but would be removed and transferred to an off-Site landfill facility.

Alternatives 4, 5 and 6 would equally reduce the toxicity, mobility and volume of contaminants at the Site.

5.2.6 Implementability

All of the alternatives, except for Alternative 3, are readily implementable. Required services and materials are generally available.

Alternative 3 would be difficult to implement. Excavation of contaminated materials would be difficult due to the high water table at the Site. In addition, it may be difficult to obtain disposal approvals from permitted off-Site disposal facilities if the excavated materials are required to be incinerated. Alternative 3 would also require the relocation of the Niagara Mohawk Power Corporation utility pole located within the Site.

Alternatives 4 and 6 require some coordination with the NYSDEC since an air discharge permit and a SPDES treated water discharge permit, respectively, are required. Bench-scale treatability studies will be required for Alternatives 4, 5, and 6.

5.2.7 Costs

The costs associated with the implementation of the remedial alternatives are lowest for Alternative 1 and increase successively for Alternatives 2, 5, 4, 6 and 3.

Capital costs range from $17,500 for Alternative 2 to $2,345,700 for Alternative 3. For those requiring long-term operation and maintenance (O&M) activities, the total net present worth O&M costs range from $60,900 for Alternative 3 to $596,200 for Alternative 6.

5.3 PREFERRED REMEDIAL ALTERNATIVE

Remedial Alternatives 1 and 2 were eliminated from consideration as they will not result in any significant reduction in toxicity volume or mobility of Site contaminants and will not achieve chemical-specific SCGs.

Remedial Alternative 3 provides for the most effective reduction of contaminants at the Site in the shortest timeframe, but is also the most difficult and most costly to implement. Because of the high water table present at the Site, excavation would require extensive dewatering activities and would generate large amounts of contaminated excavation water which would require treatment or off-site disposal. Alternative 3 is also the least preferred remedial technology since it involves off-Site land disposal.

Alternative 6 is eliminated due to the length of time required to achieve the remedial objectives and is more costly than Alternatives 4 and 5.

Alternatives 4 and 5 provide for the in situ remediation of soil and groundwater. However, Alternative 5 may be more effective in addressing the acetone contamination. Therefore, Alternative 5 is recommended as the preferred remedial alternative at this time.

To confirm the appropriateness of Alternative 5 as the preferred remedial alternative, some additional data collection and treatability studies are required. Based on the results of these additional activities, it may be necessary to re-evaluate the above remedial alternatives. The proposed additional activities are presented in Section 6.0.

6.0 RECOMMENDATIONS FOR ADDITIONAL INVESTIGATION

Based on the data collected to date, data gaps, as listed in Section 2.7, have been identified. To address these data gaps, the following recommendations are made:

i) Waste Delineation

- Excavate/install four additional test pits and eight additional boreholes to better delineate the areal and vertical extent of fill/soils at the Site and to determine the bedrock surface topography at the Site. Figure 6.1 identifies proposed test pit and borehole locations. At select locations based on organic vapor readings, soil samples will be collected for analysis of the Site-specific VOCs. It is anticipated that four samples will be submitted for analysis. In addition, an accurate Site topographic plan would be prepared to show the limits of the waste at the Site.

ii) Waste Characterization/Treatability Studies

- Soil/fill samples will be collected from borehole/test pit locations (see Figure 6.1) and composited into two samples for waste disposal characterization purposes and one sample for bench-scale treatability studies. The waste characterization samples will be analyzed for the RCRA Toxicity Characteristic Leaching Procedure (TCLP) hazardous waste, and the F001, F002, and F003 solvents for waste disposal characterization purposes. The waste characterization results will determine whether the soils require;

  i) disposal at a permitted hazardous waste landfill (the current assumed scenario);
  ii) incineration at an off-Site facility; or
  iii) disposal at a permitted non-hazardous waste landfill.

  Based on these results, the excavation and off-Site disposal alternative will be re-evaluated.

The treatability study sample will be submitted to an appropriate laboratory to perform bench-scale biological testing to determine if the bacteria required to degrade the contaminants at the Site are present and the nutrient and air requirements for the bacteria.

- Groundwater samples will be collected from wells OW-27 and OW-28 for analyses of total and soluble Site-specific metals. Data from these samples will be used to determine if the presence of metals are of concern at the Site. If metals are determined to be of concern at the Site, it will be necessary to re-evaluate the remedial alternatives since the current preferred option, bioventing, will not address metals.

  In addition, groundwater samples will be collected for bench-scale treatability studies to evaluate the effectiveness of UV oxidation and activated carbon in the treatment of organic compounds in the groundwater at the Site should groundwater pumping and treatment be determined to be required.

iii) Bedrock Groundwater Characterization

- One shallow bedrock monitoring well should be installed immediately downgradient of the Site next to existing well OW-29 to determine the vertical extent of groundwater contamination, if any, in the bedrock and to act as a downgradient bedrock sentry monitoring well. The proposed location is in the vicinity of well OW29-86. This location will also serve as a downgradient monitor for post-remediation monitoring. One sample of bedrock groundwater will be analyzed for the Site-specific VOCs.

iv) Overburden Groundwater Pumping Tests

- Should overburden groundwater pumping and treatment be determined to be required based on the above additional activities, pumping tests to determine the optimal pumping durations and frequencies will be required.

v) <u>Field Activity and HSP Procedures</u>

- The appropriate procedures presented in the report entitled, "Site Remediation Work Plan, Former Schmigel Site" will be followed during performance of the additional investigations.

FIGURES

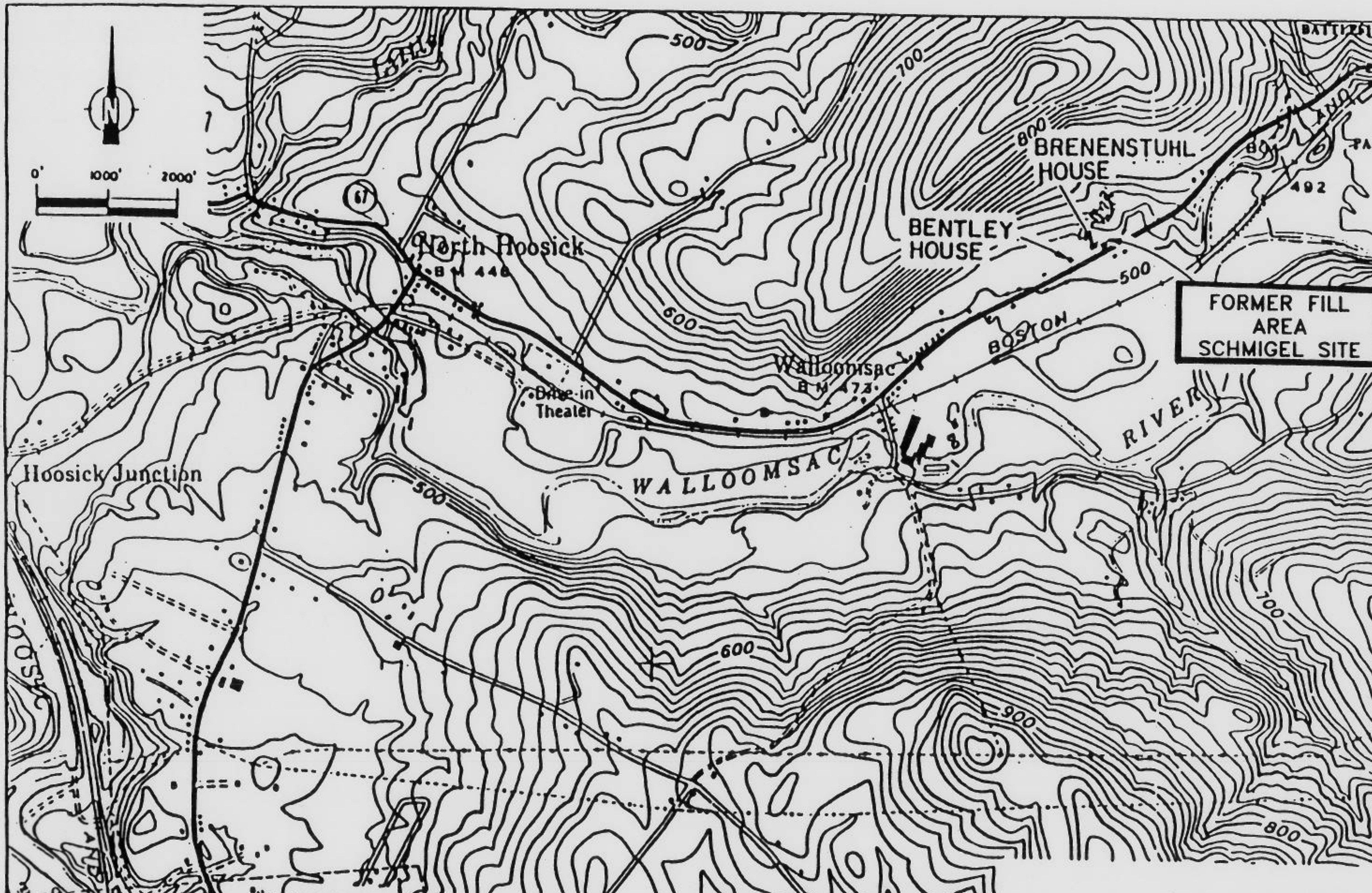

figure 2.1
SITE LOCATION
FORMER SCHMIGEL SITE
Norplex Oak

3586 (4) OCT 05/94(NF) REV.0

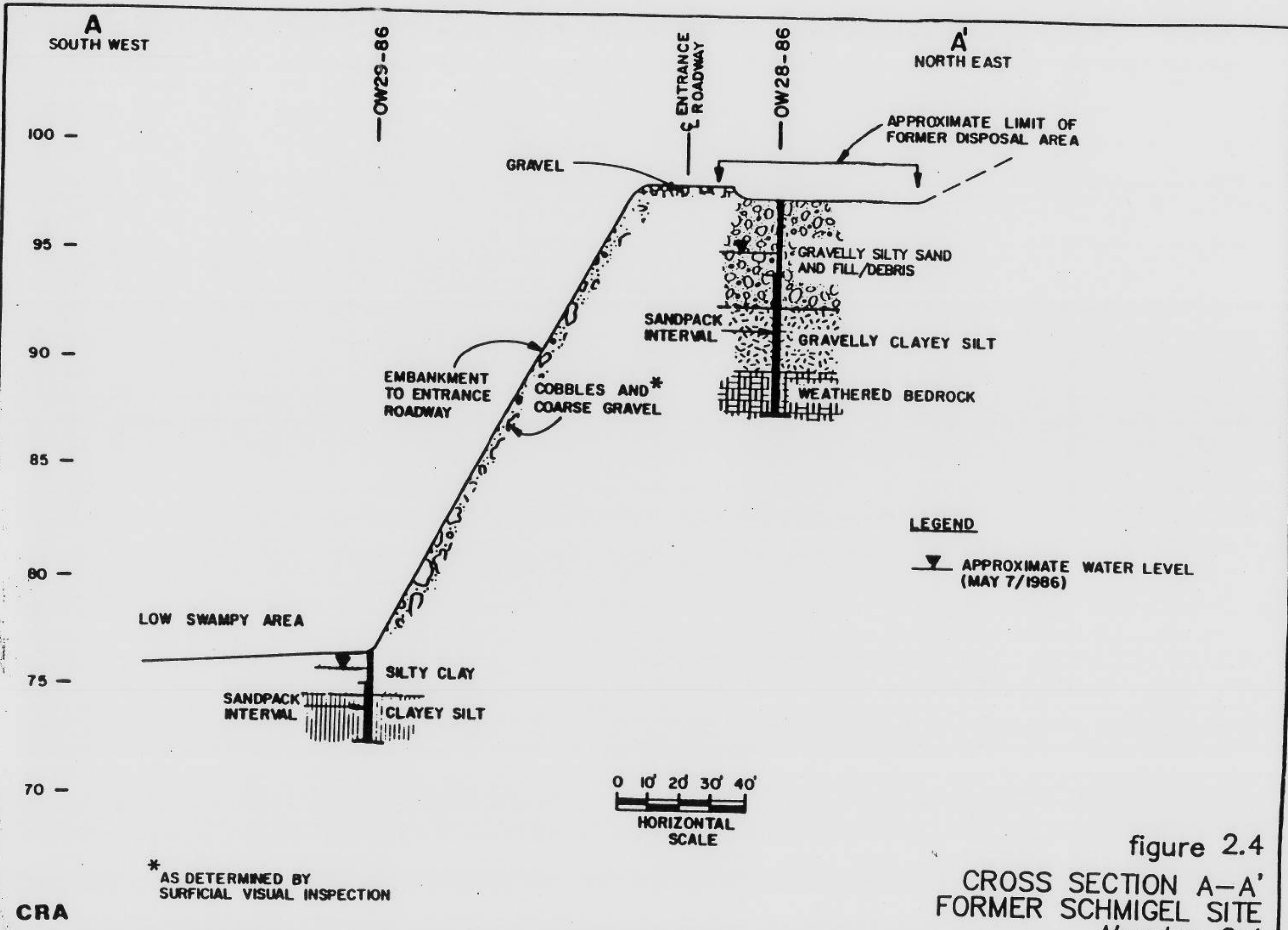

figure 2.4

CROSS SECTION A–A'
FORMER SCHMIGEL SITE
Norplex Oak

CRA

3586 (4) OCT 05/94(NF) REV.0

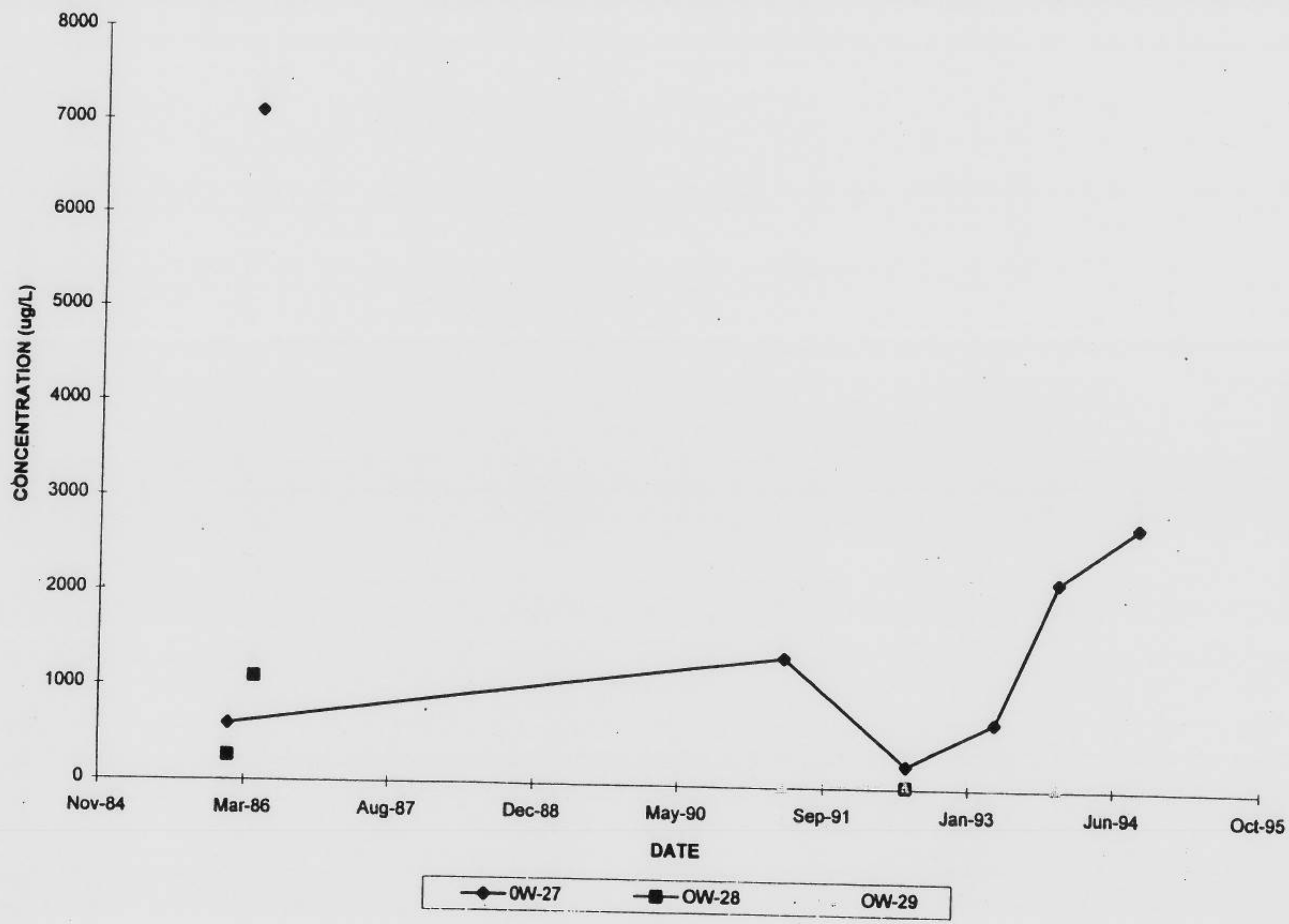

figure 2.5

ACETONE CONCENTRATION VERSUS TIME
GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
Norplex Oak

CRA

3586 (4) OCT 11/94(NF) REV.0 (G-01)

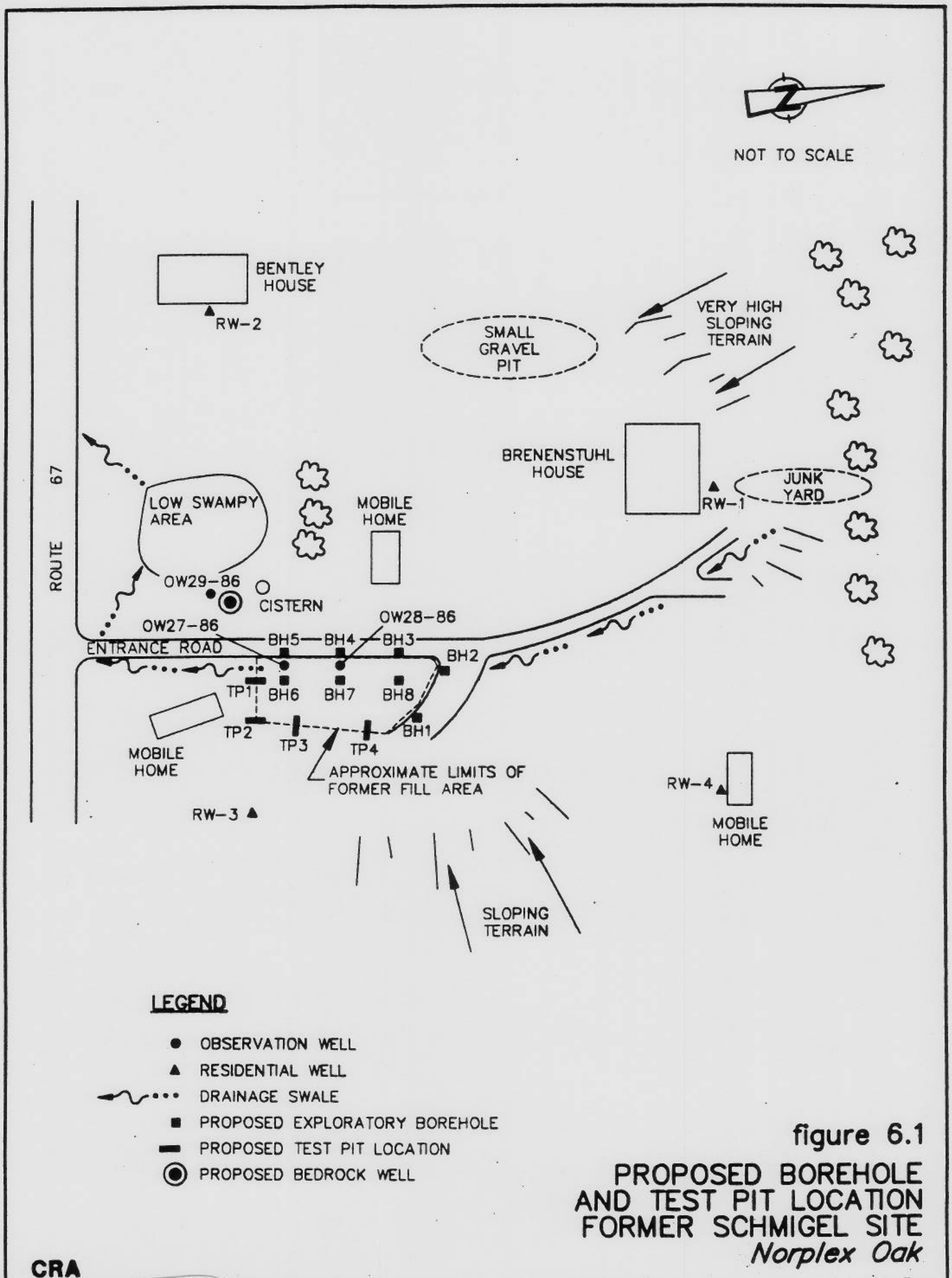

figure 6.1

PROPOSED BOREHOLE AND TEST PIT LOCATION FORMER SCHMIGEL SITE

Norplex Oak

3586 (4) OCT 11/94(NF) REV.0 (P-05)

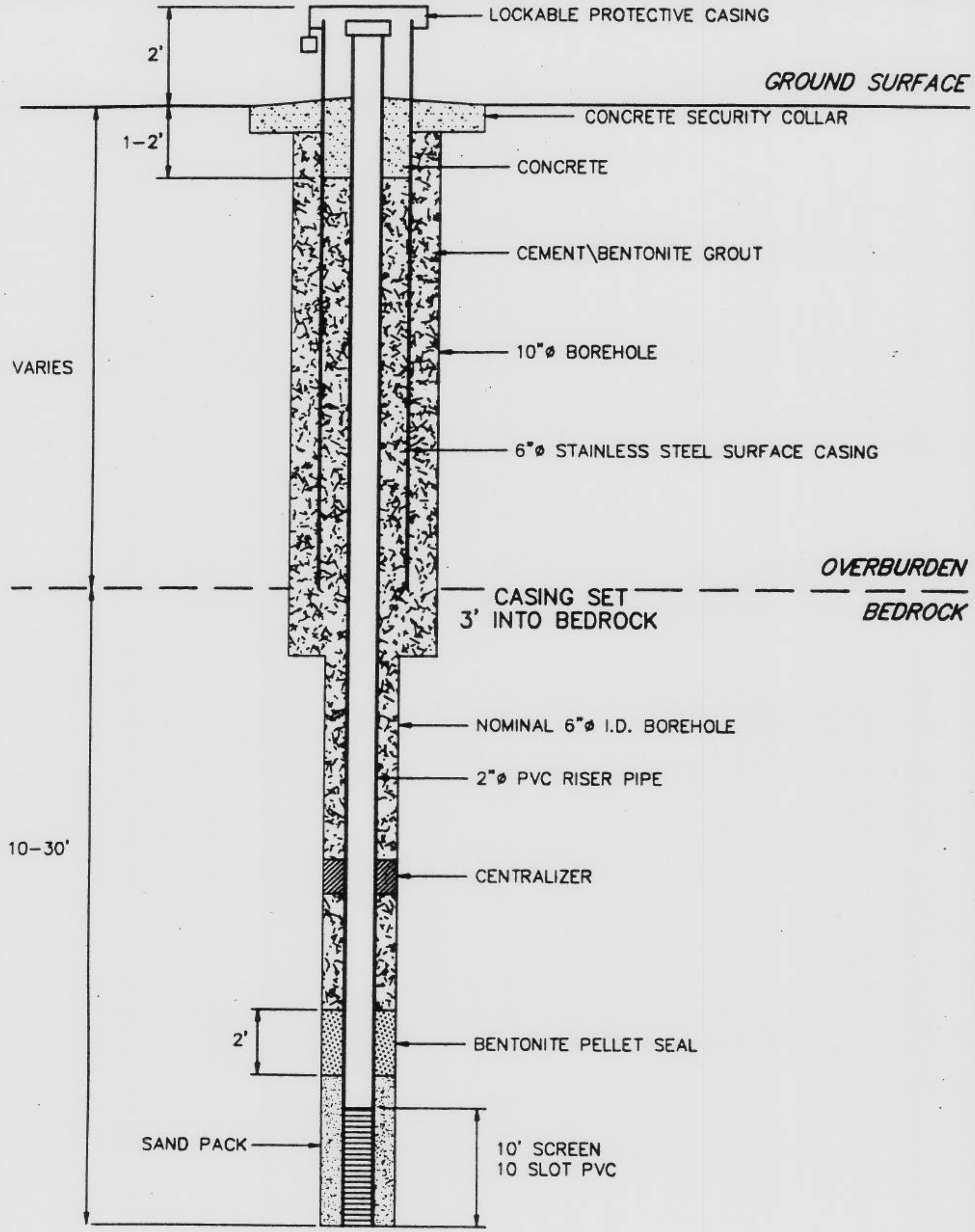

figure 6.2

TYPICAL BEDROCK OBSERVATION WELL
FORMER SCHMIGEL SITE
Norplex Oak

CRA

3586 (4) OCT 13/94(NF) REV.0 (D-05)

TABLES

TABLE 2.1

HISTORICAL SAMPLING EVENTS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	Sampling Locations				
Sampling Events	*Monitoring Wells*	*Residential Wells*	*Surface Water*	*Sediment*	*Soil*
May 1986 - Site Investigation	OW-27, OW-28, OW-29	-	-	-	OW-27 (8-10' and 12-14') OW-28 (6-8' and 8-10') OW-29 (0-2' and 2-4')
August 1986 - Site Investigation	OW-27, OW-28, OW-29	RW-1 RW-2, RW-3, RW-4	Ditch-1, Ditch-2, Ditch-4, Seep	Ditch-1, Ditch-2, Ditch-3, Ditch-4	-
December 1988 - Supplemental Investigation	-	-	Ditch-3	-	Trench 6, Test Pit 2, Trench 1, Drum
February 1989 - Supplementary Sampling Program	OW-27, OW-28, OW-29	RW-1, RW-3, RW-4	Ditch-3, Ditch-4, Cistern	-	-
May 1991	OW-27, OW-28, OW-29	-	Ditch 4, Cistern	-	-
July 1992	OW-27, OW-28, OW-29	RW-1, RW-2, RW-3	Cistern	-	-
May 1993	OW-27, OW-28	-	-	-	-

TABLE 2.1

HISTORICAL SAMPLING EVENTS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	Sampling Locations				
Sampling Events	*Monitoring Wells*	*Residential Wells*	*Surface Water*	*Sediment*	*Soil*
December 1993	OW-27, OW-28, OW-29	RW-2	Ditch-4, Cistern	-	-
September 1994	OW-27, OW-28, OW-29	RW-2	Cistern	-	-

TABLE 2.2

HISTORICAL GROUNDWATER ELEVATIONS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	Elevation (feet) (1)		
Well ID:	*OW27-86*	*OW28-86*	*0W29-86*
Top of Casing:	*98.40*	*100.00*	*78.38*
Ground Surface:	*95.82*	*97.30*	*76.37*
Date of Measurement			
05/02/86	89.6	95.1	75.7
05/06/86	89.4	95.0	NM
05/07/86	89.2	94.9	75.8
08/08/86	88.4	92.3	75.2
08/25/86	88.8	93.2	75.5
02/16/89	90.3	95.2	75.4
05/01/91	91.1	96.0	75.5
07/23/92	NM	NM	NM
05/08/93	NM	NM	NM
12/06/93	92.0	96.6	75.0
09/08/94	89.2	92.2	75.2

Notes:
NM Not Measured
(1) Based on an assumed reference elevation of 100 feet for top of casing at well OW28-86.

TABLE 2.3

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / Sample Event:	OW-27 May 1986	OW-27 August 1986	OW-27 February 1989	OW-27 February 1989 (Duplicate)	OW-27 May 1991	OW-27 May 1991 (Duplicate)	OW-27 July 1992	OW-27 May 1993
Volatile Organic Compounds (ug/L)								
Vinyl Chloride	10	BDL 1	ND 50	ND 25	ND 2	ND 2	ND 5	ND 5J
Chloroethane	BDL 1	NA	ND 50	ND 25	ND 2	ND 2	ND 5	ND 5J
Methylene Chloride	4	BDL 1	ND 120	ND 62	135	124	ND 5	13J
Acetone	7200	BDL 10	460	600	1180	1370	240	260J
1,1-Dichloroethene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5	ND 5J
1,1-Dichloroethane	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5	ND 5J
trans-1,2-Dichloroethene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5	ND 5J
2-Butanone (MEK)	NA	10	ND 120	ND 62	ND 10	10.8	ND 10	ND 10J
1,2-Dichloroethane	5	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5	ND 5J
1,1,2-Trichloroethane	5	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5	ND 5J
Benzene	2	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5	ND 5J
4-Methyl-2-pentanone (MIBK)	NA	BDL 10	ND 50	ND 25	11.8	10.5	ND 10	ND 10J
Toluene	120	BDL 1	ND 25	32	11.2	10.7	23	9.1J
Ethylbenzene	110	BDL 1	190	280	128	134	67	30J
Styrene	NA	BDL 1	ND 25	ND 12	3.59	3.47	ND 5	ND 5J
Total Xylene	400	BDL 1	400	590	461	445	200	90J
Base/Neutral Acid Compounds (ug/L)								
Di-n-butyl Phthalate	7	NA	NA	NA	NA	NA	NA	NA
Phenol	6	22	NA	NA	NA	NA	NA	NA
Total Metals (ug/L)								
Antimony	BDL 10	BDL 25	ND 50	ND 50	NA	NA	ND 50	NA
Arsenic	10	10	9	8	NA	NA	18	NA
Beryllium	BDL 10	BDL 10	ND 1	ND 1	NA	NA	ND 5	NA
Cadmium	BDL 1	5	ND 5	ND 5	NA	NA	ND 5	NA
Chromium	10	BDL 5	20	40	NA	NA	58.1	NA
Copper	BDL 50	3310	260	290	NA	NA	442	NA
Lead	50	130	23	23	NA	NA	90.6	NA
Mercury	2	4	ND 0.1	ND 0.1	NA	NA	ND 0.2	NA
Nickel	BDL 50	50	ND 40	ND 40	NA	NA	ND 40	NA
Silver	BDL 10	120	ND 5	ND 5	NA	NA	ND 10	NA
Thallium	200	1190	ND 8	ND 4	NA	NA	ND 50	NA
Zinc	50	980	90	140	NA	NA	184	NA
Aluminum	NA	NA	NA	NA	NA	NA	3620	NA
Barium	NA	NA	NA	NA	NA	NA	116	NA

TAB...

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-27* *May 1986*	*OW-27* *August 1986*	*OW-27* *February 1989*	*OW-27* *February 1989 (Duplicate)*	*OW-27* *May 1991*	*OW-27* *May 1991 (Duplicate)*	*OW-27* *July 1992*	*OW-27* *May 1993*
Total Metals (ug/L) (cont.)								
Calcium	NA	NA	NA	NA	NA	NA	59300	NA
Iron	NA	NA	NA	NA	NA	NA	84000	NA
Magnesium	NA	NA	NA	NA	NA	NA	6030	NA
Manganese	NA	NA	NA	NA	NA	NA	6660	NA
Potassium	NA	NA	NA	NA	NA	NA	2300	NA
Sodium	NA	NA	NA	NA	NA	NA	4100	NA
Vanadium	NA	NA	NA	NA	NA	NA	ND 50	NA
Miscellaneous Inorganics (mg/L)								
Alkalinity, Total	NA	NA	NA	NA	NA	NA	226	NA
Alkalinity, Bicarbonate	NA	NA	NA	NA	NA	NA	226	NA
BOD5	NA	NA	NA	NA	NA	NA	49.1	NA
Chloride	NA	NA	NA	NA	NA	NA	3.7	NA
COD	NA	NA	NA	NA	NA	NA	76.1	NA
Nitrate	NA	NA	NA	NA	NA	NA	ND 0.05	NA
Nitrogen	NA	NA	NA	NA	NA	NA	ND 0.05	NA
Total Phosphorus	NA	NA	NA	NA	NA	NA	0.315	NA
TDS	NA	NA	NA	NA	NA	NA	236	NA
TSS	NA	NA	NA	NA	NA	NA	229	NA
Sulfate	NA	NA	NA	NA	NA	NA	20.6	NA
Sulfide	NA	NA	NA	NA	NA	NA	5.26	NA
TOC	NA	NA	NA	NA	NA	NA	11	NA

TABLE 2.3

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	*OW-27 May 1993 (Duplicate)*	*OW-27 December 1993*	*OW-27 December 1993 (Duplicate)*	*OW-27 September 1994*	*OW-27 September 1994 (Duplicate)*	*OW-28 May 1986*	*OW-28 August 1986*	*OW-28 February 1989*
Volatile Organic Compounds (ug/L)								
Vinyl Chloride	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1	ND 10
Chloroethane	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	NA	ND 10
Methylene Chloride	50J	ND 5	ND 50	170	160	BDL 1	BDL 1	ND 10
Acetone	700J	2200	2200	2800	2300	1100	BDL 10	260
1,1-Dichloroethene	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1	ND 5
1,1-Dichloroethane	ND 25J	ND 5	ND 50	ND 5	ND 5	2	BDL 1	ND 5
trans-1,2-Dichloroethene	ND 25J	ND 5	ND 50	ND 5	ND 5	2	3.3	ND 5
2-Butanone (MEK)	ND 50J	19	ND 100	27J	65	NA	BDL 10	ND 25
1,2-Dichloroethane	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1	ND 5
1,1,2-Trichloroethane	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1	ND 5
Benzene	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1	ND 5
4-Methyl-2-pentanone (MIBK)	ND 50J	83	ND 100	42J	46	NA	BDL 10	ND 10
Toluene	27J	190	180	45	43	BDL 1	BDL 1	ND 5
Ethylbenzene	83J	66	57	42	27	BDL 1	BDL 1	ND 5
Styrene	ND 25J	ND 5	ND 50	ND 5	ND 5	NA	BDL 1	ND 5
Total Xylene	200	160	140	110	110	NA	BDL 1	ND 5
Base/Neutral Acid Compounds (ug/L)								
Di-n-butyl Phthalate	NA	NA	NA	NA	NA	BDL 5	NA	NA
Phenol	NA	NA	NA	NA	NA	BDL 5	BDL 2	NA
Total Metals (ug/L)								
Antimony	NA	NA	NA	NA	NA	BDL 10	BDL 25	ND 50
Arsenic	NA	NA	NA	NA	NA	110	30	6
Beryllium	NA	NA	NA	NA	NA	BDL 10	BDL 10	ND 1
Cadmium	NA	NA	NA	NA	NA	1	BDL 1	ND 5
Chromium	NA	NA	NA	NA	NA	BDL 5	6	ND 10
Copper	NA	NA	NA	NA	NA	BDL 50	BDL 50	6
Lead	NA	NA	NA	NA	NA	BDL 10	20	8
Mercury	NA	NA	NA	NA	NA	6	2	ND 0.1
Nickel	NA	NA	NA	NA	NA	BDL 50	BDL 50	ND 40
Silver	NA	NA	NA	NA	NA	BDL 10	BDL 10	ND 5
Thallium	NA	NA	NA	NA	NA	BDL 100	BDL 500	ND 4
Zinc	NA	NA	NA	NA	NA	40	120	20
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-27*	*OW-27*	*OW-27*	*OW-27*	*OW-27*	*OW-28*	*OW-28*	*OW-28*
Sample Event:	*May 1993 (Duplicate)*	*December 1993*	*December 1993 (Duplicate)*	*September 1994*	*September 1994 (Duplicate)*	*May 1986*	*August 1986*	*February 1989*
Total Metals (ug/L) (cont.)								
Calcium	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous Inorganics (mg/L)								
Alkalinity, Total	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate	NA	NA	NA	NA	NA	NA	NA	NA
BOD5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	NA	NA
COD	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus	NA	NA	NA	NA	NA	NA	NA	NA
TDS	NA	NA	NA	NA	NA	NA	NA	NA
TSS	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2.3

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	*OW-28* *May 1991*	*OW-28* *May 1991* *(Duplicate)*	*OW-28* *July 1992*	*OW-28* *July 1992* *(Duplicate)*	*OW-28* *May 1993*	*OW-28* *December 1993*	*OW-28* *September 1994*	*OW-29* *May 1986*
Volatile Organic Compounds (ug/L)								
Vinyl Chloride	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	20
Chloroethane	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	3
Methylene Chloride	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	2
Acetone	ND 20	NA	24J	ND 10J	ND 10J	ND 10	ND 10	BDL 100
1,1-Dichloroethene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	BDL 1
1,1-Dichloroethane	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	11
trans-1,2-Dichloroethene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	6
2-Butanone (MEK)	ND 10	NA	ND 10	ND 10	ND 10J	ND 10	ND 10	NA
1,2-Dichloroethane	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	BDL 1
1,1,2-Trichloroethane	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	BDL 1
Benzene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	BDL 1
4-Methyl-2-pentanone (MIBK)	ND 10	NA	ND 10	ND 10	ND 10J	ND 10	ND 10	NA
Toluene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	BDL 1
Ethylbenzene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	2
Styrene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	NA
Total Xylene	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5	BDL 3
Base/Neutral Acid Compounds (ug/L)								
Di-n-butyl Phthalate	NA	NA	NA	NA	NA	NA	NA	BDL 5
Phenol	NA	NA	NA	NA	NA	NA	NA	BDL 5
Total Metals (ug/L)								
Antimony	NA	NA	ND 50	NA	NA	NA	NA	BDL 10
Arsenic	NA	NA	23.7	NA	NA	NA	NA	2
Beryllium	NA	NA	ND 5	NA	NA	NA	NA	BDL 10
Cadmium	NA	NA	ND 5	NA	NA	NA	NA	BDL 1
Chromium	NA	NA	82	NA	NA	NA	NA	BDL 5
Copper	NA	NA	104	NA	NA	NA	NA	BDL 50
Lead	NA	NA	78.3	NA	NA	NA	NA	40
Mercury	NA	NA	ND 0.2	NA	NA	NA	NA	3
Nickel	NA	NA	85.2	NA	NA	NA	NA	BDL 50
Silver	NA	NA	ND 10	NA	NA	NA	NA	BDL 10
Thallium	NA	NA	ND 50	NA	NA	NA	NA	300
Zinc	NA	NA	176	NA	NA	NA	NA	400
Aluminum	NA	NA	42500	NA	NA	NA	NA	NA
Barium	NA	NA	223	NA	NA	NA	NA	NA

TABL[illegible]

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-28* *May 1991*	*OW-28* *May 1991* *(Duplicate)*	*OW-28* *July 1992*	*OW-28* *July 1992* *(Duplicate)*	*OW-28* *May 1993*	*OW-28* *December 1993*	*OW-28* *September 1994*	*OW-29* *May 1986*
Total Metals (ug/L) (cont.)								
Calcium	NA	NA	19500	NA	NA	NA	NA	NA
Iron	NA	NA	64700	NA	NA	NA	NA	NA
Magnesium	NA	NA	16300	NA	NA	NA	NA	NA
Manganese	NA	NA	3140	NA	NA	NA	NA	NA
Potassium	NA	NA	9400J	NA	NA	NA	NA	NA
Sodium	NA	NA	4780	NA	NA	NA	NA	NA
Vanadium	NA	NA	63	NA	NA	NA	NA	NA
Miscellaneous Inorganics (mg/L)								
Alkalinity, Total	NA	NA	46.5	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate	NA	NA	46.5	NA	NA	NA	NA	NA
BOD5	NA	NA	ND 6.0	NA	NA	NA	NA	NA
Chloride	NA	NA	4.96	NA	NA	NA	NA	NA
COD	NA	NA	11.0	NA	NA	NA	NA	NA
Nitrate	NA	NA	0.0827	NA	NA	NA	NA	NA
Nitrogen	NA	NA	0.0827	NA	NA	NA	NA	NA
Total Phosphorus	NA	NA	1.12	NA	NA	NA	NA	NA
TDS	NA	NA	123	NA	NA	NA	NA	NA
TSS	NA	NA	1090	NA	NA	NA	NA	NA
Sulfate	NA	NA	17.6	NA	NA	NA	NA	NA
Sulfide	NA	NA	ND 1.0	NA	NA	NA	NA	NA
TOC	NA	NA	4.5	NA	NA	NA	NA	NA

TABL[illegible]

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	OW-29	OW-29	OW-29	OW-29	OW-29	OW-29
Sample Event:	August 1986	February 1989	May 1991	July 1992	December 1993	September 1994
Volatile Organic Compounds (ug/L)						
Vinyl Chloride	1.1	ND 10	ND 2	ND 5	ND 5	ND 5
Chloroethane	2	ND 10	ND 2	ND 5	ND 5	ND 5
Methylene Chloride	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Acetone	BDL 10	ND 25	20.8	54	42	ND 10
1,1-Dichloroethene	18.8	ND 5	ND 2	ND 5	ND 5	ND 5
1,1-Dichloroethane	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
trans-1,2-Dichloroethene	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
2-Butanone (MEK)	BDL 10	ND 25	ND 10	ND 10	ND 10	ND 10
1,2-Dichloroethane	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,2-Trichloroethane	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Benzene	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
4-Methyl-2-pentanone (MIBK)	BDL 10	ND 10	ND 10	ND 10	ND 10	ND 10
Toluene	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Ethylbenzene	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Styrene	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Total Xylene	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Base/Neutral Acid Compounds (ug/L)						
Di-n-butyl Phthalate	NA	NA	NA	NA	NA	NA
Phenol	9	NA	NA	NA	NA	NA
Total Metals (ug/L)						
Antimony	40	ND 50	NA	ND 50	NA	NA
Arsenic	450	5	NA	25.6	NA	NA
Beryllium	BDL 10	12	NA	ND 5	NA	NA
Cadmium	7	ND 5	NA	ND 5	NA	NA
Chromium	80	250	NA	94000	NA	NA
Copper	340	610	NA	47.3	NA	NA
Lead	300	200	NA	97.2	NA	NA
Mercury	2	1.1	NA	ND 0.2	NA	NA
Nickel	120	520	NA	60.8	NA	NA
Silver	230	ND 5	NA	ND 10	NA	NA
Thallium	1760	ND 8	NA	ND 50	NA	NA
Zinc	470	1600	NA	113	NA	NA
Aluminum	NA	NA	NA	34100	NA	NA
Barium	NA	NA	NA	229	NA	NA

TA___3

HISTORICAL GROUNDWATER MONITORING WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*
Sample Event:	*August 1986*	*February 1989*	*May 1991*	*July 1992*	*December 1993*	*September 1994*
Total Metals (ug/L) (cont.)						
Calcium	NA	NA	NA	72100	NA	NA
Iron	NA	NA	NA	[95500]	NA	NA
Magnesium	NA	NA	NA	13300	NA	NA
Manganese	NA	NA	NA	[19700]	NA	NA
Potassium	NA	NA	NA	5800J	NA	NA
Sodium	NA	NA	NA	5550	NA	NA
Vanadium	NA	NA	NA	ND 50	NA	NA
Miscellaneous Inorganics (mg/L)						
Alkalinity, Total	NA	NA	NA	224	NA	NA
Alkalinity, Bicarbonate	NA	NA	NA	224	NA	NA
BOD5	NA	NA	NA	11.9J	NA	NA
Chloride	NA	NA	NA	3.8	NA	NA
COD	NA	NA	NA	27.3	NA	NA
Nitrate	NA	NA	NA	0.0663	NA	NA
Nitrogen	NA	NA	NA	0.0663	NA	NA
Total Phosphorus	NA	NA	NA	ND 0.05	NA	NA
TDS	NA	NA	NA	266	NA	NA
TSS	NA	NA	NA	863	NA	NA
Sulfate	NA	NA	NA	11.9	NA	NA
Sulfide	NA	NA	NA	ND 1.0	NA	NA
TOC	NA	NA	NA	5.8	NA	NA

Notes:
J Associated value is estimated.
ND Not detected at stated detection limit.
BDL Below Detection Limit
NA Not Analyzed
[ ] Exceedance of New York State groundwater quality standard or guidance value.

...LE 2..

HISTORICAL RESIDENTIAL WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*RW-1*	*RW-1*	*RW-1*	*RW-2*	*RW-2*	*RW-2*
Sample Event:	*August 1986*	*February 1989*	*July 1992*	*August 1986*	*July 1992*	*December 1993*
Volatile Organic Compounds (ug/L)						
1,1-Dichloroethene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Base/Neutral Acid Compounds (ug/L)						
Phenol	BDL 2	NA	NA	20	NA	NA
Total Metals (ug/L)						
Arsenic	20	ND 3	NA	9	NA	NA
Copper	BDL 50	11	NA	BDL 50	NA	NA
Lead	BDL 1	ND 2	NA	2	NA	NA
Zinc	BDL 10	ND 10	NA	BDL 10	NA	NA

TABLE 2.4

HISTORICAL RESIDENTIAL WELL DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*RW-2* *September 1994*	*RW-3* *August 1986*	*RW-3* *February 1989*	*RW-3* *July 1992*	*RW-4* *August 1986*	*RW-4* *February 1989*
Volatile Organic Compounds (ug/L)						
1,1-Dichloroethene	ND 5	18.8	ND 5	ND 5	BDL 1	ND 5
Base/Neutral Acid Compounds (ug/L)						
Phenol	NA	BDL 2	NA	NA	3	NA
Total Metals (ug/L)						
Arsenic	NA	10	ND 6	NA	9	ND 3
Copper	NA	BDL 50	ND 6	NA	140	ND 6
Lead	NA	7	ND 2	NA	3	ND 2
Zinc	NA	40	10	NA	10	ND 10

Notes:

- \- Compound was not detected, below detection limit, or was not analyzed.
- ND Not detected at stated detection limit.
- BDL Below Detection Limit
- NA Not Analyzed
- [box] Exceedance of New York State groundwater quality standard or guidance value.

...LE 2.

HISTORICAL SURFACE WATER SAMPLE DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample ID: *Sample Location:*	*SW-4* *DITCH-1* *August 1986*	*SW-1* *DITCH-2* *August 1986*	*SAMPLE 5* *DITCH-3* *December 1988*	*SAMPLE 9* *DITCH-3* *February 1989*	*SW-2* *DITCH-4* *August 1986*	*SAMPLE 10* *DITCH-4* *February 1989*	*SS-1* *DITCH-4* *May 1991*
Volatiles (µg/L)							
Methyl Cellosolve	NA	NA	120000	ND 5000	NA	ND 5000	ND 2000
Acetone	BDL 10	BDL 10	350000	3900	BDL 10	8800	ND 20
4-Methyl-2-pentanone (MIBK)	BDL 10	BDL 10	820	ND 100	BDL 10	ND 100	ND 10
Toluene	BDL 1	BDL 1	180	ND 50	BDL 1	ND 50	ND 2
Total Xylene	BDL 1	BDL 1	130	ND 50	BDL 1	ND 50	ND 2
Base/Neutral Acid Compounds (ug/L)							
Phenol	4	3	NA	NA	5	NA	NA
Total Metals (ug/L)							
Arsenic	10	40	ND	5	50	ND 3	NA
Cadmium	BDL 1	1	ND	ND 5	8	ND 5	NA
Chromium	BDL 5	8	ND	20	BDL 5	ND 10	NA
Copper	BDL 50	BDL 50	27	61	BDL 50	16	NA
Lead	30	60	ND	49	90	11	NA
Mercury	BDL 0.4	1	3	ND 0.1	0.7	ND 0.1	NA
Thallium	BDL 500	BDL 500	80	ND 8	BDL 500	ND 4	NA
Zinc	30	90	ND	160	310	130	NA

TABLE 2.5

HISTORICAL SURFACE WATER SAMPLE DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample ID: *Sample Location:*	*SW-2* *DITCH-4* *December 1993*	*SW-3* *SEEP* *August 1986*	*Sample 11* *CISTERN* *February 1989*	*SS-2* *CISTERN* *May 1991*	*SW-1* *CISTERN* *July 1992*	*SW-1* *CISTERN* *December 1993*	*CIS* *CISTERN* *September 1994*
Volatiles (µg/L)							
Methyl Cellosolve	ND 1000	NA	ND 5000	ND 2000	ND 5000	ND 1000	ND 2000
Acetone	ND 10	BDL 10	ND 25	ND 20	ND 10	1400	ND 10
4-Methyl-2-pentanone (MIBK)	ND 10	BDL 10	ND 10	ND 10	ND 10	ND 10	ND 10
Toluene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Total Xylene	9.1	BDL 1	ND 5	ND 2	ND 5	9.1	ND 5
Base/Neutral Acid Compounds (ug/L)							
Phenol	NA	2		NA	NA	NA	NA
Total Metals (ug/L)							
Arsenic	NA	20	4	NA	NA	NA	NA
Cadmium	NA	2	ND 5	NA	NA	NA	NA
Chromium	NA	BDL 5	ND 10	NA	NA	NA	NA
Copper	NA	220	10	NA	NA	NA	NA
Lead	NA	30	8	NA	NA	NA	NA
Mercury	NA	[0.6]	ND 0.1	NA	NA	NA	NA
Thallium	NA	BDL 50	ND 4	NA	NA	NA	NA
Zinc	NA	90	30	NA	NA	NA	NA

Notes:
- Compound was not detected, below detection limit, or was not analyzed.

ND Not detected at stated detection limit.
BDL Below Detection Limit
NA Not Analyzed
[ ] Exceedance of New York State surface water quality standard or guidance value.

TABLE 2.6

NEW YORK STATE GROUNDWATER AND SURFACE WATER CRITERIA (1)(2)
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	Class GA Groundwater	*Class C Surface Water*	*Class D Surface Water*
Volatile Organic Compounds (µg/L)			
Vinyl Chloride	2	NA	NA
Chloroethane	5	NA	NA
Methylene Chloride	5	NA	NA
Acetone	50	NA	NA
1,1-Dichloroethene	5	NA	NA
1,1-Dichloroethane	5	NA	NA
trans-1,2-Dihcloroethene	5	NA	NA
2-Butanone (MEK)	50*	NA	NA
1,2-Dichloroethane	5	NA	NA
1,1,2-Trichloroethane	5	NA	NA
Benzene	0.7	6*	NA
4-Methyl-2-pentanone (MIBK)	NA	NA	NA
Toluene	5	NA	NA
Ethylbenzene	5	NA	NA
Styrene	5	NA	NA
Total Xylene	5	NA	NA
Base/Neutral Acid Compounds (µg/L)			
Di-n-butyl Phthalate	50	NA	NA
Phenol	1	5	5
Total Metals (µg/L)			
Antimony	3*	NA	NA
Arsenic	25	190	360
Beryllium	3*	(3)	NA
Cadmium	10	(4)	(5)
Chromium	50	(6)	(7)
Copper	200	(8)	(9)
Lead	25	(10)	(11)
Mercury	2	0.2*	0.2*
Nickel	NA	(12)	(13)
Silver	50	0.1	(14)
Thallium	4*	8	20
Zinc	300	(15)	(16)
Aluminum	NA	100	NA

TABLE 2.6

NEW YORK STATE GROUNDWATER AND SURFACE WATER CRITERIA (1)(2)
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	Class GA Groundwater	*Class C Surface Water*	*Class D Surface Water*
Total Metals (µg/L) (continued)			
Barium	1000	NA	NA
Calcium	NA	NA	NA
Iron	300	300	300
Magnesium	35000*	NA	NA
Manganese	300	NA	NA
Potassium	NA	NA	NA
Sodium	20000	NA	NA
Vanadium	NA	14	190

Notes:
* Associated value is a guidance value.
(1) From NYSDEC's Technical Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Quality Standards and Guidance Values", dated October 22, 1993.
(2) Only reported for those parameters detected in the groundwater and surface water data at the Site.
(3) 11 µg/L where hardness ≤75 mg/L; 1,100 µg/L when hardness >75 mg/L.
(4) exp (0.7852 [ln(ppm hardness)] - 3.490)
(5) exp (1.128 [ln(ppm hardness)] - 3.828)
(6) exp (0.819 [ln(ppm hardness)] + 1.561)
(7) exp (0.819 [ln(ppm hardness)] + 3.688)
(8) exp (0.8545 [ln(ppm hardness)] - 1.465)
(9) exp (0.9422 [ln(ppm hardness)] - 1.464)
(10) exp (1.266 [ln(ppm hardness)] - 4.661)
(11) exp (1.266 [ln(ppm hardness)] - 1.416)
(12) exp (0.76 [ln(ppm hardness)] + 1.06)
(13) exp (0.76 [ln(ppm hardness)] + 4.02)
(14) exp (1.72 [ln(ppm hardness)] - 6.52)
(15) exp (0.85 [ln(ppm hardness)] + 0.50)
(16) exp (0.85 [ln(ppm hardness)] + 0.86)

TABLE 2.7

SUMMARY OF GROUNDWATER/SURFACE WATER DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	Total Number of Samples	*Number of Detections*	*Number of Exceedances*	*Highest Detected Concentration (μg/L)*
Volatile Organic Compounds (ug/L)				
Methyl Cellosolve	44	1	NS	120,000
Vinyl Chloride	56	3	2	20
Chloroethane	56	2	0	3
Methylene Chloride	56	8	5	170
Acetone	56	22	15	350,000
1,1-Dichloroethene	56	2	2	18.8
1,1-Dichloroethane	56	2	1	11
trans-1,2-Dichloroethene	56	3	1	6
2-Butanone (MEK)	56	5	1	65
1,2-Dichloroethane	56	1	0	5
1,1,2-Trichloroethane	56	1	0	5
Benzene	56	1	0	2
4-Methyl-2-pentanone (MIBK)	56	6	NS	820
Toluene	56	12	11	190
Ethylbenzene	56	13	12	28
Styrene	56	2	0	3.59
Total Xylene	56	15	12	590
Base/Neutral Acid Compounds (ug/L)				
Di-n-butyl Phthalate	3	1	0	7
Phenol	14	9	3	22
Total Metals (ug/L)				
Antimony	28	1	1	40
Arsenic	28	23	4	110
Beryllium	28	1	1	12
Cadmium	28	6	0	7
Chromium	28	11	4	94,000
Copper	28	25	6	3,310
Lead	28	22	7	300
Mercury	28	8	5	4
Nickel	28	2	0	520
Silver	28	2	2	230
Thallium	28	15	3	1,760
Zinc	28	22	5	1,600
Aluminum	3	3	0	42,500
Barium	3	3	0	229
Calcium	3	3	0	72,100
Iron	3	3	0	95,500
Magnesium	3	3	0	16,300
Manganese	3	3	0	19,700
Potassium	3	3	0	9,400
Sodium	3	3	0	5,800
Vanadium	3	3	0	63

Notes:
NS No water quality standards available.

TABL... [illegible]

HISTORICAL SOIL AND SEDIMENT DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	OW-27		OW-28		OW-29		SS-1
Sample Interval/Location:	*8' - 10'*	*12' - 14'*	*6' - 8'*	*8' - 10'*	*0' - 2'*	*2' - 4'*	*DITCH-1*
Sample Event:	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*August 1986*
Matrix:	*Soil*	*Soil*	*Soil*	*Soil*	*Soil*	*Soil*	*Sediment*
Volatile Organic Compounds (µg/kg)							
Methyl Cellosolve	BDL 10	BDL 10	BDL 10	BDL 10	BDL 10	BDL 10	NA
Methylene Chloride	NA	NA	NA	NA	NA	NA	BDL 1
Acetone	BDL 1	BDL 1	BDL 1	1200	1200	1700	BDL 100
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	BDL 10
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	BDL 10
2-Butanone (MEK)	NA	NA	NA	NA	NA	NA	BDL 100
2-Hexanone	NA	NA	NA	NA	NA	NA	BDL 100
Toluene	NA	NA	NA	NA	NA	NA	BDL 10
Ethylbenzene	NA	NA	NA	NA	NA	NA	BDL 10
Base/Neutral Acid Compounds (mg/kg)							
Phenol	NA	NA	NA	NA	NA	NA	1.6
Total Metals (mg/kg)							
Antimony	NA	NA	NA	NA	NA	NA	2.38
Arsenic	NA	NA	NA	NA	NA	NA	29.6
Beryllium	NA	NA	NA	NA	NA	NA	BDL 0.5
Cadmium	NA	NA	NA	NA	NA	NA	0.1
Chromium	NA	NA	NA	NA	NA	NA	9.5
Copper	NA	NA	NA	NA	NA	NA	17.5
Lead	NA	NA	NA	NA	NA	NA	7.3
Mercury	NA	NA	NA	NA	NA	NA	0.15
Nickel	NA	NA	NA	NA	NA	NA	9.5
Selenium	NA	NA	NA	NA	NA	NA	BDL 0.02
Silver	NA	NA	NA	NA	NA	NA	0.4
Thallium	NA	NA	NA	NA	NA	NA	241
Zinc	NA	NA	NA	NA	NA	NA	39

TABLE 2.8

HISTORICAL SOIL AND SEDIMENT DATA
DETECTED COMPOUNDS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Interval/Location:	*SS-2* DITCH-2	*SS-3* DITCH-3	*SS-4* DITCH-4	*SAMPLE 1* TRENCH 6	*SAMPLE 2* TEST PIT 2	*SAMPLE 3* DUP. SAMPLE 2	*SAMPLE 4* TRENCH 1	*SAMPLE 6* DRUM
Sample Event:	*August 1986*	*August 1986*	*August 1986*	*December 1988*	*December 1988*	*December 1988*	*December 1988*	*December 1988*
Matrix:	*Sediment*	*Sediment*	*Sediment*	*Soil*	*Soil*	*Soil*	*Soil*	*Waste*
Volatile Organic Compounds (μg/kg)								
Methyl Cellosolve	NA	NA	NA	110000	ND	ND	ND	ND
Methylene Chloride	BDL 1	BDL 1	BDL 1	[210]	ND	ND	ND	ND
Acetone	BDL 100	BDL 100	BDL 100	[190000]	ND	ND	ND	ND
1,1-Dichloroethene	BDL 10	BDL 10	BDL 10	29	ND	ND	ND	ND
1,1-Dichloroethane	BDL 10	BDL 10	BDL 10	7.9	ND	ND	ND	ND
2-Butanone (MEK)	BDL 100	BDL 100	BDL 100	[500]	ND	ND	ND	ND
2-Hexanone	BDL 100	BDL 100	BDL 100	56	ND	ND	ND	ND
Toluene	BDL 10	BDL 10	BDL 10	800	ND	ND	ND	7.2
Ethylbenzene	BDL 10	BDL 10	BDL 10	60	ND	ND	ND	ND
Base/Neutral Acid Compounds (mg/kg)								
Phenol	0.4	0.004	1	NA	NA	NA	NA	NA
Total Metals (mg/kg)								
Antimony	3.27	2.54	2.18	ND	ND	ND	ND	NA
Arsenic	[16.6]	11.4	9.6	3.5	4.4	4.1	3.9	NA
Beryllium	BDL 0.5	BDL 0.5	BDL 0.5	0.3	0.3	0.3	0.3	NA
Cadmium	1	0.33	0.14	ND	ND	ND	ND	NA
Chromium	6.7	6.08	0.1	9	7	6	6	NA
Copper	16	9.5	12	20	20	20	18	NA
Lead	4	7.32	4.5	18	18	16	130	NA
Mercury	0.31	0.09	0.08	ND	ND	0.08	0.1	NA
Nickel	4.5	6	15	16	15	14	13	NA
Selenium	0.02	BDL 0.02	BDL 0.02	ND	ND	ND	ND	NA
Silver	0.3	0.36	0.3	ND	ND	ND	ND	NA
Thallium	200	195	241	ND	ND	ND	ND	NA
Zinc	[466]	[66]	38	[63]	[58]	[61]	[140]	NA

Notes:

- \- Compound was not detected, below detection limit, or was not analyzed.
- ND Not detected at stated detection limit.
- BDL Below Detection Limit
- NA Not Analyzed
- [ ] Exceedance of NYSDEC cleanup objective or maximum Eastern USA background.

TABLE 2.9

NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES[(1)]
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	NYSDEC Cleanup Objective (2)	*Eastern USA Background*
Volatile Organic Compounds (µg/kg)		
Methyl Cellosolve	NA	NA
Methylene Chloride	100	NA
Acetone	200	NA
1,1-Dichloroethene	400	NA
1,1-Dichloroethane	200	NA
2-Butanone (MEK)	300	NA
2-Hexanone	NA	NA
Toluene	1500	NA
Ethylbenzene	5500	NA
Base/Neutral Acid Compounds (µg/kg)		
Phenol	0.03 or ND	NA
Total Metals (mg/kg)		
Antimony	SB	NA
Arsenic	7.5 or SB	3 - 12
Beryllium	0.16 or SB	0 - 1.75
Cadmium	1 or SB	0.1 - 1
Chromium	10 or SB	10 or SB
Copper	25 or SB	1- 50
Lead	(3)	(3)
Mercury	0.1	0.001 - 0.2
Nickel	13 or SB	0.5 - 25
Selenium	2 or SB	0.1 - 3.9
Silver	SB	NA
Thallium	SB	NA
Zinc	20 or SB	9 - 50

Notes:

SB Site Background
ND Not Detected
NA Not Available
(1) As provided in NYSDEC TAGM 4046: Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994.
(2) Total VOCs must be less than 10 ppm per TAGM 4046.
(3) SB or 4 - 61 ppm in rural, undeveloped areas or 200 - 500 ppm in suburban areas or near highways.

TABLE 4.1

IDENTIFICATION OF RESPONSE ACTIONS,
TECHNOLOGIES AND PROCESS OPTIONS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Media	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Groundwater	No Action	None	Not Applicable	No remedial measures or actions are taken at the Site. Groundwater contamination is not addressed.
	Limited Action	Institutional Controls	Access/Deed Restrictions	Implementation of institutional controls to restrict groundwater usage at the Site and installation of a fence around the Site to restrict access.
		Long-Term Groundwater Monitoring	Monitor Groundwater	Monitor the natural degradation and attenuation of Site-related contaminated groundwater through sampling and analysis.
	Physical Containment	Barrier Walls	Slurry Wall/Grout Curtain/Sheet Piling	Construction of a low permeability barrier wall downgradient or around the area of concern to restrict off-Site groundwater migration and limit upgradient groundwater flow to the Site.
	Hydraulic Containment and/or Source Removal	Groundwater Extraction	Extraction Wells	Installation and operation of groundwater extraction wells to induce an off-Site to on-Site groundwater flow direction and to remove groundwater contaminants.
			Intergrated Groundwater Injection/Extraction Well Network	Installation and operation of groundwater extraction and injection wells to collect contaminated on-Site groundwater and provide a hydraulic barrier to minimize off-Site migration of contaminated groundwater.
			Collection Trenches	Installation of downgradient groundwater collection drains/trenches to achieve a hydraulic barrier which will restrict migration of groundwater off Site.
	Treatment of Collected Groundwater	On-Site Physical Treatment	Activated Carbon Treatment	Adsorption of contaminants onto activated carbon for off-Site disposal or treatment. Clean water would be reinjected, disposed or discharged to the ground surface or drainage ditch.
			Air Stripping Treatment	Remove contaminants to vapor phase, reinject or dispose of treated water. Vapor treatment may be required.

TABLE 4.1

IDENTIFICATION OF RESPONSE ACTIONS,
TECHNOLOGIES AND PROCESS OPTIONS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Media	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Groundwater	Treatment of Collected Groundwater	On-Site Chemical Treatment	Treatment by Oxidation	Chemically destroys groundwater contaminants via oxidation using ozone or ultraviolet light or hydrogen peroxide.
		Off-Site Treatment/ Disposal	Off-Site Treatment/Disposal	Transportation of extracted groundwater to a permitted treatment, storage and disposal facility.
	In-Situ Groundwater Treatment	Biological Treatment	Aerobic/Anaerobic Biodegradation	Bacteria are added to groundwater through injection wells and nutrients are injected to stimulate bacterial degradation. The bacterial colony will eventually breakdown targeted organic constituents to less toxic compounds.
		Physical Treatment	Air Sparging	Installation of an air injection system to air-strip volatiles from the groundwater. The volatiles are entrained in air bubbles which enter the vadose zone where they can be captured with a vapor extraction system, or if permissible, allowed to escape through the ground surface to the atmosphere.
Soil	No Action	None	NA	No remedial actions are taken to improve the Site soil quality. All contaminants remain on-Site.
	Limited Further Action	Institutional Controls	Access/Deed Restrictions	Limit future uses of Site grounds and installation of a fence around the Site to restrict access.
	Physical Containment	Cap	Permeable Soil Cover	Regrade, cover with compacted fill and topsoil. Prevents physical contact with contaminated soil/fill beneath the cover.
			Low Permeability Cap	Regrade, cover with compacted clay and topsoil or asphalt. Prevents physical contact with contaminated soil/fill beneath the cap and reduce downward infiltration of precipitation to the water table.

TABLE 4.1

IDENTIFICATION OF RESPONSE ACTIONS,
TECHNOLOGIES AND PROCESS OPTIONS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Media	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Soil	In-Situ Treatment	Biological Treatment	Aerobic/Anaerobic Biodegradation	Bacteria and nutrients are added to soils to stimulate bacterial degradation through injection wells or surface application. The bacterial colony will eventually break down targeted organic constituents to less toxic compounds. The bacterial colonies will be reduced as the targeted constituents are reduced.
		Physical Treatment	Vacuum Extraction	Extraction wells or trenches are used to extract volatilized contaminants from soils with the application of a vacuum or negative pressure.
			Solvent Flushing	Water or surfactant solution is circulated into the affected soil area, removed by extraction drains and treated for reinjection. Contaminants will normally adsorb to the surfactant and will be rinsed from the affected area.
	Removal and On-Site Treatment/Disposal	Physical Treatment	Aeration by Landfarming	Involves excavation of affected soil and stockpiling them on pre-constructed containment pads. On the pads, the soils are tilled to aerate the soil and release volatiles into the air.
			Vacuum Extraction	Soil is excavated and placed in piles. Soil vapors are removed by a vacuum applied to perforated pipes installed in the pile.
			Low Temperature Thermal Desorption	Contaminated soil is excavated and heated through a process designed to release volatiles to a vapor phase.
		Physical/Chemical Treatment	Solvent Extraction/ Soil Washing	Organic solvents are mixed with contaminated soils in a series of mixing/washing tanks and then removed from the soils extracting the contaminants.
		On-Site Disposal	Landfill	Construction of an on-Site landfill or containment cell for placement of excavated contaminated soils and debris.

TABLE 4.1

IDENTIFICATION OF RESPONSE ACTIONS,
TECHNOLOGIES AND PROCESS OPTIONS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Media	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Soil	Removal and Off-Site Treatment/Disposal	Thermal Treatment	Incineration	Excavation and transportation of contaminated soils to an off-Site incinerator at a permitted treatment, storage and disposal facility.
		Off-Site Disposal	Landfill	Excavation and transportation of contaminated soils to an appropriate permitted off-Site landfill facility.

TABLE 4.2

INITIAL SCREENING OF POTENTIAL
GROUNDWATER REMEDIAL TECHNOLOGIES
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

General Response Action	*Effectiveness*	*Implementability*	*Cost*	*Retained for Further Evaluation*	*Comments*
No Action	- Not effective in meeting Site remediation goals. - No additional risk during implementation.	- Not applicable	None.	Yes	Required.
Limited Action					
Institutional Controls	- Effectiveness is dependant on future enforcement of deed restrictions. - No reduction of volume, toxicity, or mobility of Site contaminants. - Effective in reducing potential for human exposure to and ingestion of Site chemicals.	- Very implementable at any site.	Negligible cost.	Yes	May be utilized as a support technology, will not achieve remediation goals alone.
Long-term Groundwater Monitoring	- No reduction of volume, toxicity, or mobility of Site contaminants. - Effective in identifying and tracking the contaminant plume and its natural degradation and attenuation. - Does not reduce potential for human ingestion of Site chemicals	- Very implementable; groundwater wells at the Site are sufficient in number and location.	Low capital, low O & M.	Yes	May be utilized as a support technology, will not reach remediation goals alone.
Physical Containment					
Barrier Walls	- Effectively reduces mobility of Site contaminants. - No reduction in volume or toxicity of contaminants. - Protective of community during remedial action.	- Will not be effective in containing groundwater in the bedrock since construction of a barrier wall in the bedrock is not feasible. - An upgradient barrier installed in the overburden may not signficantly reduce groundwater at the Site if there is an upward gradient from the bedrock to the overburden as evidenced by the presence of "springs" at or near the Site.	Moderate capital, low O & M.	No	Will not be effective at this Site.

TABLE 4.2

INITIAL SCREENING OF POTENTIAL
GROUNDWATER REMEDIAL TECHNOLOGIES
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

General Response Action	*Effectiveness*	*Implementability*	*Cost*	*Retained for Further Evaluation*	*Comments*
Hydraulic Containment and/or Source Removal					
Extraction Wells	- Extraction wells installed within the contaminated areas will actively remove contaminated groundwater. - Very effective for collection of groundwater. Limited effectiveness in the provision of hydraulic containment at the Site. - Reduces mobility of contaminants	- Very implementable at the Site	Low capital, low O & M.	Yes	Retained as an effective collection and containment technology.
Integrated Injection/ Extraction Well Network	- Very effective for collection groundwater and provision of hydraulic containment in the overburden. - Reduces mobility of contaminants.	- Difficult to implement due to complicated controls required to maintain hydraulic containment.	Low capital, moderate O &M.	No	Difficult to implement.
Collection Trenches	- Very effective for collection of groundwater and provision of hydraulic containment. - Reduces mobility of contaminants in the overburden. - Passively removes contaminants in groundwater and soil.	- Construction to required depths is feasible. - Disposal of excess excavated soils required.	Moderate capital, low O & M.	No	Excess soil excavated for the installation will require disposal/treatment.
Treatment of Collected Groundwater					
Activated Carbon Treatment	- Very effective in reducing VOC concentrations in water, except for acetone. Limited effectiveness in the removal of acetone. - Discharge may meet SPDES regulations. - Reduces volume and mobility of contaminants.	- Implementable with low construction costs. - Construction and operation and maintenance are feasible. - Requires maintenance routinely. - Requires SPDES discharge permit.	Low capital, moderate O & M.	No	
Air Stripping Treatment	- Very effective in reducing VOC concentrations; ineffective in the removal of acetone from groundwater due to its high solubility in water. - May require pretreatment for metals. - Discharge may meet SPDES regulations.	- Implementable with low construction costs. - Construction and operation and maintenance are feasible. - Requires routine maintenance. - May require vapor phase treatment. - May require carbon treatment as a polishing step to meet surface water discharge criteria for the Site. - Requires SPDES discharge permit.	Moderate capital, moderate O & M.	No	May require vapor phase treatment and pretreatment of groundwater.
Treatment by Oxidation	- Very effective in reducing VOC concentrations. - Destroys VOCs. - Reduces toxicity of the contaminants - Discharge will meet SPDES regulations.	- Implementable with moderate construction costs. - Requires high maintenance in comparison to carbon treatment and more difficult to operate. - Requires SPDES discharge permit.	Moderate capital, moderate O & M.	Yes	May be difficult to operate long-term and more costly than other technologies.
Off-Site Disposal	- Effective for removal of organics and inorganics from the groundwater regime	- May be difficult to implement depending on the location and capacity of a suitable treatment facility. - Not feasible for long-term treatment operation.	Transportation costs may be high, disposal cost is moderate.	No	Difficult to implement long-term.

TABLE 4.2

INITIAL SCREENING OF POTENTIAL GROUNDWATER REMEDIAL TECHNOLOGIES FORMER SCHMIGEL SITE HOOSICK FALLS, NEW YORK

General Response Action	*Effectiveness*	*Implementability*	*Cost*	*Retained for Further Evaluation*	*Comments*
In Situ Groundwater Treatment					
Aerobic/Aanaerobic Biodegradation	- Effective in the treatment of the groundwater organic contaminants of concern at the Site. - May be combined with air venting to enhance the biodegradation of organics. - Laboratory and pilot scale testing is required.	- Technically feasible and systems are readily available. - Addition of substrate (nutrients, oxygen) may be required.	Low capital, low O & M.	Yes	
Air Sparging	- Can be combined with a vapor extraction system to remove and treat organics entrained in the soil vapors. - May not achieve ARARs/SCGs as a stand alone treatment.	- Technically feasible due to low construction and O & M costs. - Systems are readily available.	Low capital, low O & M.	Yes	May be retained as a support technology for SVE.

TABLE 4.3

INITIAL SCREENING OF POTENTIAL SOIL REMEDIAL TECHNOLOGIES FORMER SCHMIGEL SITE HOOSICK FALLS, NEW YORK

General Response Action	*Effectiveness*	*Implementability*	*Cost*	*Retained for Further Evaluation*	*Comments*
No Action	- No reduction of volume, toxicity, or mobility of Site contaminants.	- Not applicable	None.	Yes	Required.
LimitedAction					
Institutional Controls	- Effectiveness is dependant on future enforcement of deed restrictions. - No reduction of volume, toxicity, or mobility of Site contaminants. - Effective in reducing potential for human exposure to and ingestion of Site chemicals.	- Very implementable at any site.	Negligible cost.	Yes	May be utilized as a support technology, will not achieve remediation goals alone.
Physical Containment					
Permeable Soil Cover	- Effective in reducing the potential for human exposure to Site chemicals in the soils. - Does not reduce volume, toxicity, or mobility of Site contaminants.	- Easily implemented. - Requires routine inspections and maintenance. - Technically feasible.	Low capital, low maintenance.	No	Not necessary since surface soil contamination is minimal.
Impermeable Soil Cover	- Effective in reducing the potential for human exposure to and mobility of Site chemicals in the soils. - Does not reduce the volume or toxicity of the Site contaminants. - Will not likely significantly reduce the volume of contaminated groundwater at the Site which may need treatment.	- Easily implemented. - Requires routine inspections and maintenance. - Technically feasible and more protective than permeable soil cover.	Low capital, low maintenance.	Yes	May be retained as a support technology for SVE to control air flows.

TABLE 4.3

INITIAL SCREENING OF POTENTIAL SOIL REMEDIAL TECHNOLOGIES FORMER SCHMIGEL SITE HOOSICK FALLS, NEW YORK

General Response Action	*Effectiveness*	*Implementability*	*Cost*	*Retained for Further Evaluation*	*Comments*
In-Situ Treatment					
Aerobic/Anaerobic Biodegradation	- Effective for the degradation of the organic chemicals of concern in the Site soils. - Laboratory and pilot scale testing is required.	- Technically feasible and systems are readily available - Additional substrate (nutrients, oxygen) may be required.	Low capital, low O & M.	Yes	
Vacuum Extraction	- Effective in the removal of VOCs from the vadose zone soil but ineffective in the satured soils.	- Very implementable and technically feasible - Total cleanup costs are dependent on cleanup timeframe. - Off-gas treatment is nessecary for completeness.	Low capital, moderate O & M.	Yes	May be retained as a support technology for groundwater air sparging.
Solvent Flushing	- Treatability studies are necessary to determine the effectiveness. - Requires collection of flushing medium. - Difficult to ensure all soil interacts with solvent	- Implementability and feasibility depend on treatability studies, necessary flushing medium, and volume of flushing medium. - Implementation is difficult.	Moderate capital, moderate O & M.	No	Effectiveness and implementability is questionable.

TABLE 4.3

INITIAL SCREENING OF POTENTIAL
SOIL REMEDIAL TECHNOLOGIES
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

General Response Action	*Effectiveness*	*Implementability*	*Cost*	*Retained for Further Evaluation*	*Comments*
Removal and On-Site Treatment/Disposal					
Aeration by landfarming	- Effective in releasing VOCs from soil. - May present a problem with air emissions.	- Difficult to implement at the Site given the small size of the Site and the topography in the area. - Introduces risk of worker exposure to airborne contaminants. - Requires excavation of soil. - Precipitation and runoff may be problems. - Difficult to implement due to presence of demolition debris and drums.	Moderate capital	No	Difficult to implement.
Vacuum Extraction	- Effective in the removal of VOCs from the soil. - Increased effectiveness over in-situ due to the controls applied to ex-situ.	- Very implementable and technically feasible - Total cleanup costs are dependent on cleanup timeframe. - Off-gas treatment is necessary for completeness. - Excavation of material presents risks of exposure to workers. - Difficult to implement due to presence of demolition debris and drums.	Moderate capital	No	Difficult to implement.
Soil Washing	- Effectiveness is questionable as various washing media may be needed to wash all contaminants. - Washing media will need treatment.	- Implementability is questionable due to nature of fill at the Site. - Soil will have to be tested prior to backfill. - Requires excavation of soil.	High capital	No	Effectiveness and implementability is questionable.
Low Temperature Thermal Desorption	- Very effective in removing VOCs from soils. - Reduces volume of contaminants	- Limited units available. - Requires soil excavation. - May require solids processing. - Products will require disposal. - Air emission control may be required.	High capital	No	Difficult to implement.

TABLE 4.4

RETAINED REMEDIAL ALTERNATIVES
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Alternative 1	No Action
Alternative 2	Deed Restrictions, Access Control, Monitoring
Alternative 3	Excavation and Off-Site Disposal
Alternative 4	In Situ Soil Vapor Extraction (SVE) and Air Sparging
Alternative 5	In Situ Bioventing
Alternative 6	Intermittent Groundwater Pumping and Treatment

TABLE 5.1

DETAILED ANALYSIS CRITERIA AND FACTORS
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Evaluation Criteria	*Evaluation Factors*
Compliance with ARARs/SCGs	• Compliance with chemical-specific ARARs/SCGs • Compliance with action-specific ARARs/SCGs • Compliance with location-specific ARARs/SCGs
Overall Protection of Human Health and the Environment	• Elimination, reduction or control of risks • Environmental and health impacts
Short-Term Effectiveness	• Protection of community during remedial action • Protection of workers during remedial action • Time until objectives are achieved • Environmental impacts
Long-Term Effectiveness and Permanence	• Magnitude of residual risk • Adequacy of controls imposed after remedial action • Reliability of controls imposed after remedial action
Reduction of Toxicity, Mobility or Volume	• Treatment process used and materials treated • Amounts of hazardous materials destroyed or treated • Type and quantity of residuals remaining after treatment • Degree of expected reductions in toxicity, mobility and volume • Degree to which treatment is irreversible.
Implementability	• Technical feasibility (i.e. ability to construct and operate the technology; reliability of the technology based on its acceptable demonstrations) • Administrative feasibility • Availability of services and materials
Costs (1)	• Total capital costs • Operating and maintenance costs • Total present worth cost at six percent discount factor for 30-year period or estimated operating time
State Acceptance	• At public comment review stage, not addressed in FS
Community Acceptance	• At public comment review stage, not addressed in FS

Notes

(1) These cost estimates are considered to be accurate with a range of plus 50 percent to minus 30 percent.

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SUMMARY OF DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Evaluation Criteria	*Alternative 1* *No Action*	*Alternative 2* *Deed Restrictions, Access Control, Monitoring*	*Alternative 3* *Excavation and Off-Site Disposal*	*Alternative 4* *In Situ Soil Vapor Extraction and Air Sparging*	*Alternative 5* *In Situ Bioventing*	*Alternative 6* *Intermittent Groundwater Pumping and Treatment*
REDUCTION OF TOXICITY, MOBILITY, OR VOLUME	• No active reduction of toxicity, mobility, or volume of contaminants is provided; however, over the long-term, the volume and toxicity of contaminants at the Site will be reduced by natural attentuation and degradation.	• See Alternative 1.	• This remedy provides the maximum reduction in the toxicity, volume, and mobility of contaminants at the Site.	• This remedy reduces the toxicity and volume of the contaminants at the Site; hydraulic containment will not be achieved; however, mobility is reduced by the in situ treatment of the organic contaminants.	• See Alternative 4.	• See Alternative 4.
IMPLEMENTABILITY	• No remedy will be performed.	• This alternative is easily implemented since no technical applications are required.	• This alternative will be difficult to implement due to the consistently high water table at the Site; excavated materials may require dewatering/stabilization prior to shipping to an off-Site disposal facility; dewatering of the excavation will be required; the groundwater pumped from the excavation will require treatment prior to discharge to the ground surface. • Authorization for the temporary on-Site treatment and discharge of the excavation water will be required from the agencies. • If the excavated materials must be incinerated because of the land disposal restrictions, then delays may be encountered due to the limited availability of off-Site incineration capacity.	• This technology is well proven to work and can be readily implemented; required equipment and services are generally available. • An air discharge permit will be required for the vapor phase treatment system.	• This technology is proven to work can be readily implemented; some treatability studies will need to be performed to determine the optimal conditions required for biodegradation and to determine whether the bacteria in the Site soils are sufficient to biologically degrade the organic contaminants of concern. • Required equipment and services are generally available.	• This technology is very readily implementable and well demonstrated as a remedial alternative. • A SPDES permit is required for the on-Site treatment and discharge of the treated water; cooperation from the NYSDEC will be required to obtain the permit since there are no storm sewers in the area.

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SUMMARY OF DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Evaluation Criteria	*Alternative 1* *No Action*	*Alternative 2* *Deed Restrictions, Access Control, Monitoring*	*Alternative 3* *Excavation and Off-Site Disposal*	*Alternative 4* *In Situ Soil Vapor Extraction and Air Sparging*	*Alternative 5* *In Situ Bioventing*	*Alternative 6* *Intermittent Groundwater Pumping and Treatment*
COSTS						
• Capital Costs	$ 0.00	$ 17,500	$ 2,345,700	$ 175,800	$ 110,100	$ 203,000
• Annual O&M Costs	$ 0.00	$ 33,700 (years 0-5) $ 17,100 (years 6-30)	$ 33,200	$ 97,500	$ 72,000	$ 88,100(years 0-5) $ 71,500(years 6-30)
• Present Worth O&M Costs	$ 0.00	$ 307,200 (1)	$ 60,900 (2)	$ 260,600 (3)	$ 303,300 (4)	$ 596,200 (5)
• Total	$ 0.00	$ 324,700	$ 2,406,600	$ 436,400	$ 413,400	$ 799,200

Notes:

(1) Based on a 6 percent interest rate for 30 years.
(2) Based on a 6 percent interest rate over a 2-year post-remediation monitoring period.
(3) Based on a 6 percent interest rate over a 3-year operating period.
(4) Based on a 6 percent interest rate over a 5-year operating period.
(5) Based on a 6 percent interest rate over a 10-year operating period.

APPENDIX A

HISTORICAL SITE DATA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	*OW-27* *May 1986*	*OW-27* *August 1986*	*OW-27* *February 1989*	*OW-27* *February 1989 (Duplicate)*	*OW-27* *May 1991*	*OW-27* *May 1991 (Duplicate)*	*OW-27* *July 1992*
Volatile Organic Compounds (ug/L)							
Methyl Cellosolve	BDL 10000	NA	ND 5000	ND 5000	ND 2000	ND 2000	ND 5000
Chloromethane	BDL 1	BDL 1	ND 50	ND 25	ND 2	ND 2	ND 5
Bromomethane	BDL 1	BDL 1	ND 50	ND 25	ND 2	ND 2	ND 5
Vinyl Chloride	10	BDL 1	ND 50	ND 25	ND 2	ND 2	ND 5
Chloroethane	BDL 1	NA	ND 50	ND 25	ND 2	ND 2	ND 5
Methylene Chloride	4	BDL 1	ND 120	ND 62	135	124	ND 5
Acetone	7200	BDL 10	460	600	1180	1370	240
Carbon Disulfide	NA	BDL 10	ND 25	ND 12	ND 10	ND 10	ND 10
1,1-Dichloroethene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
1,1-Dichloroethane	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
trans-1,2-Dichloroethene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
cis-1,2-Dichloroethene	NA	NA	ND 25	ND 12	ND 2	ND 2	ND 5
Chloroform	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
2-Butanone (MEK)	NA	10	ND 120	ND 62	ND 10	10.8	ND 10
1,2-Dichloroethane	5	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
1,1,1-Trichloroethane	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Carbon Tetrachloride	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Bromodichloromethane	BDL 1	BDL 1	ND 50	ND 25	ND 2	ND 2	ND 5
1,2-Dichloropropane	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
1,3-Dichloropropene-Trans	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Trichloroethene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Dibromochloromethane	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
1,1,2-Trichloroethane	5	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Benzene	2	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
1,3-Dichloropropene(Cis)	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Bromoform	BDL 1	BDL 5	ND 25	ND 12	ND 2	ND 2	ND 5
4-Methyl-2-pentanone (MIBK)	NA	BDL 10	ND 50	ND 25	11.8	10.5	ND 10
2-Hexanone	NA	BDL 10	ND 50	ND 25	ND 10	ND 10	ND 10
Tetrachloroethene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
1,1,2,2-Tetrachloroethane	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Toluene	120	BDL 1	ND 25	32	11.2	10.7	23
Chlorobenzene	BDL 1	BDL 1	ND 25	ND 12	ND 2	ND 2	ND 5
Ethylbenzene	110	BDL 1	190	280	128	134	67
Styrene	NA	BDL 1	ND 25	ND 12	3.59	3.47	ND 5
Total Xylene	400	BDL 1	400	590	461	445	200
2-Chloroethylvinyl ether	BDL 10	BDL 1	ND 50	ND 25	NA	NA	NA
Vinyl acetate	NA	BDL 10	ND 50	ND 25	ND 10	ND 10	ND 10

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-27* *May 1986*	*OW-27* *August 1986*	*OW-27* *February 1989*	*OW-27* *February 1989* *(Duplicate)*	*OW-27* *May 1991*	*OW-27* *May 1991* *(Duplicate)*	*OW-27* *July 1992*
Base/Neutral Acid Compounds (ug/L)							
1,3-Dichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
Hexachloroethane	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl)ether	BDL 5	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	BDL 5	NA	NA	NA	NA	NA	NA
Nitrobenzene	BDL 5	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	BDL 5	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
Isophorone	BDL 5	NA	NA	NA	NA	NA	NA
Naphthalene	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	BDL 5	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	BDL 5	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	BDL 5	NA	NA	NA	NA	NA	NA
Acenaphthylene	BDL 5	NA	NA	NA	NA	NA	NA
Acenapthene	BDL 5	NA	NA	NA	NA	NA	NA
Diethylphthalate	BDL 5	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	BDL 5	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	BDL 5	NA	NA	NA	NA	NA	NA
Phenanthrene	BDL 5	NA	NA	NA	NA	NA	NA
Anthracene	BDL 5	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate	7	NA	NA	NA	NA	NA	NA
Fluoranthene	BDL 5	NA	NA	NA	NA	NA	NA
Pyrene	BDL 5	NA	NA	NA	NA	NA	NA
Benzidine	BDL 40	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	BDL 5	NA	NA	NA	NA	NA	NA
Chysene	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	BDL 5	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	BDL 10	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	BDL 5	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	BDL 5	NA	NA	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	OW-27 May 1986	OW-27 August 1986	OW-27 February 1989	OW-27 February 1989 (Duplicate)	OW-27 May 1991	OW-27 May 1991 (Duplicate)	OW-27 July 1992
Base/Neutral Acid Compounds (ug/L) (cont.)							
2,6-Dinitrotoluene	BDL 5	NA	NA	NA	NA	NA	NA
Fluorene	BDL 5	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	BDL 5	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	BDL 5	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	BDL 5	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	BDL 5	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	BDL 5	NA	NA	NA	NA	NA	NA
N-nitrosodimethyl Amine	BDL 5	NA	NA	NA	NA	NA	NA
2-Chlorophenol	BDL 5	NA	NA	NA	NA	NA	NA
2-Nitrophenol	BDL 5	NA	NA	NA	NA	NA	NA
Phenol	6	22	NA	NA	NA	NA	NA
2,4-Dimethylphenol	BDL 5	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	BDL 5	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	BDL 5	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	BDL 5	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	BDL 25	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-Dinitrophenol	BDL 25	NA	NA	NA	NA	NA	NA
Pentachlorophenol	BDL 25	NA	NA	NA	NA	NA	NA
4-Nitrophenol	BDL 25	NA	NA	NA	NA	NA	NA
Pesticides/PCBs (ug/L)							
a-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
g-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
b-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
Heptachlor	BDL 0.1	NA	NA	NA	NA	NA	NA
d-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
Aldrin	BDL 0.1	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	BDL 0.1	NA	NA	NA	NA	NA	NA
Endosulfan I	BDL 0.1	NA	NA	NA	NA	NA	NA
4,4'-DDE	BDL 0.1	NA	NA	NA	NA	NA	NA
Dieldrin	BDL 0.1	NA	NA	NA	NA	NA	NA
Endrin	BDL 0.1	NA	NA	NA	NA	NA	NA

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	*OW-27* *May 1986*	*OW-27* *August 1986*	*OW-27* *February 1989*	*OW-27* *February 1989* *(Duplicate)*	*OW-27* *May 1991*	*OW-27* *May 1991* *(Duplicate)*	*OW-27* *July 1992*
Pesticides/PCBs (ug/L) (cont.)							
4,4'-DDD	BDL 0.1	NA	NA	NA	NA	NA	NA
Endosulfan II	BDL 0.1	NA	NA	NA	NA	NA	NA
4,4'-DDT	BDL 0.1	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	BDL 0.1	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	BDL 0.1	NA	NA	NA	NA	NA	NA
Chlordane	BDL 2	NA	NA	NA	NA	NA	NA
Toxaphene	BDL 2	NA	NA	NA	NA	NA	NA
PCB-1221	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1232	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1016/1242	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1248	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1254	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1260	BDL 0.5	NA	NA	NA	NA	NA	NA
Total Metals (ug/L)							
Antimony	BDL 10	BDL 25	ND 50	ND 50	NA	NA	ND 50
Arsenic	10	10	9	8	NA	NA	18
Beryllium	BDL 10	BDL 10	ND 1	ND 1	NA	NA	ND 5
Cadmium	BDL 1	5	ND 5	ND 5	NA	NA	ND 5
Chromium	10	BDL 5	20	40	NA	NA	58.1
Copper	BDL 50	3310	260	290	NA	NA	442
Lead	50	130	23	23	NA	NA	90.6
Mercury	2	4	ND 0.1	ND 0.1	NA	NA	ND 0.2
Nickel	BDL 50	50	ND 40	ND 40	NA	NA	ND 40
Selenium	BDL 2	BDL 2	ND 2	ND 2	NA	NA	ND 50
Silver	BDL 10	120	ND 5	ND 5	NA	NA	ND 10
Thallium	200	1190	ND 8	ND 4	NA	NA	ND 50
Zinc	50	980	90	140	NA	NA	184
Aluminum	NA	NA	NA	NA	NA	NA	3620
Barium	NA	NA	NA	NA	NA	NA	116
Calcium	NA	NA	NA	NA	NA	NA	59300
Cobalt	NA	NA	NA	NA	NA	NA	ND 50
Iron	NA	NA	NA	NA	NA	NA	84000
Magnesium	NA	NA	NA	NA	NA	NA	6030

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-27* *May 1986*	*OW-27* *August 1986*	*OW-27* *February 1989*	*OW-27* *February 1989 (Duplicate)*	*OW-27* *May 1991*	*OW-27* *May 1991 (Duplicate)*	*OW-27* *July 1992*
Total Metals (ug/L) (cont.)							
Manganese	NA	NA	NA	NA	NA	NA	6660
Potassium	NA	NA	NA	NA	NA	NA	2300
Sodium	NA	NA	NA	NA	NA	NA	4100
Vanadium	NA	NA	NA	NA	NA	NA	ND 50
Miscellaneous Inorganics (mg/L)							
Alkalinity, Total	NA	NA	NA	NA	NA	NA	226
Alkalinity, Bicarbonate	NA	NA	NA	NA	NA	NA	226
BOD5	NA	NA	NA	NA	NA	NA	49.1
Chloride	NA	NA	NA	NA	NA	NA	3.7
COD	NA	NA	NA	NA	NA	NA	76.1
Nitrate	NA	NA	NA	NA	NA	NA	ND 0.05
Nitrite	NA	NA	NA	NA	NA	NA	ND 0.01J
Nitrogen	NA	NA	NA	NA	NA	NA	ND 0.05
Total Phosphorus	NA	NA	NA	NA	NA	NA	0.315
TDS	NA	NA	NA	NA	NA	NA	236
TSS	NA	NA	NA	NA	NA	NA	229
Sulfate	NA	NA	NA	NA	NA	NA	20.6
Sulfide	NA	NA	NA	NA	NA	NA	5.26
TOC	NA	NA	NA	NA	NA	NA	11

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-27* *May 1993*	*OW-27* *May 1993* *(Duplicate)*	*OW-27* *December 1993*	*OW-27* *December 1993* *(Duplicate)*	*OW-27* *September 1994*	*OW-27* *September 1994* *(Duplicate)*	*OW-28* *May 1986*	*OW-28* *August 1986*
Volatile Organic Compounds (ug/L)								
Methyl Cellosolve	ND 1000J	ND 1000J	ND 1000	ND 1000	ND 1000	ND 1000	BDL 10000	NA
Chloromethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Bromomethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Vinyl Chloride	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Chloroethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	NA
Methylene Chloride	13 J	50J	ND 5	ND 50	170	160	BDL 1	BDL 1
Acetone	260 J	700J	2200	2200	2800	2300	1100	BDL 10
Carbon Disulfide	ND 10J	ND 50J	ND 10	ND 100	ND 10	ND 10	NA	BDL 10
1,1-Dichloroethene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,1-Dichloroethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	2	BDL 1
trans-1,2-Dichloroethene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	2	3.3
cis-1,2-Dichloroethene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	NA	NA
Chloroform	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
2-Butanone (MEK)	ND 10J	ND 50J	19	ND 100	27J	65	NA	BDL 10
1,2-Dichloroethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,1,1-Trichloroethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Carbon Tetrachloride	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Bromodichloromethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,2-Dichloropropane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,3-Dichloropropene-Trans	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Trichloroethene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Dibromochloromethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,1,2-Trichloroethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Benzene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,3-Dichloropropene(Cis)	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Bromoform	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 5
4-Methyl-2-pentanone (MIBK)	ND 10J	ND 50J	83	ND 100	42J	46	NA	BDL 10
2-Hexanone	ND 10J	ND 50J	ND 10	ND 100	ND 10	ND 10	NA	BDL 10
Tetrachloroethene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
1,1,2,2-Tetrachloroethane	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Toluene	9.1 J	27J	190	180	45	43	BDL 1	BDL 1
Chlorobenzene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	BDL 1	BDL 1
Ethylbenzene	30 J	83J	66	57	42	27	BDL 1	BDL 1
Styrene	ND 5J	ND 25J	ND 5	ND 50	ND 5	ND 5	NA	BDL 1
Total Xylene	90 J	200	160	140	110	110	NA	BDL 1
2-Chloroethylvinyl ether	NA	NA	NA	NA	NA	NA	BDL 10	BDL 1
Vinyl acetate	NA	NA	NA	NA	NA	NA	NA	BDL 10

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	OW-27 May 1993	OW-27 May 1993 (Duplicate)	OW-27 December 1993	OW-27 December 1993 (Duplicate)	OW-27 September 1994	OW-27 September 1994 (Duplicate)	OW-28 May 1986	OW-28 August 1986
Base/Neutral Acid Compounds (ug/L)								
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	BDL 5	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	BDL 5	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Hexachloroethane	NA	NA	NA	NA	NA	NA	BDL 5	NA
Bis(2-chloroethyl)ether	NA	NA	NA	NA	NA	NA	BDL 5	NA
Bis(2-chloroisopropyl)ether	NA	NA	NA	NA	NA	NA	BDL 5	NA
N-Nitrosodi-n-propylamine	NA	NA	NA	NA	NA	NA	BDL 5	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	BDL 5	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Isophorone	NA	NA	NA	NA	NA	NA	BDL 5	NA
Naphthalene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Bis(2-chloroethoxy)methane	NA	NA	NA	NA	NA	NA	BDL 5	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	BDL 5	NA
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Acenapthene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Diethylphthalate	NA	NA	NA	NA	NA	NA	BDL 5	NA
N-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	BDL 5	NA
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	BDL 5	NA
4-Bromophenyl phenyl ether	NA	NA	NA	NA	NA	NA	BDL 5	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Anthracene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Di-n-butyl Phthalate	NA	NA	NA	NA	NA	NA	BDL 5	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Pyrene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Benzidine	NA	NA	NA	NA	NA	NA	BDL 40	NA
Butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	BDL 5	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	BDL 5	NA
Chysene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	BDL 5	NA
3,3-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	BDL 10	NA
Di-n-octylphthalate	NA	NA	NA	NA	NA	NA	BDL 5	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	BDL 5	NA

TABLE [illegible]

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-27* *May 1993*	*OW-27* *May 1993* *(Duplicate)*	*OW-27* *December 1993*	*OW-27* *December 1993* *(Duplicate)*	*OW-27* *September 1994*	*OW-27* *September 1994* *(Duplicate)*	*OW-28* *May 1986*	*OW-28* *August 1986*
Base/Neutral Acid Compounds (ug/L) (cont.)								
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Fluorene	NA	NA	NA	NA	NA	NA	BDL 5	NA
4-Chlorophenyl phenyl ether	NA	NA	NA	NA	NA	NA	BDL 5	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	BDL 5	NA
1,2-Diphenylhydrazine	NA	NA	NA	NA	NA	NA	BDL 5	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	BDL 5	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	BDL 5	NA
N-nitrosodimethyl Amine	NA	NA	NA	NA	NA	NA	BDL 5	NA
2-Chlorophenol	NA	NA	NA	NA	NA	NA	BDL 5	NA
2-Nitrophenol	NA	NA	NA	NA	NA	NA	BDL 5	NA
Phenol	NA	NA	NA	NA	NA	NA	BDL 5	BDL 2
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	BDL 5	NA
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	BDL 5	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	BDL 5	NA
4-Chloro-3-Methylphenol	NA	NA	NA	NA	NA	NA	BDL 5	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	BDL 25	NA
2-Methyl-4,6-Dinitrophenol	NA	NA	NA	NA	NA	NA	BDL 25	NA
Pentachlorophenol	NA	NA	NA	NA	NA	NA	BDL 25	NA
4-Nitrophenol	NA	NA	NA	NA	NA	NA	BDL 25	NA
Pesticides/PCBs (ug/L)								
a-BHC	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
g-BHC	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
b-BHC	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Heptachlor	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
d-BHC	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Aldrin	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Heptachlor Epoxide	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Dieldrin	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Endrin	NA	NA	NA	NA	NA	NA	BDL 0.1	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	OW-27 May 1993	OW-27 May 1993 (Duplicate)	OW-27 December 1993	OW-27 December 1993 (Duplicate)	OW-27 September 1994	OW-27 September 1994 (Duplicate)	OW-28 May 1986	OW-28 August 1986
Pesticides/PCBs (ug/L) (cont.)								
4,4'-DDD	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Endosulfan Sulfate	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	BDL 0.1	NA
Chlordane	NA	NA	NA	NA	NA	NA	BDL 2	NA
Toxaphene	NA	NA	NA	NA	NA	NA	BDL 2	NA
PCB-1221	NA	NA	NA	NA	NA	NA	BDL 0.5	NA
PCB-1232	NA	NA	NA	NA	NA	NA	BDL 0.5	NA
PCB-1016/1242	NA	NA	NA	NA	NA	NA	BDL 0.5	NA
PCB-1248	NA	NA	NA	NA	NA	NA	BDL 0.5	NA
PCB-1254	NA	NA	NA	NA	NA	NA	BDL 0.5	NA
PCB-1260	NA	NA	NA	NA	NA	NA	BDL 0.5	NA
Total Metals (ug/L)								
Antimony	NA	NA	NA	NA	NA	NA	BDL 10	BDL 25
Arsenic	NA	NA	NA	NA	NA	NA	110	30
Beryllium	NA	NA	NA	NA	NA	NA	BDL 10	BDL 10
Cadmium	NA	NA	NA	NA	NA	NA	1	BDL 1
Chromium	NA	NA	NA	NA	NA	NA	BDL 5	6
Copper	NA	NA	NA	NA	NA	NA	BDL 50	BDL 50
Lead	NA	NA	NA	NA	NA	NA	BDL 10	20
Mercury	NA	NA	NA	NA	NA	NA	6	2
Nickel	NA	NA	NA	NA	NA	NA	BDL 50	BDL 50
Selenium	NA	NA	NA	NA	NA	NA	BDL 2	BDL 2
Silver	NA	NA	NA	NA	NA	NA	BDL 10	BDL 10
Thallium	NA	NA	NA	NA	NA	NA	BDL 100	BDL 500
Zinc	NA	NA	NA	NA	NA	NA	40	120
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	*OW-27* *May 1993*	*OW-27* *May 1993* *(Duplicate)*	*OW-27* *December 1993*	*OW-27* *December 1993* *(Duplicate)*	*OW-27* *September 1994*	*OW-27* *September 1994* *(Duplicate)*	*OW-28* *May 1986*	*OW-28* *August 1986*
Total Metals (ug/L) (cont.)								
Manganese	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous Inorganics (mg/L)								
Alkalinity, Total	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate	NA	NA	NA	NA	NA	NA	NA	NA
BOD5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	NA	NA	NA	NA	NA	NA	NA	NA
COD	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus	NA	NA	NA	NA	NA	NA	NA	NA
TDS	NA	NA	NA	NA	NA	NA	NA	NA
TSS	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	NA	NA	NA	NA	NA	NA	NA	NA
TOC	NA	NA	NA	NA	NA	NA	NA	NA

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-28* *February 1989*	*OW-28* *May 1991*	*OW-28* *May 1991* *(Duplicate)*	*OW-28* *July 1992*	*OW-28* *July 1992* *(Duplicate)*	*OW-28* *May 1993*	*OW-28* *December 1993*	*OW-28* *September 1994*
Volatile Organic Compounds (ug/L)								
Methyl Cellosolve	ND 5000	ND 2000	ND 2000	ND 5000	ND 5000	ND 1000J	ND 1000	ND 1000
Chloromethane	ND 10	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Bromomethane	ND 10	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Vinyl Chloride	ND 10	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Chloroethane	ND 10	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Methylene Chloride	ND 10	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Acetone	260	ND 20	NA	24J	ND 10J	ND 10J	ND 10	ND 10
Carbon Disulfide	ND 25	ND 10	NA	ND 10	ND 10	ND 10J	ND 10	ND 10
1,1-Dichloroethene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,1-Dichloroethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
trans-1,2-Dichloroethene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
cis-1,2-Dichloroethene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Chloroform	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
2-Butanone (MEK)	ND 25	ND 10	NA	ND 10	ND 10	ND 10J	ND 10	ND 10
1,2-Dichloroethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,1,1-Trichloroethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Carbon Tetrachloride	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Bromodichloromethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,2-Dichloropropane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,3-Dichloropropene-Trans	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Trichloroethene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Dibromochloromethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,1,2-Trichloroethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Benzene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,3-Dichloropropene(Cis)	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Bromoform	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
4-Methyl-2-pentanone (MIBK)	ND 10	ND 10	NA	ND 10	ND 10	ND 10J	ND 10	ND 10
2-Hexanone	ND 10	ND 10	NA	ND 10	ND 10	ND 10J	ND 10	ND 10
Tetrachloroethene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
1,1,2,2-Tetrachloroethane	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Toluene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Chlorobenzene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Ethylbenzene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Styrene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
Total Xylene	ND 5	ND 2	NA	ND 5	ND 5	ND 5J	ND 5	ND 5
2-Chloroethylvinyl ether	BDL 10	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	BDL 10	ND 10	NA	ND 10	ND 10	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-28* *February 1989*	*OW-28* *May 1991*	*OW-28* *May 1991* *(Duplicate)*	*OW-28* *July 1992*	*OW-28* *July 1992* *(Duplicate)*	*OW-28* *May 1993*	*OW-28* *December 1993*	*OW-28* *September 1994*
Base/Neutral Acid Compounds (ug/L)								
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl)ether	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA
Acenapthene	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA
Chysene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-28* *February 1989*	*OW-28* *May 1991*	*OW-28* *May 1991* *(Duplicate)*	*OW-28* *July 1992*	*OW-28* *July 1992* *(Duplicate)*	*OW-28* *May 1993*	*OW-28* *December 1993*	*OW-28* *September 1994*
Base/Neutral Acid Compounds (ug/L) (cont.)								
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA
N-nitrosodimethyl Amine	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs (ug/L)								
a-BHC	NA	NA	NA	NA	NA	NA	NA	NA
g-BHC	NA	NA	NA	NA	NA	NA	NA	NA
b-BHC	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA
d-BHC	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*
Sample Event:	*February 1989*	*May 1991*	*May 1991 (Duplicate)*	*July 1992*	*July 1992 (Duplicate)*	*May 1993*	*December 1993*	*September 1994*
Pesticides/PCBs (ug/L) (cont.)								
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1016/1242	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (ug/L)								
Antimony	ND 50	NA	NA	ND 50	NA	NA	NA	NA
Arsenic	6	NA	NA	23.7	NA	NA	NA	NA
Beryllium	ND 1	NA	NA	ND 5	NA	NA	NA	NA
Cadmium	ND 5	NA	NA	ND 5	NA	NA	NA	NA
Chromium	ND 10	NA	NA	82	NA	NA	NA	NA
Copper	6	NA	NA	104	NA	NA	NA	NA
Lead	8	NA	NA	78.3	NA	NA	NA	NA
Mercury	ND 0.1	NA	NA	ND 0.2	NA	NA	NA	NA
Nickel	ND 40	NA	NA	85.2	NA	NA	NA	NA
Selenium	ND 2	NA	NA	ND 50	NA	NA	NA	NA
Silver	ND 5	NA	NA	ND 10	NA	NA	NA	NA
Thallium	ND 4	NA	NA	ND 50	NA	NA	NA	NA
Zinc	20	NA	NA	176	NA	NA	NA	NA
Aluminum	NA	NA	NA	42500	NA	NA	NA	NA
Barium	NA	NA	NA	223	NA	NA	NA	NA
Calcium	NA	NA	NA	19500	NA	NA	NA	NA
Cobalt	NA	NA	NA	ND 50	NA	NA	NA	NA
Iron	NA	NA	NA	64700	NA	NA	NA	NA
Magnesium	NA	NA	NA	16300	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*	*OW-28*
Sample Event:	*February 1989*	*May 1991*	*May 1991 (Duplicate)*	*July 1992*	*July 1992 (Duplicate)*	*May 1993*	*December 1993*	*September 1994*
Total Metals (ug/L) (cont.)								
Manganese	NA	NA	NA	3140	NA	NA	NA	NA
Potassium	NA	NA	NA	9400J	NA	NA	NA	NA
Sodium	NA	NA	NA	4780	NA	NA	NA	NA
Vanadium	NA	NA	NA	63	NA	NA	NA	NA
Miscellaneous Inorganics (mg/L)								
Alkalinity, Total	NA	NA	NA	46.5	NA	NA	NA	NA
Alkalinity, Bicarbonate	NA	NA	NA	46.5	NA	NA	NA	NA
BOD5	NA	NA	NA	ND 6.0	NA	NA	NA	NA
Chloride	NA	NA	NA	4.96	NA	NA	NA	NA
COD	NA	NA	NA	11.0	NA	NA	NA	NA
Nitrate	NA	NA	NA	0.0827	NA	NA	NA	NA
Nitrite	NA	NA	NA	ND 0.01J	NA	NA	NA	NA
Nitrogen	NA	NA	NA	0.0827	NA	NA	NA	NA
Total Phosphorus	NA	NA	NA	1.12	NA	NA	NA	NA
TDS	NA	NA	NA	123	NA	NA	NA	NA
TSS	NA	NA	NA	1090	NA	NA	NA	NA
Sulfate	NA	NA	NA	17.6	NA	NA	NA	NA
Sulfide	NA	NA	NA	ND 1.0	NA	NA	NA	NA
TOC	NA	NA	NA	4.5	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*
Sample Event:	*May 1986*	*August 1986*	*February 1989*	*May 1991*	*July 1992*	*December 1993*	*September 1994*
Volatile Organic Compounds (ug/L)							
Methyl Cellosolve	NA	NA	ND 5000	ND 2000	ND 5000	ND 1000	ND 1000
Chloromethane	BDL 1	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Bromomethane	BDL 1	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Vinyl Chloride	20	1.1	ND 10	ND 2	ND 5	ND 5	ND 5
Chloroethane	3	2	ND 10	ND 2	ND 5	ND 5	ND 5
Methylene Chloride	2	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Acetone	BDL 100	BDL 10	ND 25	20.8	54	42	ND 10
Carbon Disulfide	NA	BDL 10	ND 25	ND 10	ND 10	ND 10	ND 10
1,1-Dichloroethene	BDL 1	18.8	ND 5	ND 2	ND 5	ND 5	ND 5
1,1-Dichloroethane	11	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
trans-1,2-Dichloroethene	6	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
cis-1,2-Dichloroethene	NA	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Chloroform	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
2-Butanone (MEK)	NA	BDL 10	ND 25	ND 10	ND 10	ND 10	ND 10
1,2-Dichloroethane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,1-Trichloroethane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Carbon Tetrachloride	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Bromodichloromethane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,2-Dichloropropane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,3-Dichloropropene-Trans	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Trichloroethene	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Dibromochloromethane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,2-Trichloroethane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Benzene	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,3-Dichloropropene(Cis)	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Bromoform	BDL 1	BDL 5	ND 5	ND 2	ND 5	ND 5	ND 5
4-Methyl-2-pentanone (MIBK)	NA	BDL 10	ND 10	ND 10	ND 10	ND 10	ND 10
2-Hexanone	NA	BDL 10	ND 10	ND 10	ND 10	ND 10	ND 10
Tetrachloroethene	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,2,2-Tetrachloroethane	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Toluene	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Chlorobenzene	BDL 1	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Ethylbenzene	2	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Styrene	NA	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Total Xylene	BDL 3	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
2-Chloroethylvinyl ether	BDL 10	BDL 1	ND 10	NA	NA	NA	NA
Vinyl acetate	NA	BDL 10	ND 10	ND 10	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: / *Sample Event:*	OW-29 May 1986	OW-29 August 1986	OW-29 February 1989	OW-29 May 1991	OW-29 July 1992	OW-29 December 1993	OW-29 September 1994
Base/Neutral Acid Compounds (ug/L)							
1,3-Dichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
Hexachloroethane	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl)ether	BDL 5	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	BDL 5	NA	NA	NA	NA	NA	NA
Nitrobenzene	BDL 5	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	BDL 5	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
Isophorone	BDL 10	NA	NA	NA	NA	NA	NA
Naphthalene	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	BDL 5	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	BDL 5	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	BDL 5	NA	NA	NA	NA	NA	NA
Acenaphthylene	BDL 5	NA	NA	NA	NA	NA	NA
Acenapthene	BDL 5	NA	NA	NA	NA	NA	NA
Diethylphthalate	BDL 5	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	BDL 5	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	BDL 5	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	BDL 5	NA	NA	NA	NA	NA	NA
Phenanthrene	BDL 5	NA	NA	NA	NA	NA	NA
Anthracene	BDL 5	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate	BDL 5	NA	NA	NA	NA	NA	NA
Fluoranthene	BDL 5	NA	NA	NA	NA	NA	NA
Pyrene	BDL 5	NA	NA	NA	NA	NA	NA
Benzidine	BDL 40	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	BDL 5	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	BDL 5	NA	NA	NA	NA	NA	NA
Chysene	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	BDL 5	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	BDL 10	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	BDL 5	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	BDL 5	NA	NA	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*OW-29* *May 1986*	*OW-29* *August 1986*	*OW-29* *February 1989*	*OW-29* *May 1991*	*OW-29* *July 1992*	*OW-29* *December 1993*	*OW-29* *September 1994*
Base/Neutral Acid Compounds (ug/L) (cont.)							
2,6-Dinitrotoluene	BDL 5	NA	NA	NA	NA	NA	NA
Fluorene	BDL 5	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	BDL 5	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	BDL 5	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	BDL 5	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	BDL 5	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	BDL 5	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	BDL 5	NA	NA	NA	NA	NA	NA
N-nitrosodimethyl Amine	BDL 5	NA	NA	NA	NA	NA	NA
2-Chlorophenol	BDL 5	NA	NA	NA	NA	NA	NA
2-Nitrophenol	BDL 5	NA	NA	NA	NA	NA	NA
Phenol	BDL 5	9	NA	NA	NA	NA	NA
2,4-Dimethylphenol	BDL 5	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	BDL 5	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	BDL 5	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	BDL 5	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	BDL 25	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-Dinitrophenol	BDL 25	NA	NA	NA	NA	NA	NA
Pentachlorophenol	BDL 25	NA	NA	NA	NA	NA	NA
4-Nitrophenol	BDL 25	NA	NA	NA	NA	NA	NA
Pesticides/PCBs (ug/L)							
a-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
g-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
b-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
Heptachlor	BDL 0.1	NA	NA	NA	NA	NA	NA
d-BHC	BDL 0.1	NA	NA	NA	NA	NA	NA
Aldrin	BDL 0.1	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	BDL 0.1	NA	NA	NA	NA	NA	NA
Endosulfan I	BDL 0.1	NA	NA	NA	NA	NA	NA
4,4'-DDE	BDL 0.1	NA	NA	NA	NA	NA	NA
Dieldrin	BDL 0.1	NA	NA	NA	NA	NA	NA
Endrin	BDL 0.1	NA	NA	NA	NA	NA	NA

TABLE A.1

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*
Sample Event:	*May 1986*	*August 1986*	*February 1989*	*May 1991*	*July 1992*	*December 1993*	*September 1994*
Pesticides/PCBs (ug/L) (cont.)							
4,4'-DDD	BDL 0.1	NA	NA	NA	NA	NA	NA
Endosulfan II	BDL 0.1	NA	NA	NA	NA	NA	NA
4,4'-DDT	BDL 0.1	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	BDL 0.1	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	BDL 0.1	NA	NA	NA	NA	NA	NA
Chlordane	BDL 2	NA	NA	NA	NA	NA	NA
Toxaphene	BDL 2	NA	NA	NA	NA	NA	NA
PCB-1221	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1232	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1016/1242	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1248	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1254	BDL 0.5	NA	NA	NA	NA	NA	NA
PCB-1260	BDL 0.5	NA	NA	NA	NA	NA	NA
Total Metals (ug/L)							
Antimony	BDL 10	40	ND 50	NA	ND 50	NA	NA
Arsenic	2	450	5	NA	25.6	NA	NA
Beryllium	BDL 10	BDL 10	12	NA	ND 5	NA	NA
Cadmium	BDL 1	7	ND 5	NA	ND 5	NA	NA
Chromium	BDL 5	80	250	NA	94000	NA	NA
Copper	BDL 50	340	610	NA	47.3	NA	NA
Lead	40	300	200	NA	97.2	NA	NA
Mercury	3	2	1.1	NA	ND 0.2	NA	NA
Nickel	BDL 50	120	520	NA	60.8	NA	NA
Selenium	BDL 2	BDL 2	ND 2	NA	ND 50	NA	NA
Silver	BDL 10	230	ND 5	NA	ND 10	NA	NA
Thallium	300	1760	ND 8	NA	ND 50	NA	NA
Zinc	400	470	1600	NA	113	NA	NA
Aluminum	NA	NA	NA	NA	34100	NA	NA
Barium	NA	NA	NA	NA	229	NA	NA
Calcium	NA	NA	NA	NA	72100	NA	NA
Cobalt	NA	NA	NA	NA	ND 50	NA	NA
Iron	NA	NA	NA	NA	95500	NA	NA
Magnesium	NA	NA	NA	NA	13300	NA	NA

TABL[illegible]

HISTORICAL GROUNDWATER MONITORING WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*	*OW-29*
Sample Event:	*May 1986*	*August 1986*	*February 1989*	*May 1991*	*July 1992*	*December 1993*	*September 1994*
Total Metals (ug/L) (cont.)							
Manganese	NA	NA	NA	NA	19700	NA	NA
Potassium	NA	NA	NA	NA	5800J	NA	NA
Sodium	NA	NA	NA	NA	5550	NA	NA
Vanadium	NA	NA	NA	NA	ND 50	NA	NA
Miscellaneous Inorganics (mg/L)							
Alkalinity, Total	NA	NA	NA	NA	224	NA	NA
Alkalinity, Bicarbonate	NA	NA	NA	NA	224	NA	NA
BOD5	NA	NA	NA	NA	11.9J	NA	NA
Chloride	NA	NA	NA	NA	3.8	NA	NA
COD	NA	NA	NA	NA	27.3	NA	NA
Nitrate	NA	NA	NA	NA	0.0663	NA	NA
Nitrite	NA	NA	NA	NA	ND 0.1J	NA	NA
Nitrogen	NA	NA	NA	NA	0.0663	NA	NA
Total Phosphorus	NA	NA	NA	NA	ND 0.05	NA	NA
TDS	NA	NA	NA	NA	266	NA	NA
TSS	NA	NA	NA	NA	863	NA	NA
Sulfate	NA	NA	NA	NA	11.9	NA	NA
Sulfide	NA	NA	NA	NA	ND 1.0	NA	NA
TOC	NA	NA	NA	NA	5.8	NA	NA

Notes:
NA Not Analyzed
ND Non-detect at the stated detection limit.
BDL Below Detection Limit
J Associated value is estimated.

TABLE A.2

HISTORICAL RESIDENTIAL WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*RW-1*	*RW-1*	*RW-1*	*RW-2*	*RW-2*	*RW-2*
Sample Event:	*August 1986*	*February 1989*	*July 1992*	*August 1986*	*July 1992*	*December 1993*
Volatile Organic Compounds (ug/L)						
Methyl Cellosolve	NA	ND 5000	ND 5000	NA	ND 5000	ND 1000
Chloromethane	BDL 1	ND 10	ND 5	BDL 1	ND 5	ND 5
Bromomethane	BDL 1	ND 10	ND 5	BDL 1	ND 5	ND 5
Vinyl Chloride	BDL 1	ND 10	ND 5	BDL 1	ND 5	ND 5
Chloroethane	NA	ND 10	ND 5	NA	ND 5	ND 5
Methylene Chloride	BDL 1	ND 25	ND 5	BDL 1	ND 5	ND 5
Acetone	BDL 10	ND 25	ND 10	BDL 10	ND 10	ND 10
Carbon Disulfide	BDL 10	ND 5	ND 10	BDL 10	ND 10	ND 10
1,1-Dichloroethene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,1-Dichloroethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
trans-1,2-Dichloroethene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
cis-1,2-Dichloroethene	NA	ND 5	ND 5	NA	ND 5	ND 5
Chloroform	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
2-Butanone (MEK)	BDL 10	ND 25	ND 10	BDL 10	ND 10	ND 10
1,2-Dichloroethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,1,1-Trichloroethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Carbon Tetrachloride	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Bromodichloromethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,2-Dichloropropoane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,3-Dichloropropane-Trans	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Trichloroethene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Dibromochloromethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,1,2-Trichloroethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Benzene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,3-Dichloropropene(Cis)	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Bromoform	BDL 5	ND 5	ND 5	BDL 5	ND 5	ND 5
4-Methyl-2-pentanone (MIBK)	BDL 10	ND 10	ND 10	BDL 10	ND 10	ND 10
2-Hexanone	BDL 10	ND 10	ND 10	BDL 10	ND 10	ND 10
Tetrachloroethene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
1,1,2,2-Tetrachloroethane	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Toluene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Chlorobenzene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Ethylbenzene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Styrene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Total Xylene	BDL 1	ND 5	ND 5	BDL 1	ND 5	ND 5
Vinyl acetate	BDL 10	ND 10	ND 10	BDL 10	ND 10	NA
2-Chloroethyvinyl ether	BDL 1	ND 10	NA	BDL 1	NA	NA

TABLE A.2

HISTORICAL RESIDENTIAL WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	RW-1	RW-1	RW-1	RW-2	RW-2	RW-2
Sample Event:	*August 1986*	*February 1989*	*July 1992*	*August 1986*	*July 1992*	*December 1993*
Base/Neutral Acid Compounds (ug/L)						
Phenol	BDL 2	NA	NA	20	NA	NA
Total Metals (ug/L)						
Antimony	BDL 25	ND 50	NA	BDL 25	NA	NA
Arsenic	20	ND 3	NA	9	NA	NA
Beryllium	BDL 10	ND 1	NA	BDL 10	NA	NA
Cadmium	BDL 1	ND 5	NA	BDL 1	NA	NA
Chromium	BDL 5	ND 10	NA	BDL 1	NA	NA
Copper	BDL 50	11	NA	BDL 50	NA	NA
Lead	BDL 1	ND 2	NA	2	NA	NA
Mercury	BDL 0.4	ND 0.2	NA	BDL 0.4	NA	NA
Nickel	BDL 50	ND 40	NA	BDL 50	NA	NA
Selenium	BDL 2	ND 4	NA	BDL 2	NA	NA
Silver	BDL 10	ND 5	NA	BDL 10	NA	NA
Thallium	BDL 500	ND 4	NA	BDL 500	NA	NA
Zinc	BDL 10	ND 10	NA	BDL 10	NA	NA

TABLE A.2

HISTORICAL RESIDENTIAL WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location: *Sample Event:*	*RW-2* *September 1994*	*RW-3* *August 1986*	*RW-3* *February 1989*	*RW-3* *July 1992*	*RW-4* *August 1986*	*RW-4* *February 1989*
Volatile Organic Compounds (ug/L)						
Methyl Cellosolve	ND 1000	NA	ND 5000	ND 5000	NA	ND 5000
Chloromethane	ND 5	BDL 1	ND 10	ND 5	BDL 1	ND 10
Bromomethane	ND 5	BDL 1	ND 10	ND 5	BDL 1	ND 10
Vinyl Chloride	ND 5	BDL 1	ND 10	ND 5	BDL 1	ND 10
Chloroethane	ND 5	BDL 1	ND 10	ND 5	BDL 1	ND 10
Methylene Chloride	ND 5	BDL 1	ND 25	ND 5	BDL 1	ND 25
Acetone	ND 10	BDL 10	ND 25	ND 10	BDL 10	ND 25
Carbon Disulfide	ND 10	BDL 10	ND 5	ND 10	BDL 10	ND 5
1,1-Dichloroethene	ND 5	18.8	ND 5	ND 5	BDL 1	ND 5
1,1-Dichloroethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
trans-1,2-Dichloroethene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
cis-1,2-Dichloroethene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Chloroform	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
2-Butanone (MEK)	ND 10	BDL 10	ND 10	ND 10	BDL 10	ND 25
1,2-Dichloroethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
1,1,1-Trichloroethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Carbon Tetrachloride	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Bromodichloromethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
1,2-Dichloropropoane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
1,3-Dichloropropane-Trans	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Trichloroethene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Dibromochloromethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
1,1,2-Trichloroethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Benzene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
1,3-Dichloropropene(Cis)	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Bromoform	ND 5	BDL 5	ND 5	ND 5	BDL 5	ND 5
4-Methyl-2-pentanone (MIBK)	ND 10	BDL 10	ND 10	ND 10	BDL 10	ND 10
2-Hexanone	ND 10	BDL 10	ND 10	ND 10	BDL 10	ND 10
Tetrachloroethene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
1,1,2,2-Tetrachloroethane	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Toluene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
Chlorobenzene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
ᴲthylbenzene	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
	ND 5	BDL 1	ND 5	ND 5	BDL 1	ND 5
	ND 5	BDL 1	ND 5	ND 5	BDL 10	ND 10
	NA	BDL 10	ND 10	ND 10	BDL 1	ND 10
	NA	BDL 1	ND 10	NA		

TABLE A.2

HISTORICAL RESIDENTIAL WELL DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Location:	*RW-2*	*RW-3*	*RW-3*	*RW-3*	*RW-4*	*RW-4*
Sample Event:	*September 1994*	*August 1986*	*February 1989*	*July 1992*	*August 1986*	*February 1989*
Base/Neutral Acid Compounds (ug/L)						
Phenol	NA	BDL 2	NA	NA	3	NA
Total Metals (ug/L)						
Antimony	NA	BDL 25	ND 50	NA	BDL 25	ND 50
Arsenic	NA	10	ND 6	NA	9	ND 3
Beryllium	NA	BDL 10	ND 1	NA	BDL 10	ND 1
Cadmium	NA	BDL 1	ND 5	NA	BDL 1	ND 5
Chromium	NA	BDL 1	ND 10	NA	BDL 5	ND 10
Copper	NA	BDL 50	ND 6	NA	140	ND 6
Lead	NA	7	ND 2	NA	3	ND 2
Mercury	NA	BDL 0.4	ND 0.2	NA	BDL 0.4	ND 0.1
Nickel	NA	BDL 50	ND 40	NA	BDL 50	ND 40
Selenium	NA	BDL 2	ND 2	NA	BDL 2	ND 2
Silver	NA	BDL 10	ND 5	NA	BDL 10	ND 5
Thallium	NA	BDL 500	ND 8	NA	BDL 500	ND 4
Zinc	NA	40	10	NA	10	ND 10

Notes:
ND Non-detect at the stated detection limit.
NA Not Analyzed
BDL Below Detection Limit

TABLE A3

HISTORICAL SURFACE WATER SAMPLE DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample ID: / *Sample Location:*	*SW-4* *DITCH-1* *August 1986*	*SW-1* *DITCH-2* *August 1986*	*SAMPLE 5* *DITCH-3* *December 1988*	*SAMPLE 9* *DITCH-3* *February 1989*	*SW-2* *DITCH-4* *August 1986*	*SAMPLE 10* *DITCH-4* *February 1989*	*SS-1* *DITCH-4* *May 1991*
Volatiles (µg/L) (cont.)							
Toluene	BDL 1	BDL 1	180	ND 50	BDL 1	ND 50	ND 2
Chlorobenzene	BDL 1	BDL 1	ND	ND 50	BDL 1	ND 50	ND 2
Ethylbenzene	BDL 1	BDL 1	ND	ND 50	BDL 1	ND 50	ND 2
Styrene	BDL 1	BDL 1	ND	ND 50	BDL 1	ND 50	ND 2
Total Xylene	BDL 1	BDL 1	130	ND 50	BDL 1	ND 50	ND 2
2-Chloroethylvinyl ether	BDL 1	BDL 1	ND	ND 100	BDL 1	ND 100	NA
Base/Neutral Acid Compounds (ug/L)							
Phenol	4	3	NA	NA	5	NA	NA
Total Metals (ug/L)							
Antimony	BDL 25	BDL 25	ND	ND 50	BDL 25	ND 50	NA
Arsenic	10	40	ND	5	50	ND 3	NA
Beryllium	BDL 10	BDL 10	ND	ND 1	BDL 10	ND 1	NA
Cadmium	BDL 1	1	ND	ND 5	8	ND 5	NA
Chromium	BDL 5	8	ND	20	BDL 5	ND 10	NA
Copper	BDL 50	BDL 50	27	61	BDL 50	16	NA
Lead	30	60	ND	49	90	11	NA
Mercury	BDL 0.4	1	3	ND 0.1	0.7	ND 0.1	NA
Nickel	BDL 50	BDL 50	ND	ND 40	BDL 50	ND 40	NA
Selenium	BDL 2	BDL 2	ND	ND 2	BDL 2	ND 2	NA
Silver	BDL 10	BDL 10	ND	ND 5	BDL 10	ND 5	NA
Thallium	BDL 500	BDL 500	80	ND 8	BDL 500	ND 4	NA
Zinc	30	90	ND	160	310	130	NA

TABLE A.3

HISTORICAL SURFACE WATER SAMPLE DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample ID: *Sample Location:*	*SW-2* *DITCH-4* *December 1993*	*SW-3* *SEEP* *August 1986*	*Sample 11* *CISTERN* *February 1989*	*SS-2* *CISTERN* *May 1991*	*SW-1* *CISTERN* *July 1992*	*SW-1* *CISTERN* *December 1993*	*CIS* *CISTERN* *September 1994*
Volatiles (µg/L)							
Methyl Cellosolve	ND 1000	NA	ND 5000	ND 2000	ND 5000	ND 1000	ND 2000
Chloromethane	ND 5	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Bromomethane	ND 5	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Vinyl Chloride	ND 5	BDL 1	ND 10	ND 2	ND 5	ND 5	ND 5
Chloroethane	ND 5	NA	ND 10	ND 2	ND 5	ND 5	ND 5
Methylene Chloride	ND 5	BDL 1	ND 25	ND 2	ND 5	ND 5	ND 5
Acetone	ND 10	BDL 10	ND 25	ND 20	ND 10	1400	ND 10
Carbon Disulfide	ND 10	BDL 10	ND 5	ND 10	ND 10	ND 10	ND 10
1,1-Dichloroethene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1-Dichloroethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
trans-1,2-Dichloroethene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
cis-1,2-Dichloroethene	ND 5	NA	ND 5	ND 2	ND 5	ND 5	ND 5
Chloroform	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
2-Butanone (MEK)	ND 10	BDL 10	ND 25	ND 10	ND 10	ND 10	ND 10
1,2-Dichloroethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,1-Trichloroethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Carbon Tetrachloride	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Bromodichloromethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,2-Dichloropropene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,3-Dichloropropane-Trans	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Trichloroethene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Dibromochloromethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,2-Trichloroethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Benzene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,3-Dichloropropene(Cis)	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Bromoform	ND 5	BDL 5	ND 5	ND 2	ND 5	ND 5	ND 5
4-Methyl-2-pentanone (MIBK)	ND 10	BDL 10	ND 10	ND 10	ND 10	ND 10	ND 10
2-Hexanone	ND 10	BDL 10	ND 10	ND 10	ND 10	ND 10	ND 10
Tetrachloroethene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
1,1,2,2-Tetrachloroethane	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Vinyl acetate	NA	BDL 10	ND 10	NA	NA	NA	NA

TABLE A3

HISTORICAL SURFACE WATER SAMPLE DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample ID:	*SW-2*	*SW-3*	*Sample 11*	*SS-2*	*SW-1*	*SW-1*	*CIS*
Sample Location:	*DITCH-4*	*SEEP*	*CISTERN*	*CISTERN*	*CISTERN*	*CISTERN*	*CISTERN*
	December 1993	*August 1986*	*February 1989*	*May 1991*	*July 1992*	*December 1993*	*September 1994*
Volatiles (µg/L) (cont.)							
Toluene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Chlorobenzene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Ethylbenzene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Styrene	ND 5	BDL 1	ND 5	ND 2	ND 5	ND 5	ND 5
Total Xylene	9.1	BDL 1	ND 5	ND 2	ND 5	9.1	ND 5
2-Chloroethylvinyl ether	NA	BDL 1	ND 10	NA	NA	NA	NA
Base/Neutral Acid Compounds (ug/L)							
Phenol	NA	2		NA	NA	NA	NA
Total Metals (ug/L)							
Antimony	NA	BDL 25	ND 50	NA	NA	NA	NA
Arsenic	NA	20	4	NA	NA	NA	NA
Beryllium	NA	BDL 10	ND 1	NA	NA	NA	NA
Cadmium	NA	2	ND 5	NA	NA	NA	NA
Chromium	NA	BDL 5	ND 10	NA	NA	NA	NA
Copper	NA	220	10	NA	NA	NA	NA
Lead	NA	30	8	NA	NA	NA	NA
Mercury	NA	0.6	ND 0.1	NA	NA	NA	NA
Nickel	NA	BDL 50	ND 40	NA	NA	NA	NA
Selenium	NA	BDL 2	ND 2	NA	NA	NA	NA
Silver	NA	BDL 10	ND 5	NA	NA	NA	NA
Thallium	NA	BDL 50	ND 4	NA	NA	NA	NA
Zinc	NA	90	30	NA	NA	NA	NA

Notes:
ND Non-detect at the stated detection limit.
NA Not Analyzed
BDL Below Detection Limit

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TABLE A.4

HISTORICAL SOIL AND SEDIMENT DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	OW-27		OW-28		OW-29		SS-1
Sample Interval/Location:	*8' - 10'*	*12' - 14'*	*6' - 8'*	*8' - 10'*	*0' - 2'*	*2' - 4'*	*DITCH-1*
Sample Event:	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*August 1986*
Matrix:	*Soil*	*Soil*	*Soil*	*Soil*	*Soil*	*Soil*	*Sediment*
Volatile Organic Compounds (ppb)							
Methyl Cellosolve	BDL 10	BDL 10	BDL 10	BDL 10	BDL 10	BDL 10	NA
Chloromethane	NA	NA	NA	NA	NA	NA	BDL 1
Bromomethane	NA	NA	NA	NA	NA	NA	BDL 1
Vinyl Chloride	NA	NA	NA	NA	NA	NA	BDL 1
Chloroethane	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	NA	NA	NA	NA	NA	NA	BDL 1
Acetone	BDL 1	BDL 1	BDL 1	1200	1200	1700	BDL 100
Carbon Disulfide	NA	NA	NA	NA	NA	NA	BDL 100
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	BDL 10
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	BDL 10
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	BDL 10
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA
Chloroform	NA	NA	NA	NA	NA	NA	BDL 10
2-Butanone (MEK)	NA	NA	NA	NA	NA	NA	BDL 100
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	BDL 10
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	BDL 10
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	BDL 10
Bromodichloromethane	NA	NA	NA	NA	NA	NA	BDL 10
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	BDL 10
1,3-Dichloropropene-Trans	NA	NA	NA	NA	NA	NA	BDL 10
Trichloroethene	NA	NA	NA	NA	NA	NA	BDL 10
Dibromochloromethane	NA	NA	NA	NA	NA	NA	BDL 10
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	BDL 10
Benzene	NA	NA	NA	NA	NA	NA	BDL 10
1,3-Dichloropropene(Cis)	NA	NA	NA	NA	NA	NA	BDL 10
Bromoform	NA	NA	NA	NA	NA	NA	BDL 50
4-Methyl-2-pentanone (MIBK)	NA	NA	NA	NA	NA	NA	BDL 100
2-Hexanone	NA	NA	NA	NA	NA	NA	BDL 100
Tetrachloroethene	NA	NA	NA	NA	NA	NA	BDL 10
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	BDL 10
Toluene	NA	NA	NA	NA	NA	NA	BDL 10
Chlorobenzene	NA	NA	NA	NA	NA	NA	BDL 10
Ethylbenzene	NA	NA	NA	NA	NA	NA	BDL 10
Styrene	NA	NA	NA	NA	NA	NA	BDL 10
Total Xylene	NA	NA	NA	NA	NA	NA	BDL 10
Vinyl acetate	NA	NA	NA	NA	NA	NA	BDL 100
2-Chloroethylvinyl ether	NA	NA	NA	NA	NA	NA	BDL 1

TABLE A.4

HISTORICAL SOIL AND SEDIMENT DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	OW-27		OW-28		OW-29		SS-1
Sample Interval/Location:	*8' - 10'*	*12' - 14'*	*6' - 8'*	*8' - 10'*	*0' - 2'*	*2' - 4'*	*DITCH-1*
Sample Event:	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*May 1986*	*August 1986*
Matrix:	*Soil*	*Soil*	*Soil*	*Soil*	*Soil*	*Soil*	*Sediment*
Base/Neutral Acid Compounds (ppm)							
Phenol	NA	NA	NA	NA	NA	NA	1.6
Total Metals (ppm)							
Antimony	NA	NA	NA	NA	NA	NA	2.38
Arsenic	NA	NA	NA	NA	NA	NA	29.6
Beryllium	NA	NA	NA	NA	NA	NA	BDL 0.5
Cadmium	NA	NA	NA	NA	NA	NA	0.1
Chromium	NA	NA	NA	NA	NA	NA	9.5
Copper	NA	NA	NA	NA	NA	NA	17.5
Lead	NA	NA	NA	NA	NA	NA	7.3
Mercury	NA	NA	NA	NA	NA	NA	0.15
Nickel	NA	NA	NA	NA	NA	NA	9.5
Selenium	NA	NA	NA	NA	NA	NA	BDL 0.02
Silver	NA	NA	NA	NA	NA	NA	0.4
Thallium	NA	NA	NA	NA	NA	NA	241
Zinc	NA	NA	NA	NA	NA	NA	39

TABLE A.4

HISTORICAL SOIL AND SEDIMENT DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

	SS-2	SS-3	SS-4	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 6
Sample Interval/Location:	DITCH-2	DITCH-3	DITCH-4	TRENCH 6	TEST PIT 2	DUP. SAMPLE 2	TRENCH 1	DRUM
Sample Event:	August 1986	August 1986	August 1986	December 1988	December 1988	December 1988	December 1988	December 1988
Matrix:	Sediment	Sediment	Sediment	Soil	Soil	Soil	Soil	Waste
Volatile Organic Compounds (ppb)								
Methyl Cellosolve	NA	NA	NA	110000	ND	ND	ND	ND
Chloromethane	BDL 1	BDL 1	BDL 1	ND	ND	ND	ND	ND
Bromomethane	BDL 1	BDL 1	BDL 1	ND	ND	ND	ND	ND
Vinyl Chloride	BDL 1	BDL 1	BDL 1	ND	ND	ND	ND	ND
Chloroethane	NA	NA	NA	ND	ND	ND	ND	ND
Methylene Chloride	BDL 1	BDL 1	BDL 1	210	ND	ND	ND	ND
Acetone	BDL 100	BDL 100	BDL 100	190000	ND	ND	ND	ND
Carbon Disulfide	BDL 100	BDL 100	BDL 100	ND	ND	ND	ND	ND
1,1-Dichloroethene	BDL 10	BDL 10	BDL 10	29	ND	ND	ND	ND
1,1-Dichloroethane	BDL 10	BDL 10	BDL 10	7.9	ND	ND	ND	ND
trans-1,2-Dichloroethene	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NA	NA	NA	ND	ND	ND	ND	ND
Chloroform	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
2-Butanone (MEK)	BDL 100	BDL 100	BDL 100	500	ND	ND	ND	ND
1,2-Dichloroethane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Carbon Tetrachloride	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Bromodichloromethane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
1,2-Dichloropropane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
1,3-Dichloropropene-Trans	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Trichloroethene	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Dibromochloromethane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Benzene	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
1,3-Dichloropropene(Cis)	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Bromoform	BDL 50	BDL 50	BDL 50	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	BDL 100	BDL 100	BDL 100	ND	ND	ND	ND	ND
2-Hexanone	BDL 100	BDL 100	BDL 100	56	ND	ND	ND	ND
Tetrachloroethene	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Toluene	BDL 10	BDL 10	BDL 10	800	ND	ND	ND	7.2
Chlorobenzene	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Ethylbenzene	BDL 10	BDL 10	BDL 10	60	ND	ND	ND	ND
Styrene	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND
Total Xylene	BDL 10	BDL 10	BDL 10	180	ND	ND	ND	ND
Vinyl acetate	BDL 100	BDL 100	BDL 100	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	BDL 10	BDL 10	BDL 10	ND	ND	ND	ND	ND

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TABLE A.4

HISTORICAL SOIL AND SEDIMENT DATA
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Sample Interval/Location:	*SS-2* DITCH-2	*SS-3* DITCH-3	*SS-4* DITCH-4	*SAMPLE 1* TRENCH 6	*SAMPLE 2* TEST PIT 2	*SAMPLE 3* DUP. SAMPLE 2	*SAMPLE 4* TRENCH 1	*SAMPLE 6* DRUM
Sample Event:	*August 1986*	*August 1986*	*August 1986*	*December 1988*	*December 1988*	*December 1988*	*December 1988*	*December 1988*
Matrix:	*Sediment*	*Sediment*	*Sediment*	*Soil*	*Soil*	*Soil*	*Soil*	*Waste*
Base/Neutral Acid Compounds (ppm)								
Phenol	0.4	0.004	1	NA	NA	NA	NA	NA
Total Metals (ppm)								
Antimony	3.27	2.54	2.18	ND	ND	ND	ND	NA
Arsenic	16.6	11.4	9.6	3.5	4.4	4.1	3.9	NA
Beryllium	BDL 0.5	BDL 0.5	BDL 0.5	0.3	0.3	0.3	0.3	NA
Cadmium	1	0.33	0.14	ND	ND	ND	ND	NA
Chromium	6.7	6.08	0.1	9	7	6	6	NA
Copper	16	9.5	12	20	20	20	18	NA
Lead	4	7.32	4.5	18	18	16	130	NA
Mercury	0.31	0.09	0.08	ND	ND	0.08	0.1	NA
Nickel	4.5	6	15	16	15	14	13	NA
Selenium	0.02	BDL 0.02	BDL 0.02	ND	ND	ND	ND	NA
Silver	0.3	0.36	0.3	ND	ND	ND	ND	NA
Thallium	200	195	241	ND	ND	ND	ND	NA
Zinc	466	66	38	63	58	61	140	NA

Notes:
NA Not Applicable
ND Non-detect at the stated detection limit.
BDL Below Detection Limit

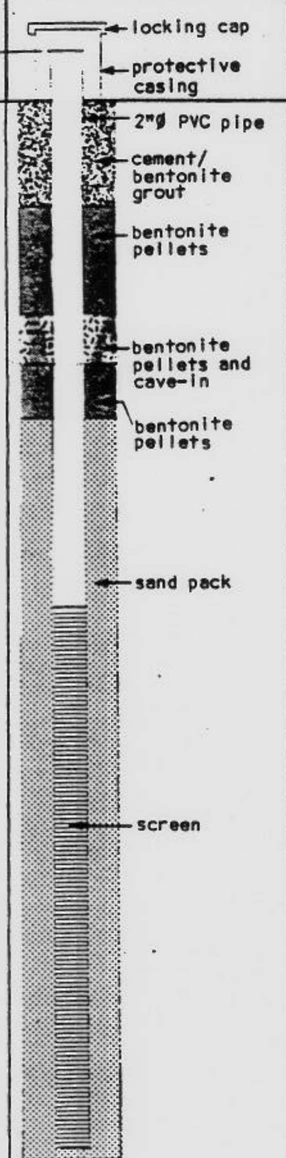
APPENDIX B

STRATIGRAPHIC AND INSTRUMENTATION LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG

(OVERBURDEN)

PROJECT NAME:	FORMER SCHMIGEL SITE	**HOLE DESIGNATION:**	OW27-86
PROJECT NO.:	1393	**DATE COMPLETED:**	4/30/86
CLIENT:	OAK MATERIALS GROUP INC.	**DRILLING METHOD:**	HOLLOW STEM AUGER
LOCATION:	WALLOOMSAC, NEW YORK	**CRA SUPERVISOR:**	C. PADGINTON



DEPTH ft/m BG	STRATIGRAPHY DESCRIPTION & REMARKS	ELEVATION ft/m AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
		98.40				
0		95.82				
1.0	SP-Clayey-gravelly-sand, brownish gray, rust and black, wet, carbonization, gravel subrounded fill , non-plastic, medium dense			1ss		12
2.0						
3.0	Gravel Seam SP-Same as above with slight increase in clay content	92.82		2ss		14
4.0		91.82				
5.0	No Recovery - Auger to 6 ft.			3ss		4
6.0	Fill-Wood, twigs, pieces of board, etc.	89.82				
7.0				4ss		5
8.0	CL-Silty-clay, brown, native, saturated SM-Silty-fine sand, brown, native, saturated, low plasticity	88.07 87.82				
9.0				5ss		6
10.0	CI-Silty-clay, green and black, inclusions of bedrock (slate), saturated, plastic, native, stiff	85.82	Screen Details Screen set to 9.8 ft (E1.86.0) Length - 5 ft. Dia. - 0.167 ft. #10 Slot Schedule 80 PVC			
12.0		83.82		6ss		15
14.0	GP-Coarse, sandy, gravels, gray and brown, saturated, native, medium dense	81.82		7ss		28

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS **WATER FOUND** **STATIC WATER LEVEL**

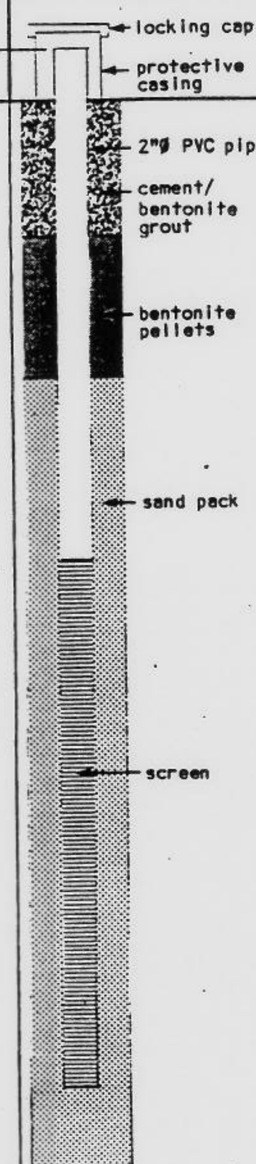
STRATIGRAPHIC AND INSTRUMENTATION LOG

(OVERBURDEN)

PROJECT NAME:	FORMER SCHMIGEL SITE	**HOLE DESIGNATION:**	OW28-86
PROJECT NO.:	1393	**DATE COMPLETED:**	4/30/86
CLIENT:	OAK MATERIALS GROUP INC.	**DRILLING METHOD:**	HOLLOW STEM AUGER
LOCATION:	WALLOOMSAC, NEW YORK	**CRA SUPERVISOR:**	C. PADGINTON

DEPTH ft/m BG	STRATIGRAPHY DESCRIPTION & REMARKS	ELEVATION ft/m AMSL	SAMPLE NUMBER	SAMPLE STATE	'N' VALUE
		100.00			
0		97.30			
1.0	SP-SM-Gravely, silty-sand, brown and gray, wet, non-plastic, native, medium dense, organic inclusions		1ss		16
2.0					
3.0			2ss		19
4.0		93.30			
5.0	No Recovery - Auger to 6 ft.		3ss		8
6.0		91.30			
7.0	SP-SM-Gravelly-clayey, silt, greenish-gray, carbonization, saturated native		4ss		50+
8.0		89.30			
9.0	SP-Medium sand w/bedrock fragments-weathered, brownish gray, saturated, native		5ss		50+
10.0	Auger Refusal-Top of Rock	87.30			
12.0					
14.0					

MONITOR INSTALLATION



Screen Details
Screen set to 9.4ft. (El. 87.9)
Length - 5 ft.
Dia. - 0.167
#10 Slot
Schedule 90 PVC

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

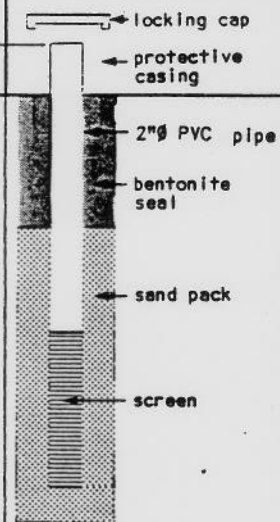
GRAIN SIZE ANALYSIS **WATER FOUND** **STATIC WATER LEVEL**

S T R A T I G R A P H I C   A N D   I N S T R U M E N T A T I O N   L O G

(O V E R B U R D E N)

PROJECT NAME: FORMER SCHMIGEL SITE
HOLE DESIGNATION: OW29-86
PROJECT NO.: 1393
DATE COMPLETED: 5/01/86
CLIENT: OAK MATERIALS GROUP INC.
DRILLING METHOD: HOLLOW STEM AUGER
LOCATION: WALLOOMSAC, NEW YORK
CRA SUPERVISOR: C. PADGINTON

DEPTH ft/m BG	STRATIGRAPHY DESCRIPTION & REMARKS	ELEVATION ft/m AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
		78.38	locking cap			
0		76.37	protective casing			
	OL-Organic silty-clay, brown w/ light brown and black mottling, plastic, saturated, native		2"Ø PVC pipe			
1.0			bentonite seal	1ss		2
2.0	MH-CL-Clayey-silt, brown and black, wet-moist, w/depth, plastic, firm, native	74.37	sand pack	2ss		8
3.0			screen			
4.0	Bottom of Hole	72.37				
5.0						
6.0						
7.0						
8.0						
9.0						
10.0						
12.0						
14.0						



Screen Details
Screen set to 3.7ft.
(El. 72.67)
Length - 1.5 ft.
Dia. - 0.167 ft.
#10 slot
Schedule 80 PVC

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS   WATER FOUND   STATIC WATER LEVEL

APPENDIX C

COST ESTIMATES

TABLE C1

INSTITUTIONAL CONTROLS AND MONITORING
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*	*Total Costs*
A. DIRECT CAPITAL COSTS					
A.1	Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
A.2	Fencing	400	ft	$ 15	$ 6,000
	Subtotal - A				*$ 16,000*
B. INDIRECT CAPITAL COSTS					
B.1	Administrative and Legal Costs	1	L.S.	(incl. in A.2)	$ -
B.2	Design & Engineering (10% of Direct Capital Costs)	1	L.S.	$ 1,500	$ 1,500
B.3	Construction Management	1	L.S.	(incl. in B.2)	$ -
	Subtotal - B				*$ 1,500*
		TOTAL ESTIMATED CAPITAL COSTS			**$ 17,500**
C. ANNUAL OPERATION & MAINTENANCE COSTS					
C.1	Quarterly Sampling(1) and Reporting (years 0 to 5)	4	Event/year	$ 8,300	$ 33,200
C.2	Semi-annual Sampling(1) and Reportin (years 6 to 30)	2	Event/year	$ 8,300	$ 16,600
C.3	Fence Maintenance	1	L.S.	$ 500	$ 500
		NET PRESENT WORTH O&M COSTS (6% for 30 years)			**$ 307,200**
		TOTAL ESTIMATED COST OF ALTERNATIVE			**$ 324,700**

TABLE C2

EXCAVATION AND OFF-SITE LANDFILLING
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*	*Total Costs*
A. DIRECT CAPITAL COSTS					
A.1	Mobilization	1	L.S.	$ 8,800	$ 8,800
A.2	Health and Safety	1	L.S.	$ 8,800	$ 8,800
A.3	Excavation, Stockpiling & Dewatering	3700	cu. yd.	$ 20	$ 74,000
A.4	Stabilization/dewatering of excavated soils	1850	cu. yd.	$ 10	$ 18,500
A.5	Off-Site disposal of excavation water(1)	50000	gal.	$ 0.50	$ 25,000
A.6	Loading of trucks for off-Site disposal	5550	cu. yd.	$ 2	$ 11,100
A.7	Transportation & Disposal at a permited hazardous waste landfill(2)	8325	tons	$ 200	$ 1,665,000
A.8	Analytical Testing	1	L.S.	$ 15,000	$ 15,000
A.9	Supply & Place Imported Fill	3700	cu. yd.	$ 12	$ 44,400
A.10	Demobilization/closeout	1	L.S.	$ 8,800	$ 8,800
	Subtotal - A				*$ 1,879,400*
B. INDIRECT CAPITAL COSTS					
B.1	Administrative and Legal Costs	1	L.S.	$ 6,400	$ 6,400
B.2	Design & Engineering	1	L.S.	$ 10,700	$ 10,700
B.3	Construction Management	1	L.S.	$ 21,400	$ 21,400
	Subtotal - B				*$ 32,100*
				Total A & B	**$ 1,911,500**
				25% Contingency	**$ 434,200**
				TOTAL ESTIMATED CAPITAL COSTS	**$ 2,345,700**

TABLE C3

SOIL VAPOR EXTRACTION AND AIR SPARGING
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*		*Total Costs*	
A. DIRECT CAPITAL COSTS							
A.1	Mobilization	1	L.S.	$	8,700	$	8,700
A.2	Health and Safety	1	L.S.	$	4,500	$	4,500
A.3	Install Extraction Trenches	220	ft	$	50	$	11,000
A.4	Install Air Injection Wells	2	each	$	3,500	$	7,000
A.5	Underground piping	50	ft	$	40	$	2,000
A.6	Blowers and Equipment	1	L.S.	$	10,000	$	10,000
A.7	Vapor phase carbon system for odor control	1	L.S.	$	10,000	$	10,000
A.8	Instrumentation, utilities & electrical	1	L.S.	$	11,500	$	11,500
A.9	Civil/Mechanical	1	L.S.	$	10,000	$	10,000
A.10	Install Impermeable Cover	1	L.S	$	20,000	$	20,000
A.11	Installation/Startup	1	L.S.	$	5,000	$	5,000
A.12	Demobilization/closeout	1	L.S.	$	4,500	$	4,500
	Subtotal - A					*$*	*104,200*
B. INDIRECT CAPITAL COSTS							
B.1	Administrative and Legal Costs	1	L.S.	$	5,200	$	5,200
B.2	Design & Engineering	1	L.S.	$	20,800	$	20,800
B.3	Construction Management	1	L.S.	$	10,400	$	10,400
	Subtotal - B					*$*	*36,400*

TABLE C3

SOIL VAPOR EXTRACTION AND AIR SPARGING
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*		*Total Costs*	
				Total A &B		**$**	**140,600**
				25% Contingency		**$**	**35,200**
		TOTAL ESTIMATED CAPITAL COSTS				**$**	**175,800**
C. ANNUAL OPERATION & MAINTENANCE COSTS							
C.1	Quarterly Sampling[1] and Reporting	4	Event/year	$	8,300	$	33,200
C.2	Carbon replacement & disposal	1	L.S.	$	6,000	$	6,000
C.3	Equipment maintenance	1	L.S.	$	4,000	$	4,000
C.4	Utilities	12	month	$	400	$	4,800
C.5	Operator Labor	1	L.S.	$	30,000	$	30,000
C.6	25% Contingency	1	L.S.	$	19,500	$	19,500
	Subtotal - C					*$*	*97,500*
		NET PRESENT WORTH O&M COSTS (6% for 3 years)				**$**	**260,600**
	TOTAL ESTIMATED COST OF ALTERNATIVE					***$***	***436,400***

NOTE

(1) Collection of six groundwater/surface water samples and QA/QC samples for analyses of acetone, methylene chloride, toluene, ethylbenzene, and xylene.

TABLE C4

BIOVENTING
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	Description	Estimated Quantity	Unit	Unit Cost		Total Costs	
A. DIRECT CAPITAL COSTS							
A.1	Mobilization	1	L.S.	$	5,200	$	5,200
A.2	Health and Safety	1	L.S.	$	2,600	$	2,600
A.3	Predesign Bench Scale Testing	1	L.S.	$	5,000	$	5,000
A.4	Install Infiltration Trenches	220	ft	$	50	$	11,000
A.5	Install Injection/Extraction Wells	3	each	$	3,500	$	10,500
A.6	Underground piping	50	ft	$	40	$	2,000
A.7	Blowers, Pumps and Equipment	1	L.S.	$	7,000	$	7,000
A.8	Instrumentation, utilities & electrical	1	L.S.	$	8,000	$	8,000
A.9	Civil/Mechanical	1	L.S.	$	5,000	$	5,000
A.10	Installation/Startup	1	L.S.	$	4,000	$	4,000
A.11	Demobilization/closeout	1	L.S.	$	2,600	$	2,600
	Subtotal - A					*$*	*62,900*
B. INDIRECT CAPITAL COSTS							
B.1	Administrative and Legal Costs	1	L.S.	$	3,200	$	3,200
B.2	Design & Engineering	1	L.S.	$	12,600	$	12,600
B.3	Construction Management	1	L.S.	$	9,400	$	9,400
	Subtotal - B					*$*	*25,200*
				Total A & B		**$**	**88,100**
				25% Contingency		**$**	**22,000**
		TOTAL ESTIMATED CAPITAL COSTS				**$**	**110,100**

TABLE C4

BIOVENTING
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*	*Total Costs*
C. ANNUAL OPERATION & MAINTENANCE COSTS					
C.1	Quarterly Sampling[1] and Reporting	4	Event/year	$ 8,300	$ 33,200
C.2	Equipment maintenance	1	L.S.	$ 2,000	$ 2,000
C.3	Utilities	12	month	$ 200	$ 2,400
C.4	Operator Labor	1	L.S.	$ 20,000	$ 20,000
C.5	25% Contingency	1	%	$ 14,400	$ 14,400
	Subtotal - C				*$ 72,000*
			NET PRESENT WORTH O&M COSTS (6% for 5 years)		$ 303,300
			TOTAL ESTIMATED COST OF ALTERNATIVE		***$ 413,400***

NOTE.
(1) Collection of six groundwater/surface water samples and QA/QC samples for analyses of acetone, methylene chloride, toluene, ethylbenzene, and xylene.

TABLE C5

INTERMITTENT PUMPING AND ON-SITE TREATMENT
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*		*Total Costs*	
A. DIRECT CAPITAL COSTS							
A.1	Mobilization	1	L.S.	$	10,000	$	10,000
A.2	Health and Safety	1	L.S.	$	5,200	$	5,200
A.3	Predesign Bench Scale Testing	1	L.S.	$	5,000	$	5,000
A.4	Install Extraction Well	1	each	$	3,500	$	3,500
A.5	Install Buried Forcemains	100	ft	$	40	$	4,000
A.6	Pumps, tanks, filters & miscellaneous equipment	1	L.S.	$	15,000	$	15,000
A.7	UV Oxidation Treatment System	1	L.S.	$	40,000	$	40,000
A.8	Pretreatment System	1	L.S.	$	5,000	$	5,000
A.9	Instrumentation & electrical	1	L.S.	$	12,000	$	12,000
A.10	Access Road, and treatment building construction, fencing	1	L.S.	$	15,000	$	15,000
A.11	Installation/Startup	1	L.S.	$	10,000	$	10,000
A.12	Demobilization/closeout	1	L.S.	$	5,200	$	5,200
	Subtotal - A					*$*	*129,900*
B. INDIRECT CAPITAL COSTS							
B.1	Administrative and Legal Costs	1	L.S.	$	6,500	$	6,500
B.2	Design & Engineering	1	L.S.	$	19,500	$	19,500
B.3	Construction Management	1	L.S.	$	13,000	$	13,000
	Subtotal - B					*$*	*32,500*

TABLE C5

INTERMITTENT PUMPING AND ON-SITE TREATMENT
FORMER SCHMIGEL SITE
HOOSICK FALLS, NEW YORK

Item	*Description*	*Estimated Quantity*	*Unit*	*Unit Cost*			*Total Costs*
				Total A & B		**$**	**162,400**
				25% Contingency		**$**	**40,600**
		TOTAL ESTIMATED CAPITAL COSTS				**$**	**203,000**
C. ANNUAL OPERATION & MAINTENANCE COSTS							
C.1	Quarterly Sampling[1] and Reporting (years 0 to 5)	4	Event/year	$	8,300	$	33,200
C.2	Semi-annual Sampling[1] and Reporting (years 6 to 10)	2	Event/year	$	8,300	$	16,600
C.3	Metals/solids handling & disposal	1	L.S.	$	7,500	$	7,500
C.4	Utilities	12	month	$	400	$	4,800
C.5	Equipment maintenance	1	L.S.	$	5,000	$	5,000
C.6	Operator Labor	1	L.S.	$	20,000	$	20,000
C.7	25% Contingency	1	%	$	17,600	$	17,600
	Subtotal - C for years 0 to 5					*$*	*88,100*
	Subtotal - C for years 6 to 10					*$*	*71,500*
		NET PRESENT WORTH O&M COSTS (6% for 10 years)				**$**	**596,200**
		TOTAL ESTIMATED COST OF ALTERNATIVE				***$***	***799,200***

NOTE

(1) Collection of six groundwater/surface water samples and QA/QC samples for analyses of acetone, methylene chloride, toluene, ethylbenzene, and xylene.