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# RECORD OF DECISION

Rosen Brothers Site
Cortland, New York

U.S. Environmental Protection Agency
Region II
New York, New York
March 1998

## DECLARATION FOR RECORD OF DECISION

### SITE NAME AND LOCATION

Rosen Brothers Site, Cortland, New York

### STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selection of a remedy for the Rosen Brothers Superfund Site (the "Site") in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601-9675, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. This decision document explains the factual and legal basis for selecting the remedy for the Site. The attached index (**Appendix III**) identifies the items that comprise the Administrative Record upon which the selection of the remedial action is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the proposed remedial action in accordance with CERCLA §121(f), 42 U.S.C. §9621(f), and it concurs with the selected remedy (see **Appendix IV**).

### ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Rosen Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

### DESCRIPTION OF THE SELECTED REMEDY

The major components of the selected remedy include the following:

- Excavation of all 1,1,1-trichloroethane (TCA)-contaminated soils above 1 milligram per kilogram (mg/kg) in two hot spot areas (one immediately downgradient of the former cooling pond in the monitoring well W-06 area and the other corresponding with test pit T-02) and PCB-contaminated soils above 10 mg/kg in two hot spot areas (the northeast portion of the Site and the area of the gantry crane in the central portion)[1]. The actual extent of the excavations and the volume of the excavated material will be based on post-excavation confirmatory sampling. Clean or treated material will be used as backfill in the excavated areas.

- Consolidation of all excavated soils with PCB concentrations less than 50 mg/kg onto the former cooling pond. Those soils with PCB concentrations above 50 mg/kg will be sent off-site for treatment/disposal at a Toxic Substances Control Act (TSCA)-compliant facility. All excavated TCA-contaminated soils will either be sent off-site for treatment/disposal or treated on-site to 1 mg/kg for TCA and used as backfill in the excavations.

- Removal and consolidation onto the former cooling pond of non-hazardous debris located on surface areas where the site-wide surface cover will be installed and/or is commingled with the excavated soil.

- Placement of a cap meeting the requirements of New York State 6 NYCRR Part 360 regulations over the three-acre former cooling pond. Prior to the construction of the cap, the consolidated soils, non-hazardous debris, and existing fill materials will be regraded and compacted to provide a stable foundation and to promote runoff.

- Construction of a chain-link fence around the former cooling pond after it is capped.

- Placement of a surface cover over the remaining areas of the Site to prevent direct contact with residual levels of contaminants in Site soils. The nature of the surface cover will be determined during the remedial design phase.

- Monitored natural attenuation to address the residual groundwater contamination in downgradient areas. As part of a long-term groundwater monitoring program, sampling will be conducted in order to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment.

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1 See **Figure 3** for locations of the areas to be remediated.

- Implementation of regrading and storm-water management improvements to protect the integrity of the cap/surface cover.

- Employment of dust and VOC control/suppression measures during all construction and excavation activities, as necessary, pursuant to state and federal guidance.

- Long-term monitoring to evaluate the remedy's effectiveness. The exact frequency, location, and parameters of groundwater monitoring will be determined during remedial design. Monitoring will include a network of groundwater monitoring wells, including the installation of new monitoring wells (as necessary). Monitoring will also include several sediment sampling stations.

- Taking steps to secure institutional controls, such as deed restrictions and contractual agreements, as well as local ordinances, laws, or other government action, for the purpose of, among other things, restricting the installation and use of groundwater wells at and downgradient of the Site, restricting excavation or other activities which could affect the integrity of the cap/site-wide surface cover, and restricting residential use of the property in order to reduce potential exposure to site-related contaminants.

- Reevaluation of Site conditions at least once every five years to determine if a modification to the selected alternative is necessary.

It is anticipated that excavation of the two PCB hot spot areas and the installation of the site-wide surface cover on a portion of the Site will be performed pursuant to a Unilateral Administrative Order issued by EPA in early March 1998.

Data indicate that the groundwater contamination in the monitoring well W-06 area is of an intermittent nature and that TCA levels in groundwater along the Site's downgradient perimeter are present at relatively low levels. These conditions, combined with the removal of the TCA source areas, extremely high groundwater flow, and the presence of intrinsic conditions favorable to contaminant degradation, is expected to lead to the timely groundwater restoration via monitored natural attenuation (in approximately 10 years) without relying on a costly groundwater extraction and treatment system.

If, however, monitored natural attenuation does not appear to be successful in remediating the groundwater, then more active remedial measures would be considered. EPA may also invoke a waiver of groundwater Applicable or Relevant and Appropriate Requirements (ARARs) if the remediation program and further monitoring data indicate that reaching Maximum Contaminant Levels (MCLs) in the aquifer is technically impracticable.

The selected alternative will provide the best balance of trade-offs among alternatives with respect to the evaluating criteria. EPA and NYSDEC believe that the selected alternative will be protective of human health and the environment, will comply with ARARs, will be cost-effective, and will utilize permanent solutions to the maximum extent practicable.

## DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA §121, 42 U.S.C. §9621 in that it: (1) is protective of human health and the environment; (2) attains a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements under federal and state laws; (3) is cost-effective; (4) utilizes alternative treatment (or resource recovery) technologies to the maximum extent practicable; and (5) satisfies the statutory preference for remedies that employ treatment to reduce the toxicity, mobility, or volume of the hazardous substances, pollutants or contaminants at a site.

Because this remedy will result in contaminants remaining on the Site above health-based limits until the contaminant levels in the aquifer are reduced below MCLs, a review of the remedial action, pursuant to CERCLA §121(c), 42 U.S.C. §9621(c), will be conducted five years after the commencement of the remedial action and every five years thereafter, to ensure that the remedy continues to provide adequate protection to human health and the environment.

Jeanne M. Fox
Regional Administrator

3/23/98
Date

# DECISION SUMMARY

Rosen Brothers Site
Cortland, New York

U.S. Environmental Protection Agency
Region II
New York, New York

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## *SITE LOCATION AND DESCRIPTION*

The Rosen Brothers Site (the Site), located on relatively flat terrain, is an abandoned scrap-metal processing facility which occupies approximately 20 acres on the southern side of the City of Cortland, New York (see **Figure 1**). Access to the Site is restricted from the surrounding environs by a seven-foot-high fence with two locked gates. To the east of the Site is the building and parking lot of the former Kirby Company, Pendleton Street, a vacant lot, a small residential area consisting of approximately 13 apartment buildings, and GT Auto Finishers. To the north is Perplexity Creek (an eastward flowing, seasonally intermittent stream), railroad tracks associated with the New York, Susquehanna & Western Railroad, several industries (Acorn Products, Tuscarora Plastics, and Marietta Packaging), Huntington Street, a small residential area consisting of approximately 20 houses, and the Randall Elementary School. To the west is a vacant lot, several industries (GS Heavy Duty Electric, JTS Lumber, and Cortland Wholesale Lumber and Plywood), and South Main Street. To the south is Perplexity Creek Tributary, a former City of Cortland dump site, Valley View Drive, and the Cortland City Junior and Senior High Schools (see **Figure 2**).

Perplexity Creek Tributary, which flows northeast, converges with Perplexity Creek at the northeast corner of the Site. Both are seasonally intermittent streams. At this point, Perplexity Creek continues through a culvert for approximately 2,000 feet, then flows freely for approximately a one-half mile interval before emptying into the Tioughnioga River. Surficial geology at the Site (hereinafter referred to as overburden) is comprised of glacial sand and gravel overlain by a silt unit and a fill unit. The silt unit appears to overlay the sand and gravel unit across most of the Site, ranging from two to six feet in thickness. For most of the Site, the fill ranges in thickness from one to six feet, typically consisting of gravels, sands, and silts mixed with various materials such as slag, cinders, and ash. Other materials observed in the fill consist of metal, wire, brick, wood, glass, railroad ties, pipes, tar, plastics, and concrete. Construction and, to a lesser extent, municipal wastes, ranging from four to twenty-five feet in thickness, are present in a three-acre former cooling pond. The eastern portion of the cooling pond has been filled in to an estimated fifteen feet above grade.

The Site overlies the Cortland-Homer-Preble aquifer, a sole source aquifer used as a supply of potable water for the City of Cortland. The potable water supply well for the entire City is located approximately two miles upgradient of the Site. Officials from both the City of Cortland and Cortland County have indicated that there are no known users of groundwater in areas downgradient of the Site.

*SITE HISTORY AND ENFORCEMENT ACTIVITIES*

The area currently occupied by the Site is the eastern half of a forty-acre parcel of land which was originally referred to as "Randall's Vacant Fields." In the late 1800's, the forty-acre parcel was developed by Wickwire Brothers, Inc. (Wickwire) as an industrial facility for the manufacture of wire, wire products, insect screens, poultry netting, and nails. The eastern half of the property was used, primarily, as a scrap yard by Wickwire, supplying scrap metal for the steel mill. An on-site pond was dammed and used as a cooling pond in the manufacture of raw steel. This pond was approximately three acres in size and had an estimated capacity of one million gallons. The entire facility was sold to Keystone Consolidated Industries, Inc. (Keystone) in 1968. Keystone closed the facility in 1971. Shortly thereafter, the facility was destroyed by fire.

In the early 1970's, Phillip and Harvey Rosen (Rosen Brothers) transferred their existing scrap-metal processing operation to the eastern portion of the property. At this time, Rosen Brothers began the demolition of the Wickwire buildings on the western portion of the property. The demolition debris (allegedly over a million and a half square feet of buildings) was used to fill in most of the cooling pond to or above grade, hence the cooling pond is hereinafter referred to as "the former cooling pond". In exchange for this work, Rosen Brothers was granted title to the eastern portion of the property. The western portion of the Wickwire property was cleared for the development of new industry in 1979, and has since been known as the Noss Industrial Park.

Rosen Brothers' scrap metal operations included scrap metal processing and automobile crushing. The Site was used to stage large quantities of abandoned vehicles, appliances, steel tanks, drums, truck bodies, and other scrap materials. Municipal waste, industrial waste, and construction waste were allegedly intermittently disposed of in or on the former cooling pond. Drums were routinely crushed on-site, the contents spilling onto the ground surface. Philip Rosen and Rosen Brothers were cited for various violations throughout this period, including illegally dumping into Perplexity Creek Tributary, improperly disposing of waste materials, and operating a refuse disposal area without a permit. Operations on the Site ceased in 1985 and the Site was abandoned.

In 1986, NYSDEC conducted a Phase II investigation, which included a site inspection, geophysical studies, installation of soil borings and monitoring wells, and sampling and analysis of groundwater, soils, sediments, and waste materials. The site inspection concluded that hazardous materials were present on the Site, including several hundred full and/or leaking drums, transformers filled with polychlorinated biphenyls (PCBs), and pressurized cylinders of unknown content. The results of sampling efforts indicated elevated levels of trichloroethane (TCA), PCBs, anthracene, pyrene, lead, and chromium, in Site soil, sediment, and groundwater.

EPA performed a removal action at the Site in 1987 to address immediate threats to the public health and the environment. This removal action included fencing the Site, sampling, excavating visibly-contaminated soil, and securing and temporary staging of drums, tanks, cylinders, transformers, and the excavated soil.

Based on materials observed on the Site and other evidence, EPA issued Administrative Orders to Keystone and several additional potentially responsible parties in 1988 and 1989, namely Monarch Machine Tool Company (Monarch), Niagara Mohawk Power Corporation (Niagara Mohawk), and the Dallas Corporation (later called Overhead Door Corporation and hereinafter referred to as Overhead Door), requiring them to remove the materials previously staged by EPA. This work was completed in April 1990.

On March 30, 1989, the Site was added to the Superfund National Priorities List. Overhead Door, Monarch, and Niagara Mohawk agreed to conduct a remedial investigation/feasibility study (RI/FS) in accordance with an Administrative Order on Consent (Index Number II CERCLA-00204) with EPA in January 1990. Keystone, Cooper Industries, Inc., and Potter Paint Co., Inc. assisted in the performance or funding of the RI/FS pursuant to the terms of a Unilateral Administrative Order (Index Number II CERCLA-00205) issued in February 1990. The companies completed the RI/FS in 1997. On March 6, 1998, EPA issued a Unilateral Administrative Order to the companies noted above and several other entities to perform a removal action in anticipation of planned on-site redevelopment activities.

These companies voluntarily undertook the demolition and removal of structurally unsound buildings and a 150-foot high smoke stack in December 1992. They also removed and recycled 200 tons of scrap materials in December 1993. In November 1994, the companies emptied and disposed of the contents of an abandoned underground storage tank and removed a small concrete oil pit. In August 1997, EPA removed and recycled over 500 tons of scrap metal and more than 20 tons of tires from the Site.

## *HIGHLIGHTS OF COMMUNITY PARTICIPATION*

The RI report, dated May 1994, which describes the nature and extent of the contamination at and emanating from the Site, the Risk Assessment, dated January 1995, which discusses the risks associated with the Site, the FS report, dated April 1997, which identifies and evaluates various remedial alternatives, and the November 1997 Proposed Plan were made available to the public in both the Administrative Record and information repositories maintained at the EPA Docket Room in the Region II New York City office and at the City of Cortland Public Library located at 32 Church Street, Cortland, New York. The notice of availability for these documents was published in the *Cortland Standard* on November 17, 1997. A public comment period was held from November 17 through January 16, 1998[1]. A public meeting was held on December 9, 1997 at the New York State Grange Building in Cortland, New York. At this meeting, representatives from EPA presented the findings of the RI/FS and answered questions from the public about the Site and the remedial alternatives under consideration.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see **Appendix V**).

## *SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION*

The primary objectives of this action, the first and only remedial action planned for the Site, are to address contaminated soils and groundwater and to minimize any potential future health and environmental impacts.

## *SUMMARY OF SITE CHARACTERISTICS*

During the RI, air, surface water, sediments, surface soils, subsurface soils, and groundwater were sampled. The results from these samples are summarized below.

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[1] A thirty-day extension of the comment period was granted.

## Air

Five air samples were collected downwind of the Site and analyzed for VOCs. In addition, potential concentrations of constituents on dust particulates were evaluated. The results did not indicate any significant site-related impacts to air quality.

## Surface Water

Contaminant levels in the surface water were found to be generally insignificant.

## Sediments

Although semi-volatile organic compounds (SVOCs), PCBs, and metals were detected in sediments, they were present at levels that do not represent a significant impact.

## Surface Soil

Surface soils were sampled for SVOCs and metals at forty-three locations. PCB samples were collected at thirty-one locations. SVOCs were generally detected at low to moderate levels at almost every location sampled. Surface soil sampling data are included in **Table 1**. The SVOCs that were detected were predominantly polyaromatic hydrocarbons (PAHs) and phthalates. The highest concentrations (up to 2,300 milligram/kilogram (mg/kg) of total SVOCs) were detected in surface soil samples in the vicinity of the former cooling pond. Four PAHs, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene, were detected wherever SVOCs were present. The PAH compounds are believed to be associated with petroleum products, coal, and combustion byproducts from both Wickwire and Rosen Brothers operations. The phthalates are typically associated with plastic materials.

Elevated concentrations of metals were detected in multiple locations across the Site, including cadmium, chromium, lead, manganese, mercury, and zinc. Elevated metal concentrations include manganese at approximately 19,100 mg/kg and lead at approximately 3,000 mg/kg.

Surface-soil samples collected in the northeast portion of the Site contained PCBs with concentrations exceeding 25 mg/kg. PCB sampling data from this event are included in **Table 2**. PCBs were detected sporadically and at low levels (generally less than 1 mg/kg) in other areas of the Site, including an area where an overhead Gantry crane operated to load and unload scrap during both Wickwire and Rosen Brothers operations.

**Subsurface Soil**

Samples from twenty-one subsurface-soil locations were collected from test pits and borings. These samples were analyzed for volatile organic compounds (VOCs), SVOCs, PCBs/pesticides, and metals. Subsurface soil sampling data are included in **Table 3**. VOCs were generally detected at relatively low concentrations (*i.e.*, below 1 mg/kg), with the exception of TCA at 44 mg/kg in a single location, two to three feet below the surface in the south-central portion of the Site (*i.e.*, sample collected from test pit T-02). Most of the SVOCs detected in subsurface soil samples collected at the Site were PAHs. Total SVOC concentrations were generally low across the Site (*i.e.*, below 1 mg/kg). The highest concentration detected was approximately 330 mg/kg in the northeastern portion of the Site. Consistent with surface soil sampling data, PCBs in subsurface soil samples were generally confined to the northeastern area of the Site, at concentrations exceeding 25 mg/kg. Pesticides were either not detected or present at extremely low levels. Metals in subsurface soils were generally detected at levels well below those detected in surface soils. The maximum concentrations of manganese and lead were detected at approximately 8,000 mg/kg and 1,100 mg/kg, respectively.

A suspected area of subsurface drum disposal in the southwestern portion of the Site was investigated by test pitting during the RI in 1993. No drums were located during this effort. In addition, a geophysical testing program was conducted in 1996 to explore discrete subsurface areas of the Site where drum disposal was suspected. Using several remote sensing technologies, suspected areas were defined, including three locations within the former cooling pond. A test-pitting program did not locate any drums.

**Groundwater**

There are two primary hydrogeologic units beneath the Site -- the upper outwash unit and the lower sand and gravel unit. In the southern portion of the Site, the upper unit directly overlies the lower unit and they tend to act as one unit. In the northern portion of the Site, the upper outwash and lower sand and gravel units become separated by a lower-permeability lacustrine unit, forming two distinct hydrogeologic units. The lacustrine unit also restricts the downward migration of contaminants from the upper outwash unit to the lower sand and gravel unit. The upper outwash unit is about 40 feet thick and the general direction of groundwater flow is toward the northeast (see **Figure 3**).

During the RI, several groundwater sampling events were conducted using twenty-four monitoring wells. Samples were analyzed for VOCs, SVOCs, PCBs/pesticides, and metals. Groundwater sampling data are included in **Table 4**. The results of these RI sampling activities indicated the presence of elevated levels of VOCs in the groundwater beneath the Site. The primary groundwater contaminants were determined to be TCA and its degradation products, 1,1- dichloroethane (1,1-DCA) and 1,1-dichloroethene (1,1-DCE). The highest concentrations of contaminants were detected in the south-central portion of the Site, in monitoring well W-06, located immediately downgradient of the former cooling pond. A concentration of 3,400 micrograms per liter ($\mu$g/l) of TCA was detected in this well. Subsequent groundwater monitoring over the next several years showed a significant decline of TCA concentrations. Much lower concentrations of these and other VOCs were detected at wells throughout the Site, downgradient of the Site, and to a lesser extent, upgradient of the Site. The data indicate that there is a general decline in groundwater contaminant levels in seven upper outwash wells along the northern (downgradient) perimeter of the Site. The highest concentrations were detected in the central portion of the northern perimeter, located hydraulically downgradient of monitoring well W-06 and test pit T-02, with a high concentration of 390 $\mu$g/l detected in February 1992. By March 1996, the last full round of groundwater sampling conducted, the high concentration had declined to 88 $\mu$g/l. Consistent with the northern-perimeter wells, the data indicate that there is a general decline in groundwater contaminant levels in four off-site, upper-outwash wells located downgradient of the northern-perimeter wells. Average TCA concentrations ranged from 8 $\mu$g/l to 135 $\mu$g/l. The highest concentrations were detected hydraulically downgradient of monitoring well W-11 (see **Figure 2**), with a high concentration of 260 $\mu$g/l, detected in February 1992, which declined to 83$\mu$g/l by March 1996.

Post-RI quarterly groundwater samples were collected from April 1995 through August 1996 to assess the nature and degree of decline in the levels of TCA immediately downgradient of the former cooling pond. A summary of all groundwater sampling data for TCA is included in **Table 5**. Levels of TCA continued to decline until December 1995, when an elevated level of 5,000 $\mu$g/l was observed. The conclusion drawn from these data was that there was an intermittent source of TCA present in the soils/fill in the vicinity of or upgradient from monitoring well W-06 (See **Figure 4**).

In response, EPA conducted an investigation in the vicinity of monitoring well W-06 and the former cooling pond. Groundwater, soil, and soil gas samples were collected and test pits were excavated into the former cooling pond and in the monitoring well W-06 area in an attempt to identify the source of the intermittent TCA contamination. The data collected led to the conclusion that there was a localized source of TCA in the soils/fill in the monitoring well W-06 area and that the former cooling pond was not a source of TCA. The estimated volume of contaminated soil in the monitoring well W-06 area is 500 to 1,000 cubic yards, based on elevated soil concentrations from four to eight feet deep overlying the silt unit. A similar volume is assumed to be present in the test pit T-02 area.

PCBs were detected in groundwater in a single well in the northeastern portion of the Site. The highest concentration reported was 11 $\mu$g/l. The PCBs at this location can be correlated directly with the PCBs detected in the soil in the vicinity of this well. No PCBs were detected in nearby downgradient monitoring wells. Pesticides were not detected in the groundwater.

The data indicate that elevated levels of metals are present in the groundwater. Metals with elevated concentrations include antimony, arsenic, cadmium, lead, chromium, and manganese. Manganese was often detected above 5,000 $\mu$g/l in unfiltered samples and above 1,000 $\mu$g/l in filtered samples. While it is difficult to correlate these groundwater contaminants solely with the Site, it appears that the Site does contribute to the presence of metals in groundwater.

Overall, data from on- and off-site monitoring wells indicate a narrow, relatively low-level and stable groundwater-contaminant plume migrating from the Site to the northeast and extending almost to the Tioughnioga River. The groundwater data indicate that contaminants are confined to the upper outwash unit and have not migrated to the lower sand and gravel unit. This is likely due to both the extremely high horizontal groundwater flow velocity in the Cortland aquifer as well as to the presence of the less-permeable lacustrine unit between the upper outwash and lower sand and gravel units across the northern portion of the Site. The data collected, including the collection of data confirming the presence of conditions favorable for natural attenuation, indicate that there continues to be a general decline in the levels of contaminants over time downgradient of the source areas (*i.e.*, at the northern perimeter and areas downgradient of the Site).

Pump testing conducted after the RI concluded that a flow rate of 1,000 to 1,500 gallons per minute would be necessary to create a hydraulic barrier along the downgradient edge of the Site in order to prevent contaminated groundwater from leaving the Site.

## *SUMMARY OF SITE RISKS*

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future Site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the Site, if no remedial action were taken.

### Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification*--identifies the contaminants of concern at the Site based on several factors such as toxicity, frequency of occurrence, and concentration. *Exposure Assessment*--estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. *Toxicity Assessment*--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). *Risk Characterization*--summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The baseline risk assessment began with selecting contaminants of concern which would be representative of Site risks. Contaminants were identified based on factors such as potential for exposure to receptors, toxicity, concentration, and frequency of occurrence. Contaminants of concern are presented in **Table 6**. Several of the SVOCs (particularly the PAHs), as well as the PCBs, are known to cause cancer in laboratory animals and are suspected or known to be human carcinogens. Many of the metals, particularly manganese, are noncarcinogenic compounds with strong potential for adverse health effects.

The baseline risk assessment evaluated the health effects which could result from exposure to contaminated Site media (*i.e.*, soil, groundwater, etc.) through ingestion, dermal contact, or inhalation. The assessment evaluated risks to potential trespassers, potential future off-site residents, potential future excavation workers, and potential future industrial workers. Exposure routes are presented in **Table 7**.

Noncarcinogenic risks were assessed using a Hazard Index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses or RfDs). RfDs have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of mg/kg-day, are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (*e.g.*, the amount of a chemical ingested from contaminated drinking water) are compared with the RfD to derive the hazard quotient for the contaminant in the particular medium. The hazard index is obtained by adding the hazard quotients for all compounds across all media that impact a particular receptor population. The RfDs for the compounds of concern are presented in **Table 8**.

Potential carcinogenic risks were evaluated using the cancer slope factors developed by EPA for the contaminants of concern. Cancer slope factors (SFs) have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. SFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SFs for the compounds of concern are presented in **Table 9**.

Current federal guidelines for acceptable exposures are an individual lifetime excess carcinogenic risk in the range of $10^{-4}$ to $10^{-6}$ (e.g., a one-in-ten-thousand to a one-in-a-million excess cancer risk) and a maximum health HI (which reflects noncarcinogenic effects for a human receptor) equal to 1.0. A HI greater than 1.0 indicates a potential of noncarcinogenic health effects.

The results of the baseline risk assessment indicate that the contaminated surface soils and groundwater at the Site pose an unacceptable risk to human health due, primarily, to the presence of VOCs, SVOCs, PCBs, and metals. HI data are summarized in **Table 10**. Cancer risk data are summarized in **Table 11**.

Potential trespassers and potential future excavation workers were not found to be at risk from exposure to contaminated Site media, primarily due to the assumed short duration of potential exposure. In addition, the risk assessment concluded that there was no significant risk attributable to the Site when evaluating current scenarios. The noncarcinogenic HI for exposure to groundwater and wind-borne soil contaminants by potential future off-site residents is 69, attributable primarily to groundwater ingestion, which is well above the acceptable level of 1. As wasnoted previously, the water supply for the City of Cortland is located two miles upgradient of the Site and there are no known users of groundwater downgradient of the Site. The carcinogenic risks related to ingestion, dermal contact, and/or inhalation of vapors from groundwater and surface soils at the Site are outside the acceptable range at $9 \times 10^{-4}$ (*i.e.*, a nine-in-ten-thousand excess cancer risk) for potential future industrial workers. For potable groundwater ingestion by potential future off-site residents, the risk was $2 \times 10^{-3}$ (*i.e.*, a two-in-one-thousand excess cancer risk), which is outside the acceptable risk range.

For potential future industrial workers, the noncarcinogenic HIs for ingestion of groundwater and ingestion and inhalation of surface soils (dust) are above the acceptable level of 1. The HI for ingestion of groundwater by future industrial workers is 9 and the HI for ingestion and inhalation of surface soils by future industrial workers is 2.

Ecological Risk Assessment

A four-step process is utilized for assessing Site-related ecological risks for a reasonable maximum exposure scenario: *Problem Formulation* - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. *Exposure Assessment*--a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. *Ecological Effects Assessment*--literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. *Risk Characterization*--measurement or estimation of both current and future adverse effects.

The ecological risk assessment began with evaluating the contaminants associated with the Site in conjunction with the site-specific biological species/habitat information. The baseline risk assessment concluded that the Site has low value as a wildlife habitat, while surrounding areas provide some limited alternative, preferred habitats. The degree of physical disturbance at the Site and lack of continuous quality habitat in the area are conditions which restrict the extent of use by wildlife. Perplexity Creek and its tributary generally provide low habitat value for aquatic biota due to the intermittent nature of the stream flow.

Raccoons and deer mice were chosen to represent terrestrial receptors potentially exposed to site-related contaminants of concern. For raccoons, estimated doses of cadmium, mercury, and lead exceed the available Lowest-Observed-Adverse-Effect Levels (LOAELs) and No-Observed-Adverse-Effect-Levels (NOAELs). For deer mice, the estimated dose for PCBs exceeds both NOAELs and LOAELs. Estimated doses for mercury, nickel, lead, and barium exceed their respective NOAELs, but not their LOAELs. The primary route of exposure was bioaccumulation of contaminants through the food chain.

Summary of Human Health and Ecological Risks

Based on the results of the baseline risk assessment, EPA has determined that actual or threatened releases of hazardous substances from the Site, if not addressed by the selected alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis uncertainty can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual will actually come in contact with the chemicals of concern, the period of time over which such exposure will occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

### *REMEDIAL ACTION OBJECTIVES*

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered guidance (TBCs), and site-specific risk-based levels.

The following remedial action objectives were established for the Site:

- Prevent human contact with contaminated soils, sediments, and groundwater;
- Prevent ecological contact with contaminated soils and sediments;
- Mitigate the migration of contaminants from soils/fill to groundwater;
- Mitigate the off-site migration of contaminated groundwater;

- Restore groundwater quality to levels which meet federal and state drinking-water standards (see **Tables 12 and 13**); and

- Control surface water runoff and erosion.

## *SUMMARY OF REMEDIAL ALTERNATIVES*

CERCLA requires that each selected Site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

This ROD evaluates, in detail, four remedial alternatives for addressing the contamination associated with the Site. The four alternatives for the Site are discussed below in detail.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with the responsible parties, or procure contracts for design and construction.

The alternatives are:

***Alternative 1: No Action***

| | |
|---|---|
| Capital Cost: | $0 |
| Annual Operation and Maintenance Cost: | $60,000 |
| Present-Worth Cost: | $440,000 |
| Construction Time: | 1 Month |

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical measures to address the problem of contamination at the Site.

This alternative would, however, include a long-term groundwater monitoring program. Under the monitoring program, water quality samples would be collected semi-annually from upgradient, on-site, and downgradient groundwater monitoring wells. The specifics of monitoring locations, frequency, and parameters would be determined during the remedial design.

The no-action response also includes the development and implementation of a public awareness and education program for the residents in the area surrounding the Site. This program would include the preparation and distribution of informational press releases and circulars and convening public meetings. These activities would serve to enhance the public's knowledge of the conditions existing at the Site. This alternative would also require the involvement of local government, various health departments, and environmental agencies.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

***Alternative 2: Institutional Controls***

| | |
|---|---|
| Capital Cost: | $0 |
| Annual Operation and Maintenance Cost: | $60,000 |
| Present-Worth Cost: | $440,000 |
| Construction Time: | 2 Months |

This alternative is identical to Alternative 1, but would also include taking steps to secure institutional controls, including, but not limited to, the placement of restrictions on the installation and use of groundwater wells at and downgradient of the Site, restrictions on excavation, and restrictions on residential use of the property.

It was assumed that the implementation of institutional controls included under this alternative would not add to the overall costs as outlined in Alternative 1.

***Alternative 3: Contaminated Soil Hot Spots Excavation and Disposal, Installation of Cap on Former Cooling Pond, Site-Wide Surface Cover, and Monitored Natural Attenuation of Residual Groundwater Contamination***

| | |
|---|---|
| Capital Cost: | $2,720,000 |
| Annual Operation and Maintenance Cost: | $60,000 |
| Present-Worth Cost: | $3,140,000 |
| Construction Time: | 1 Year |

This alternative includes excavating all TCA-contaminated soils above the NYSDEC recommended soil cleanup objective of 1 mg/kg identified in the Technical and Administrative Guidance Memorandum (TAGM) in two hot spot areas (one immediately downgradient of the former cooling pond in the area around monitoring well W-06 and the other corresponding with test pit T-02) and PCB-contaminated soils above the TAGM objective of 10 mg/kg in two hot spot areas (the northeast portion of the Site and the area of the gantry crane in the central portion). All of these areas are shown on **Figure 3**. TAGM objectives may be found on **Table 14**. It is estimated that 2,000 cubic yards of TCA-contaminated soil and 3,000 cubic yards of PCB-contaminated soil would be excavated.

All excavated soils with PCB concentrations less than 50 mg/kg would be consolidated onto the former cooling pond. Those soils with PCB concentrations above 50 mg/kg would be sent off-site for treatment/disposal at a Toxic Substances Control Act (TSCA)-compliant facility. All excavated TCA-contaminated soils would either be sent off-site for treatment/disposal or treated on-site to 1 mg/kg for TCA and used as backfill in the excavations. For cost-estimating purposes, it was assumed that the TCA-contaminated soils would be treated/disposed of off-site.

Nonhazardous debris that is located on the surface of the areas where the site-wide surface cover would be installed and/or is commingled with excavated soil would be removed and consolidated onto the former cooling pond.

A cap meeting the requirements of New York State 6 NYCRR Part 360 regulations would be placed over the 3-acre former cooling pond. Prior to the construction of the cap, the consolidated soils, nonhazardous debris, and existing fill materials would be regraded and compacted to provide a stable foundation and to promote runoff.

As potential risks remain even after excavation of the contaminant hot spots, a surface cover (*e.g.*, asphalt, soil, crushed stone, etc.) would be placed over the remaining areas of the Site to prevent exposure to residual levels of contaminants in Site soils. The nature of the surface cover would be determined during the remedial design phase.

Under this alternative, monitored natural attenuation would be allowed to address the residual groundwater contamination at and downgradient of the excavated source areas. Natural attenuation of organic contaminants includes dispersion, volatilization, sorption, biodegradation, and biological and chemical stabilization, transformation, or destruction. Natural attenuation of inorganic contaminants is similar to that of organic contaminants, except that there is not a volatilization or biological component. It is estimated that it would take approximately ten years to meet drinking water standards by monitored natural attenuation. As part of a long-term groundwater monitoring program, samples from upgradient, on-site, and downgradient groundwater monitoring wells would be collected and analyzed semi-annually in order to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment. The specifics of monitoring locations, frequency, and parameters would be determined during the design of the selected remedy. If monitored natural attenuation does not appear to be successfully remediating the groundwater, then more active remedial measures would be considered.

This alternative would also include taking steps to secure institutional controls, including, but not limited to, the placement of restrictions on the installation and use of groundwater wells at and downgradient of the Site, restrictions on excavation or other activities which could affect the integrity of the cap/site-wide surface cover, and restrictions on residential use of the property.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

***Alternative 4: Contaminated Soil Hot Spots Excavation and Disposal, Installation of Cap on Former Cooling Pond, Site-Wide Surface Cover, and Groundwater Extraction and Treatment***

| | |
|---|---|
| Capital Cost: | $11,755,000 |
| Annual Operation and Maintenance Cost: | $1,970,000 |
| Present-Worth Cost: | $19,830,000 |
| Construction Time: | 2 Years |

This alternative is identical to Alternative 3, except that it would address site-wide groundwater contamination through the installation of a groundwater extraction and treatment system in order to provide a hydraulic barrier between the Site and downgradient areas. It is assumed that groundwater recovery would be achieved through the installation of six recovery wells (pumping 1,200 to 1,500 gpm) located along the northern, hydraulically downgradient, boundary of the Site (just south of Perplexity Creek). The scope of the extraction system would be determined during remedial design. Following pretreatment for solids and inorganic contaminant removal (as necessary), the extracted groundwater would be treated by air-stripping (or other appropriate treatment) to address organic contamination and then be discharged to the Tioughnioga River. Monitored natural attenuation would be allowed to address the low-level contamination in groundwater that has migrated to downgradient areas. It is estimated that it would take approximately five years of groundwater extraction and treatment to meet drinking water standards.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

## *COMPARATIVE ANALYSIS OF ALTERNATIVES*

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment, compliance with applicable or relevant and appropriate requirements, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, cost, and state and community acceptance.

The evaluation criteria are described below.

- *Overall protection of human health and the environment* addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- *Compliance with ARARs* addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- *Long-term effectiveness and permanence* refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.
- *Reduction of toxicity, mobility, or volume through treatment* is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

- *Short-term effectiveness* addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- *Implementability*is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- *Cost* includes estimated capital and operation and maintenance costs, and net present-worth costs.

- *State acceptance* indicates whether, based on its review of the RI/FS reports and the Proposed Plan, the State supports, opposes, and/or has identified any reservations with the selected alternative.

- *Community acceptance* refers to the public's general response to the alternatives described in the Proposed Plan. Factors of community acceptance to be discussed include support, reservation, and opposition by the community.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

***Overall Protection of Human Health and the Environment***

Since Alternative 1 (no action) would not address the risks posed through each exposure pathway, it would not be protective of human health and the environment. Alternative 2 (institutional controls) would be marginally more protective than the no-action alternative.

Alternative 3 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and monitored natural attenuation of residual groundwater contamination) and Alternative 4 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and groundwater extraction and treatment) would be significantly more protective than Alternative 1, in that the risk of incidental contact with waste by humans and ecological receptors would be reduced by excavation and disposal of the contaminated soils in the four hot spot areas, installing a cap on the former cooling pond, and installing a site-wide surface cover.

As part of Alternatives 2, 3, and 4, institutional controls would limit the intrusiveness of future activity that could occur on the Site.

Alternatives 1 and 2 would rely upon monitored natural attenuation alone to restore groundwater quality. Alternative 3 would include the removal of source areas (hot spots) in conjunction with monitored natural attenuation. This would result in the restoration of water quality in the aquifer more quickly than monitored natural attenuation alone, but not as expeditiously as Alternative 4, which would include site-wide extraction and treatment of contaminated groundwater. Alternative 4 would mitigate the off-site migration of low-level TCA-contaminated groundwater and would likely lead to a more expeditious groundwater cleanup than the other alternatives, which employ monitored natural attenuation.

***Compliance with ARARs***

A 6 NYCRR cap is an action-specific ARAR for landfill closure. Therefore, Alternative 3 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and monitored natural attenuation of residual groundwater contamination) and Alternative 4 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and groundwater extraction and treatment) would satisfy this action-specific ARAR. Alternatives 1 and 2 would not meet this ARAR, since they do not include any provisions for a cap on the former cooling pond.

Since Alternatives 3 and 4 would involve the excavation of PCB-contaminated soils, their disposition would be governed by the requirements of TSCA. Under these alternatives, those excavated soils which equal or exceed 50 mg/kg PCB would be sent off-site for treatment/disposal at a TSCA-compliant facility.

Alternatives 1 and 2 do not provide for any direct remediation of groundwater or source removal and, therefore, would not comply with chemical-specific ARARs. Although Alternative 3 does not include any active groundwater remediation, the excavation of contaminated soils would significantly reduce the migration of contaminants to the groundwater, thereby enabling Maximum Contaminant Levels (MCLs) and New York State drinking-water standards (chemical-specific ARARs) to be met in the groundwater in a faster time frame than Alternatives 1 and 2. Alternative 4, which includes active groundwater treatment, would be the most effective alternative in reducing groundwater contaminant concentrations.

***Long-Term Effectiveness and Permanence***

Alternatives 1 (no action) and 2 (institutional controls) would not provide reliable protection of human health and the environment over time. Alternative 3 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and monitored natural attenuation of residual groundwater contamination) and Alternative 4 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and groundwater extraction and treatment) would be more effective over the long-term than Alternatives 1 and 2, because they would remove the hot-spot areas of contamination. Alternative 4 would have the greatest effectiveness in restoring groundwater quality. Alternative 3, which includes a hot-spot excavation component, is expected to restore the aquifer to drinking water quality in approximately ten years. Alternative 4, with both hot-spot excavation and groundwater extraction and treatment components, is expected to restore the aquifer to drinking water quality in approximately five years.

The institutional controls associated with Alternatives 2 through 4 would provide an additional element of effectiveness in preventing exposure of on-site and downgradient receptors to contaminated groundwater.

Under Alternatives 3 and 4, excavating the contaminated soil hot spots, the installation of a cap over the former cooling pond, and the installation of a site-wide surface cover would substantially reduce the residual risk of untreated waste on the Site by essentially isolating it from contact with human and environmental receptors. The adequacy and reliability of the cap and site-wide surface cover to provide long-term protection from waste remaining at the Site should be excellent.

The 6 NYCRR Part 360 cap and site-wide surface cover would require routine inspection and maintenance to ensure long-term effectiveness and permanence. Routine maintenance, as a reliable management control, would include mowing, fertilizing, reseeding and repairing any potential erosion or burrowing rodent damage.

***Reduction of Toxicity, Mobility, or Volume through Treatment***

Alternatives 1 (no action) and 2 (institutional controls) would rely solely on monitored natural attenuation to reduce the levels of groundwater contamination. Alternative 3 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and monitored natural attenuation of residual groundwater contamination) would rely on monitored natural attenuation after excavation of the hot-spot areas of contamination to reduce the levels of groundwater contamination. Therefore, these alternatives would not actively reduce the toxicity, mobility, or volume of groundwater contaminants through treatment. Treating contaminated groundwater under Alternative 4 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and groundwater extraction and treatment) would reduce the toxicity, mobility, and volume of contaminants through treatment.

Excavation and disposal of the contaminated soil hot spots, the installation of a cap on the former cooling pond, and a site-wide surface cover under Alternatives 3 and 4 would prevent further migration of and potential exposure to these materials. In addition, under these alternatives, all excavated TCA-contaminated soils would either be sent off-site for treatment/disposal or treated on-site to 1 mg/kg for TCA and used as backfill in the excavations.

***Short-Term Effectiveness***

Alternatives 1 (no action) and 2 (institutional controls) do not include any physical construction measures in any areas of contamination and, therefore, do not present a risk to the community as a result of their implementation. Alternatives 3 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and monitored natural attenuation of residual groundwater contamination) and 4 (soil hot spots excavation, former cooling pond cap, site-wide surface cover, and groundwater extraction and treatment) involve excavating, moving, placing, and regrading contaminated soils. Since Alternative 4 includes ex-situ treatment of the extracted groundwater, it would generate quantities of treatment byproducts that would have to be handled by on-site workers and removed off-site for treatment/disposal. Alternative 4 also includes the installation of extraction wells through potentially contaminated soils and groundwater. While both of the action alternatives present some risk to on-site workers through dermal contact and inhalation, these exposures can be minimized by utilizing proper protective equipment. The vehicle traffic associated with the cap and surface cover construction, and the off-site transport of contaminated soils could impact the local roadway system and nearby residents through increased noise level. Under Alternatives 3 and 4, disturbance of the land during construction could affect the surface water hydrology of the Site. There is a potential for increased stormwater runoff and erosion during excavation and construction activities that would be properly managed to prevent excessive water and sediment loading.

It is estimated that Alternative 1 would require one month to implement, since developing a long-term groundwater monitoring program would be the only activity required. It is estimated that the implementation of institutional controls under Alternative 2 would take an additional month to implement. Alternative 3 could be implemented in about one year. Alternative 4 would take an estimated two years to implement.

***Implementability***

Performing routine groundwater monitoring and effecting institutional controls are all actions that can be readily implemented. These actions are technically and administratively feasible and require readily available materials and services. Excavating and relocating the contaminated soil, transporting materials to an off-site treatment/disposal facility, installing a cap and site-wide surface cover (Alternatives 3 and 4), and installing extraction wells (Alternative 4), although more difficult to implement than the no-action alternative, can be accomplished using technologies known to be reliable and can be readily implemented. Equipment, services and materials for this work are readily available. These actions would also be administratively feasible.

Air stripping (Alternative 4) is a process through which VOCs are transferred from the aqueous phase to an air stream. Air stripping has been effectively used to remove over 99 percent of VOCs from groundwater at numerous hazardous waste and spill sites.

Alternative 4 involves the extraction of over one million gallons per day and, in order to handle this volume of water, installation of a pipeline to the Tioughnioga River. Alternative 4 also would involve the generation of sludge requiring off-site disposal. These considerations make Alternative 4 more difficult to implement in comparison to the other alternatives.

*Cost*

The present-worth costs for Alternatives 1 through 3 are calculated using a discount rate of 7 percent and a ten-year time interval. The results of modeling indicate that groundwater could be reasonably expected to be restored to drinking water standards via monitored natural attenuation in ten years. The present-worth cost for Alternative 4 is calculated using a discount rate of 7 percent and a five-year time interval. It is estimated that groundwater could be reasonably expected to be restored to drinking water standards via extraction and treatment in five years. The estimated capital, annual O&M, and present-worth costs for each of the alternatives are presented below.

| Alternative No. | Capital Cost | Operation and Maintenance Cost | Present-Worth Cost |
|---|---|---|---|
| 1 | $0 | $60,000 | $440,000 |
| 2 | $0 | $60,000 | $440,000 |
| 3 | $2,720,000 | $60,000 | $3,140,000 |
| 4 | $11,755,000 | $2,000,000 | $19,830,000 |

As can be seen by the cost estimates, Alternatives 1 and 2 (No Action and Institutional Controls, respectively) are the least costly remedies at

$440,000. Alternative 4 (Downgradient Perimeter Groundwater Recovery and Treatment) is the most costly remedy at $19,830,000.

### *State Acceptance*

NYSDEC concurs with the selected remedy.

### *Community Acceptance*

Comments received during the public comment period indicate that the public generally supports the selected remedy. Comments received during the public comment period are summarized and addressed in the Responsiveness Summary, which is attached as **Appendix V** to this document.

## *DESCRIPTION OF THE SELECTED REMEDY*

Based upon an evaluation of the various alternatives, EPA and NYSDEC have determined that Alternative 3 (contaminated soil hot spot excavation and disposal, installation of a cap on the former cooling pond, a site-wide surface cover, and groundwater monitored natural attenuation) is an appropriate remedy for the Site. Specifically, this would involve the following:

- Excavation of all 1,1,1-trichloroethane (TCA)-contaminated soils above 1 milligram per kilogram (mg/kg) in two hot spot areas (one immediately downgradient of the former cooling pond in the monitoring well W-06 area and the other corresponding with test pit T-02) and PCB-contaminated soils above 10 mg/kg in two hot spot areas (the northeast portion of the Site and the area of the gantry crane in the central portion)[2]. The actual extent of the excavations and the volume of the excavated material will be based on post-excavation confirmatory sampling. Clean or treated material will be used as backfill in the excavated areas.

- Consolidation of all excavated soils with PCB concentrations less than 50 mg/kg onto the former cooling pond. Those soils with PCB concentrations above 50 mg/kg will be sent off-site for treatment/disposal at a Toxic Substances Control Act (TSCA)-

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[2] See **Figure 3** for locations of the areas to be remediated.

compliant facility. All excavated TCA-contaminated soils will either be sent off-site for treatment/disposal or treated on-site to 1 mg/kg for TCA and used as backfill in the excavations.

- Removal and consolidated onto the former cooling pond of non-hazardous debris located on surface areas where the site-wide surface cover will be installed and/or is commingled with the excavated soil.

- Placement of a cap meeting the requirements of New York State 6 NYCRR Part 360 regulations over the three-acre former cooling pond. Prior to the construction of the cap, the consolidated soils, non-hazardous debris, and existing fill materials will be regraded and compacted to provide a stable foundation and to promote runoff.

- Construction of a chain-link fence around the former cooling pond after it is capped.

- Placement of a surface cover over the remaining areas of the Site to prevent direct contact with residual levels of contaminants in Site soils. The nature of the surface cover will be determined during the remedial design phase.

- Monitored natural attenuation to address the residual groundwater contamination in downgradient areas. As part of a long-term groundwater monitoring program, sampling will be conducted in order to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment.

- Implementation of regrading and storm-water management improvements to protect the integrity of the cap/surface cover.

- Employment of dust and VOC control/suppression measures during all construction and excavation activities, as necessary, pursuant to state and federal guidance.

- Long-term monitoring will evaluate the remedy's effectiveness. The exact frequency, location, and parameters of groundwater monitoring will be determined during remedial design. Monitoring will include a network of groundwater monitoring wells, including the installation of new monitoring wells (as necessary). Monitoring will also include several sediment sampling stations.

- Taking steps to secure institutional controls, such as deed restrictions and contractual agreements, as well as local ordinances, laws, or other government action, for the purpose of, among other things, restricting the installation and use of groundwater wells at and downgradient of the Site, restricting excavation or other activities which could affect the integrity of the cap/site-wide surface cover, and restricting residential use of the property in order to reduce potential exposure to site-related contaminants.

- Reevaluation of Site conditions at least once every five years to determine if a modification to the selected alternative is necessary.

It is anticipated that excavation of the two PCB hot spot areas and the installation of the site-wide surface cover on a portion of the Site will be performed pursuant to a Unilateral Administrative Order issued by EPA in early March 1998.

Data indicate that the groundwater contamination in the monitoring well W-06 area is of an intermittent nature and that TCA levels in groundwater along the Site's downgradient perimeter are present at relatively low levels. These conditions, combined with the removal of the TCA source areas, extremely high groundwater flow, and the presence of intrinsic conditions favorable to contaminant degradation, is expected to lead to the timely groundwater restoration via monitored natural attenuation (in approximately 10 years), without relying on a costly groundwater extraction and treatment system.

If, however, monitored natural attenuation does not appear to be successful in remediating the groundwater, then more active remedial measures would be considered. EPA may also invoke a waiver of groundwater Applicable or Relevant and Appropriate Requirements (ARARs) if the remediation program and further monitoring data indicate that reaching Maximum Contaminant Levels (MCLs) in the aquifer is technically impracticable.

The selected alternative will provide the best balance of trade-offs among alternatives with respect to the evaluating criteria. EPA and NYSDEC believe that the selected alternative will be protective of human health and the environment, will comply with ARARs, will be cost-effective, and will utilize permanent solutions to the maximum extent practicable.

## *STATUTORY DETERMINATIONS*

As was previously noted, CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

For the reasons discussed below, EPA has determined that the selected remedy meets the requirements of CERCLA §121, 42 U.S.C. §9621.

### Protection of Human Health and the Environment

The selected remedy protects human health and the environment by reducing levels of contaminants in the groundwater and soil through extraction and treatment, respectively, as well as through the implementation of institutional controls. The selected remedy will provide overall protection by reducing the toxicity, mobility, and volume of contamination and by meeting federal and state MCLs.

### Compliance with Applicable or Relevant and Appropriate Requirements of Environmental Laws

While there are no federal or New York State soil ARARs for VOCs, one of the remedial action goals is to meet TAGM objectives. The selected remedy will meet soil TAGM objectives in the soil source areas.

As the aquifer is usable, federal MCLs and state drinking water standards are ARARs. The selected remedy will be effective in meeting these

ARARs, since it includes excavation of the source areas in combination with monitored natural attenuation of the groundwater[3].

A summary of action-specific, chemical-specific, and location-specific ARARs which will be complied with during implementation is presented below. A listing of the individual chemical-specific ARARs is presented in **Tables 11 and 12**.

**Action-specific ARARs:**

- 6 NYCRR Part 257, Air Quality Standards
- 6 NYCRR Part 373, Fugitive Dusts
- 40 CFR 50, Air Quality Standards
- Resource Conservation and Recovery Act

**Chemical-specific ARARs:**

- Safe Drinking Water Act (SDWA) MCLs and MCL Goals (MCLGs) 40 CFR Part 141
- 6 NYCRR Parts 700-705 Groundwater and Surface Water Quality Regulations
- 10 NYCRR Part 5 State Sanitary Code

**Location-specific ARARs:**

- Clean Water Act Section 404, 33 U.S.C. 1344
- National Historic Preservation Act

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3 Because data indicate that TCA contamination in the groundwater is intermittent, the removal of TCA source areas, extremely high groundwater flow, and the presence of intrinsic conditions favorable to contaminant degradation, is expected to lead to timely groundwater restoration via monitored natural attenuation.

**Other Criteria, Advisories, or Guidance To Be Considered:**

- New York Guidelines for Soil Erosion and Sediment Control
- New York State Air Cleanup Criteria, January 1990
- New York State Technical and Administrative Guidance Memorandum (TAGM)
- New York State Air Guide-1

Cost-Effectiveness

The selected remedy provides for overall effectiveness in proportion to its cost and in mitigating the principal risks posed by contaminated soil and groundwater. The estimated cost for the selected remedy has a capital cost of $2,720,000, annual operation and maintenance of $60,000, and a 10-year present-worth cost of $3,140,000.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable by the excavation and disposal of source area soils.

Preference for Treatment as a Principal Element

The selected remedy's utilization of on- or off-site treatment/disposal of the TCA-contaminated source area soils and off-site treatment/disposal of source area soils exceeding 50 mg/kg PCBs satisfies the statutory preference for remedies employing treatment that permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances.

## *DOCUMENTATION OF SIGNIFICANT CHANGES*

There are no significant changes from the selected alternative presented in the Proposed Plan.

# APPENDIX I

# FIGURES

## FIGURES

*Figure 1.*
Location of Rosen Brothers Site

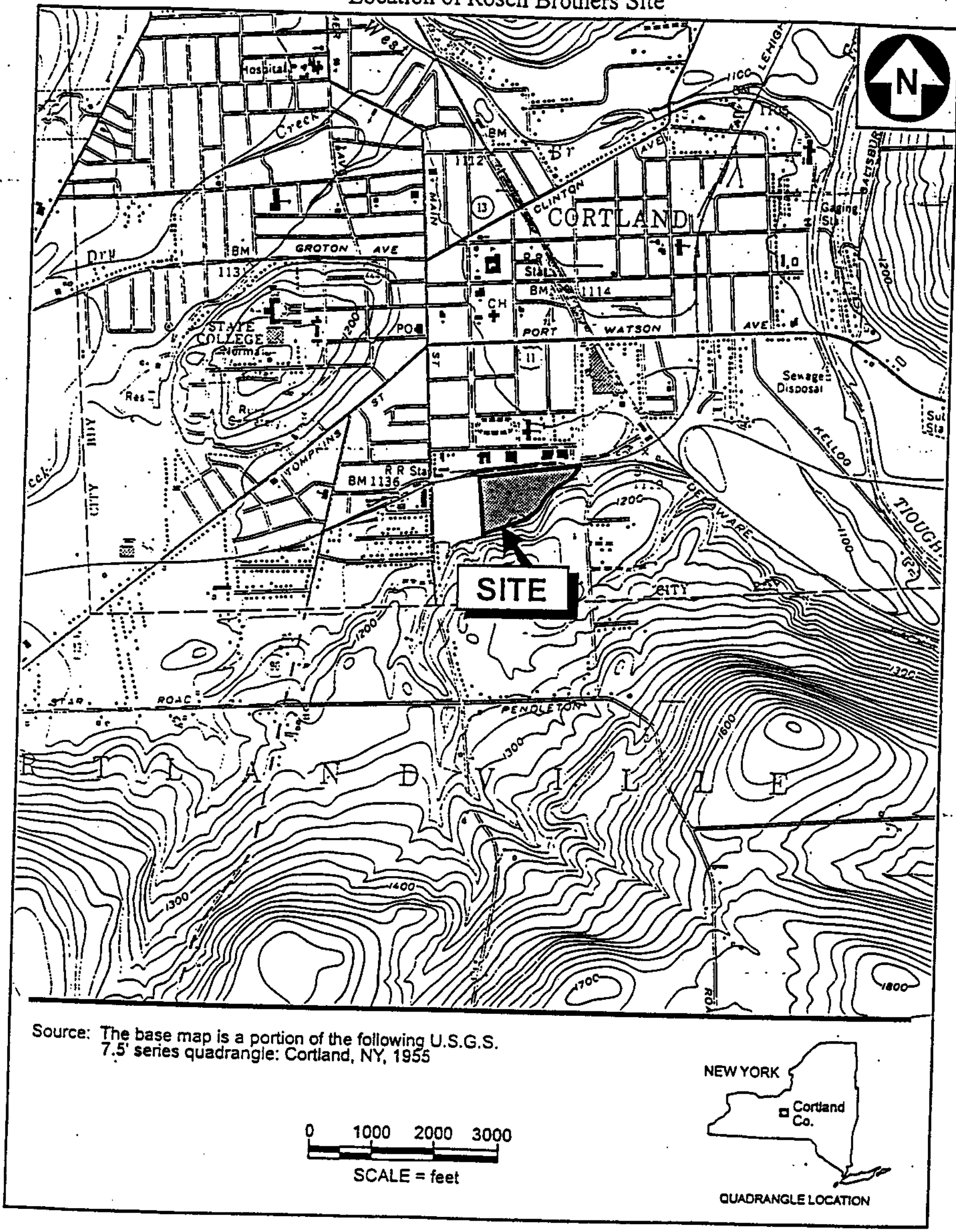


*Figure 2.*
Rosen Brothers Site

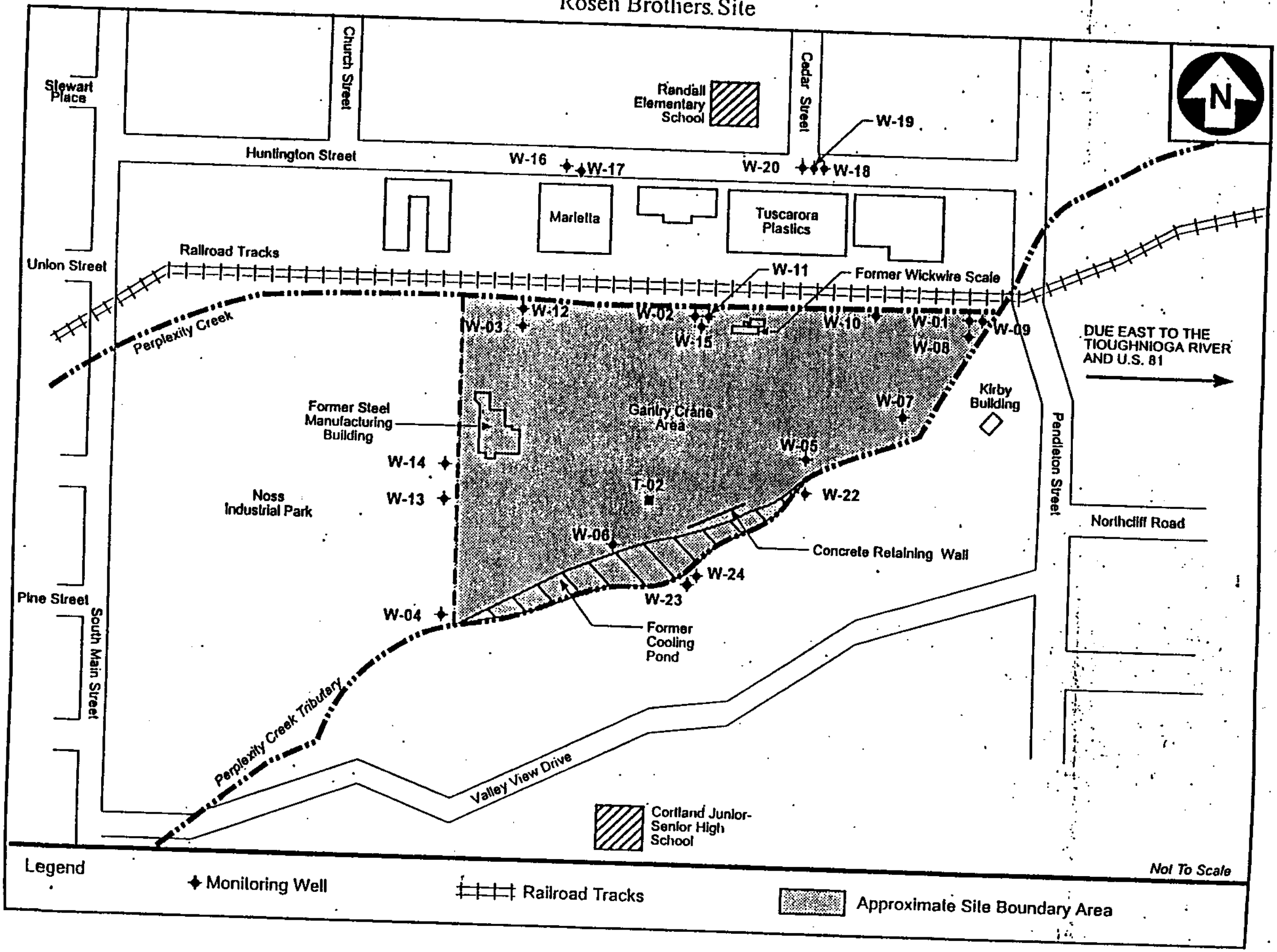
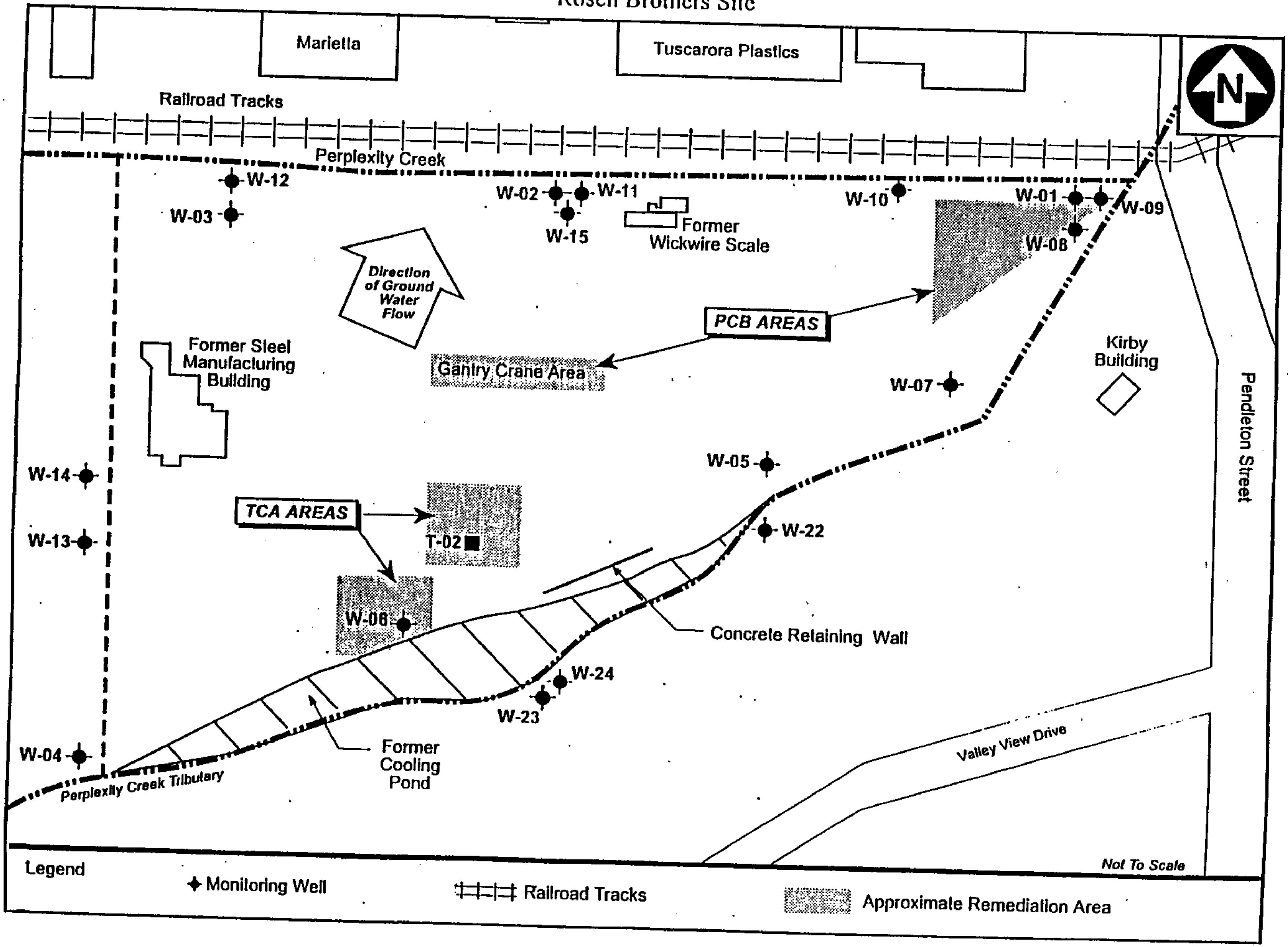


*Figure 3.*
Rosen Brothers Site



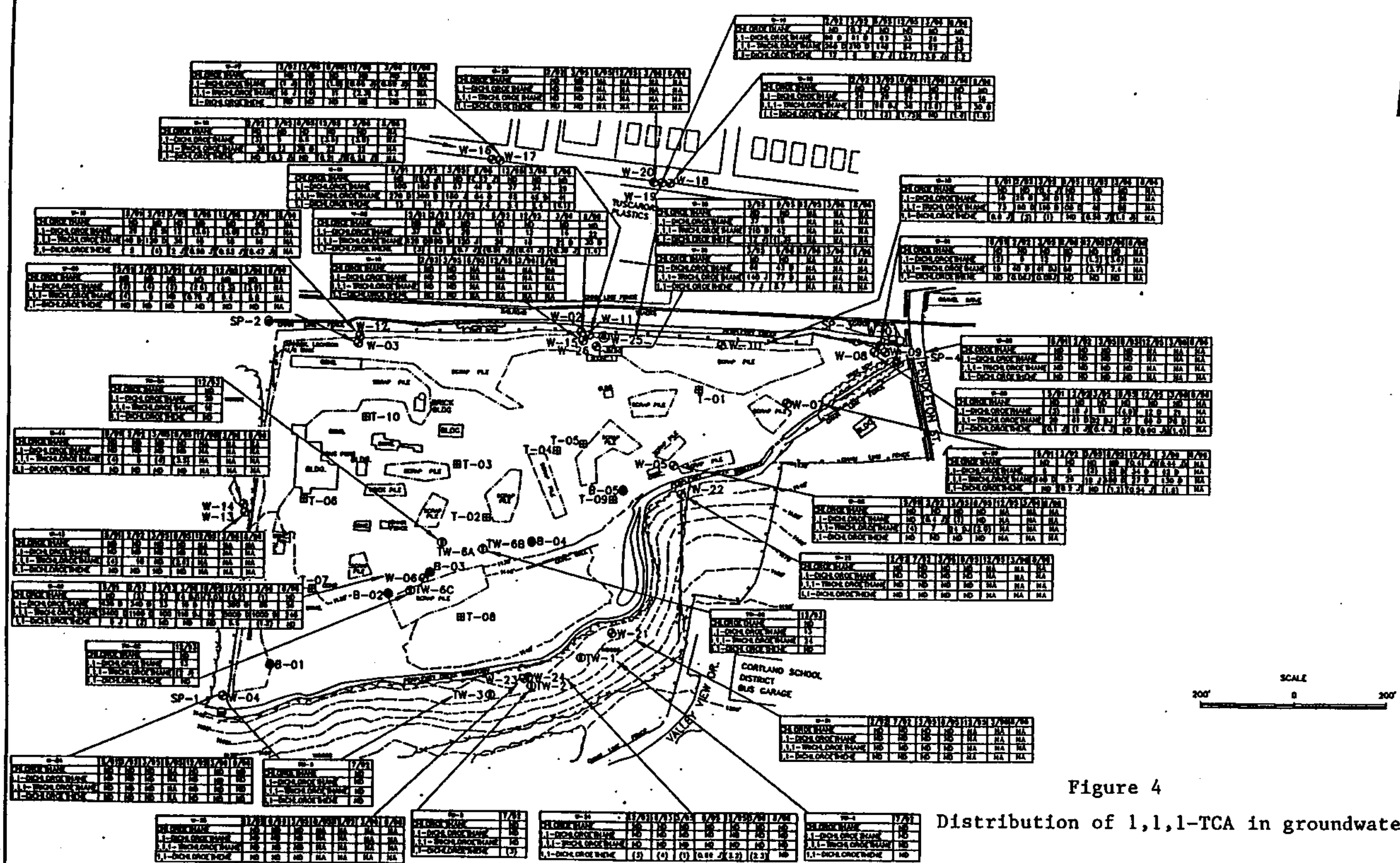



Figure 4

Distribution of 1,1,1-TCA in groundwater.

APPENDIX II

TABLES

TABLES

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| -01* | SS-01 (RE) | SS-01 (Dup.)* | SS-01 (Dup.) (RE) | SS-02* | SS-02 (RE) | SS-02 (Dup.) | SS-02 (Dup.) (DL)* | SS-02 (Dup.) (RE) | SS-03* | SS-03 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 50,000 | 50,000 | 0.03 (a) |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 0.84 | 0.6 | |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 400 | 400 | 0.8 |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | 1.6 |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 29 | | 8.5 |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 7,000 | | 7.9 |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 4,000 | 4,000 | 0.1 (a) |
| .4 J | <0.4 | <0.52 J | <0.52 | <0.41 J | <0.41 | <0.41 | <2.1 J | <0.41 | <0.43 J | <0.43 | | | |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 4,000 | 4,000 | 0.9 |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 0.1 | 0.1 | |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 80 | 80 | |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 40 | 40 | 0.2 (a) |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 1,800 | 2,000 | |
| 0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | 0.33 (a) |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 2,000 | | |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 200 | 200 | 0.4 |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 2,000 | 2,000 | 3.4 |
| 3 J | 0.14 J | 0.24 J | 0.25 J | 0.078 J | 0.063 J | 1.1 | 1.3 DJ | 1.1 | 0.14 J | 0.15 J | 300 | | 13 |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | 0.22 (a) |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 90 | 90 | |
| 9 J | 0.064 J | 0.13 J | 0.14 J | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | 0.24 (a) |
| 3 J | 0.25 J | 0.39 J | 0.45 J | 0.12 J | 0.14 J | 0.55 | 0.83 DJ | 0.54 | 0.18 J | 0.18 J | | | 36.4 |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 800 | 800 | |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 64 | 40 | |
| 98 | <0.98 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 | <1.0 | <1.0 | <1.0 | 8,000 | 8,000 | 0.1 |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | |
| 98 | <0.98 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 | <1.0 | <1.0 | <1.0 | | | 0.43 (a) |
| 4 J | 0.077 J | 0.069 J | 0.11 J | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | 0.024 J | 0.03 J | 80,000 | | 2 |
| 8 J | <0.4 | 0.042 J | <0.52 | 0.028 J | <0.41 | 0.037 J | <2.1 | 0.039 J | 0.029 J | <0.43 | 300 | | 41 |
| .4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 1 | 1 (2) | 1 |
| 98 | <0.98 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 | <1.0 | <1.0 | <1.0 | | | 0.5 (a) |
| 1 J | 0.1 J | 0.1 J | 0.12 J | 0.087 J | 0.076 J | 1.2 | 1.8 DJ | 1.2 | 0.13 J | 0.14 J | 5,000 | | 50 (3) |
| 98 | <0.98 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 | <1.0 | <1.0 | <1.0 | 200 | 200 | 0.2 (a) |
| 98 | <0.98 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 J | <1.0 | <1.0 | <1.0 | | | 0.1 (a) |

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| SS-01* | SS-01 (FS) | SS-01 (Dup.)* | SS-01 (Dup.) (FS) | SS-02* | SS-02 (FS) | SS-02 (Dup.) | SS-02 (Dup.) (EL)* | SS-02 (Dup.) (FS) | SS-03* | SS-03 (FS) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York S TAGM Cleanup O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.11 J | 0.11 J | 0.13 J | <0.14 J | 0.047 J | 0.051 J | 1.2 | 1.5 DJ | 1.2 | 0.085 J | 0.085 J | | | 6.2 |
| <0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | |
| <0.4 | 0.034 BJ | <0.52 | 0.033 BJ | <0.41 | 0.033 BJ | 0.045 BJ | <2.1 | 0.035 BJ | <0.43 | <0.43 | 1 | | |
| <0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.031 BJ | 60,000 | 60,000 | 7.1 |
| 0.12 J | 0.1 J | 0.13 J | 0.12 J | 0.073 J | 0.068 J | 1.8 | 2.8 D | 1.8 | 0.15 J | 0.14 J | 2,000 | | |
| <0.96 | <0.96 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 | <1.0 | <1.0 | <1.0 | 3,000 | | 50 (3) |
| <0.96 | <0.96 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 | <1.0 | <1.0 | <1.0 | | | |
| 0.046 J | 0.1 J | 0.16 J | 0.16 J | 0.041 J | 0.051 J | <0.41 | <2.1 J | <0.41 | <0.43 J | <0.43 | 6 | | |
| <0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 140 | 100 | |
| <0.4 | <0.4 | <0.52 | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | |
| <0.96 | <0.96 | <1.3 | <1.3 | <1.0 | <1.0 | <1.0 | <5 J | <1.0 | <1.0 | <1.0 | 0.41 | | 0.41 |
| 0.99 | 1.1 | 1.2 | 1.2 | 0.88 | 0.91 | 5.9 E | 11 D | 5.6 E | 1.3 | 1.3 | 2,000 | 2,000 | 1 (s) |
| 0.18 J | 0.17 J | 0.21 J | 0.2 J | 0.15 J | 0.13 J | 1.9 | 2.7 D | 1.9 | 0.31 J | 0.26 J | | | 50 (3) |
| 0.13 J | 0.11 J | 0.16 J | 0.12 J | 0.11 J | 0.075 J | 1.5 | 2.2 D | 1.6 | 0.17 J | 0.12 J | 20,000 | | 50 (3) |
| 0.19 J | 0.18 J | 0.21 J | 0.19 J | 0.28 J | 0.25 J | 0.57 | 0.65 DJ | 0.57 | 0.26 J | 0.23 J | 6.3 | | |
| 0.61 | 0.69 | 1.2 | 0.84 | 0.94 | 0.71 | 3.9E | 11 D | 3.9E | 1.5 | 0.98 | 6,000 | 6,000 | 6.1 |
| 2.1 J | 2.7 | 2.4 J | 2.8 | 2 | 2.1 | 9.8E | 9.3D | 9.8E | 2.5 | 4.3E | 3,000 | | 50 (3) |
| 1.0 J | 1.4 | 1.4 J | 1.6 | 1.9 | 2.4 | 5.3E | 5.1D | 5.1E | 2.1 | 3.1 | 2,000 | | 50 (3) |
| <0.4 R | <0.4 | <0.52 J | <0.52 | <0.41 | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | 20,000 | 20,000 | 50 (3) |
| 0.64 J | 0.73 | 0.87 J | 0.99 | 0.86 | 0.7 | 4.5E | 4.9D | 4.4E | 1.1 | 1.2 | 1.6 | 2 | |
| 0.63 J | 0.8 | 1.1 J | 1.2 | 0.94 | 0.97 | 3.9E | 4.8D | 4E | 1.3 | 1.3 | 0.22 | | 0.22 (s) |
| 1.2 BJ | 1.1 B | 1.2 BJ | 1.0 B | <0.71 J | 0.68 B | 1.3 B | <2.1 J | 1.2 B | 0.96 BJ | 1.0 B | | | 0.4 |
| 0.037 J | <0.4 | <0.52 J | <0.52 | 0.064 J | <0.41 | <0.41 | <2.1 J | <0.41 | 0.2 J | <0.43 | 50 | 50 | 50 (3) |
| 0.76 J | 0.94 | 1.1 J | 1.0 | 0.7 J | 0.56 | 3.6E | 3.9DJ | 3.1 | 1.2 J | 1.3 | 2,000 | | 50 (3) |
| 0.65 J | 1.0 | 1.0 J | 1.2 | 0.52 J | 0.79 | 2.6 | 3.6D | 3.2 | 1.0 | 1.5 | 0.22 | | 1.1 |
| 0.6 J | 0.63 | 0.79 J | 0.77 | 0.58 J | 0.8 | 3.1 | 3.9D | 3.2 | 1.1 | 1.2 | 0.22 | | 1.1 |
| 0.97 J | 0.84 | 1.3 J | 1.4 | 0.84 J | 0.74 | 2.3 | 2.9D | 2.9 | 1.1 | 1.0 | 0.61 | | 0.061 (s) |
| <0.4 R | <0.4 | <0.52 J | <0.52 | <0.41 R | <0.41 | <0.41 | <2.1 | <0.41 | <0.43 | <0.43 | | | 3.2 |
| 0.65 J | 0.44 | 0.98 J | 1.1 | 0.46 J | 0.61 | 1.6 | 22 D | 2.2 | 0.68 | 0.7 | 0.014 | | 0.014 (s) |
| 8.79 | 8.14 | 12.48 | 10.8 | 6.838 | 8.66 | 6.6 | 17.02 | 6.9 | 19.94 | 16.71 | | | 50 (3) |



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TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| SS-04 | SS-04 (DL)* | SS-04 (RE) | SS-05 | SS-05 (DL)* | SS-05 (RE) | SS-06 | SS-06 (DL)* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 50,000 | 80,000 | 0.03 (a) |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 0.64 | 0.6 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 400 | 400 | 0.8 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | 1.6 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 29 | | 6.5 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 7,000 | | 7.9 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 4,000 | 4,000 | 0.1 (a) |
| <0.4 | <0.8 J | <0.4 | <0.42 | <2.1 J | <0.42 | <0.36 | <3.6 J | | | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 4,000 | 4,000 | 0.9 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 0.1 | 0.1 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 80 | 80 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 40 | 40 | 0.2 (a) |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 1,800 | 2,000 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | 0.33 (a) |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 2,000 | | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 200 | 200 | 0.4 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 2,000 | 2,000 | 3.4 |
| 0.077 J | 0.079 DJ | 0.083 J | 0.21 J | 0.19 DJ | 0.2 J | 0.42 | 0.42 DJ | 300 | | 13 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | 0.22 (a) |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 90 | 90 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | 0.24 (a) |
| 0.13 J | 0.14 DJ | 0.14 J | 0.35 J | 0.33 DJ | 0.36 J | 0.5 | 0.49 DJ | | | 36.4 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 600 | 600 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 64 | 40 | |
| <0.98 | <2 | <0.98 | <1.0 | <5.1 | <1.0 | <0.88 | <8.8 | 8,000 | 8,000 | 0.1 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | |
| <0.98 | <2 | <0.98 | <1.0 | <5.1 | <1.0 | <0.88 | <8.8 | | | 0.43 (a) |
| 0.029 J | <0.8 | 0.034 J | 0.05 J | <2.1 | 0.051 J | <0.36 | <3.6 | 80,000 | | 2 |
| 0.048 J | 0.048 DJ | <0.4 | 0.043 J | <2.1 | 0.045 J | 0.083 J | <3.6 | 300 | | 41 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 1 | 1 (2) | 1 |
| <0.98 | <2 | <0.98 | <1.0 | <5.1 | <1.0 | <0.88 | <8.8 | | | 0.5 (a) |
| 0.03 J | <0.8 | 0.032 J | 0.089 J | <2.1 | 0.089 J | 2.5 | 3.7 D | 5,000 | | 50 (3) |
| <0.98 | <2 | <0.98 | <1.0 | <5.1 | <1.0 | <0.88 | <8.8 | 200 | 200 | 0.2 (a) |
| <0.98 | <2 J | <0.98 | <1.0 | <5.1 J | <1.0 | <0.88 | <8.8 J | | | 0.1 (a) |



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TABLE 1.

**SUPPLEMENTAL SURFACE SOIL SAMPLING**
**SEMIVOLATILE ORGANICS ANALYTICAL RESULTS**
**NOVEMBER 1993**
**ROSEN SITE**
**CORTLAND, NEW YORK**

| SS-04 | SS-04 (DL)* | SS-04 (RE) | SS-05 | SS-05 (DL)* | SS-05 (RE) | SS-06 | SS-06 (DL)* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|
| .042 J | 0.041 DJ | 0.045 J | 0.097 J | <2.1 | 0.1 J | 1.9 | 2.5 DJ | | | 6.2 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 1 | | |
| .03 BJ | <0.8 | 0.035 BJ | 0.035 BJ | <2.1 | 0.046 BJ | 0.041 BJ | <3.6 | 60,000 | 60,000 | 7.1 |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 2,000 | | |
| .044 J | 0.049 DJ | 0.045 J | 0.12 J | 0.12 DJ | 0.12 J | 3 E | 5 D | 3,000 | | 50 (3) |
| <0.96 | <2 | <0.96 | <1.0 | <5.1 | <1.0 | <0.86 | <8.6 | | | |
| <0.96 | <2 | <0.96 | <1.0 | <5.1 | <1.0 | <0.86 | <8.6 | 6 | | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 J | <0.42 | <0.36 | <3.6 J | 140 | 100 | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | | | |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 0.41 | | 0.41 |
| <0.96 | <2 J | <0.96 | <1.0 | <5.1 J | <1.0 | <0.86 | <8.6 J | 2,000 | 2,000 | 1 (a) |
| 0.46 | 0.48 DJ | 0.49 | 1.3 | 1.3 DJ | 1.2 | 13 E | 24 D | | | 50 (3) |
| .18 J | 0.16 DJ | 0.13 J | 0.24 J | 0.22 DJ | 0.23 J | 4.9 E | 7.1 D | 20,000 | | 50 (3) |
| .066 J | 0.074 DJ | 0.041 J | 0.18 J | 0.21 DJ | 0.18 J | 3.1 E | 2.3 DJ | 8.3 | | |
| 0.64 | 0.75 DJ | 0.61 | 0.66 | 0.79 DJ | 0.89 | 0.14 J | <3.6 | 8,000 | 6,000 | 8.1 |
| 0.56 | 0.73 DJ | 0.37 J | 1.1 | 2 DJ | 1.1 | 11 E | 29 D | 3,000 | | 50 (3) |
| 1.1 | 0.85 D | 1.7 | 3 | 2 DJ | 2.9 | 19 E | 23 D | 2,000 | | 50 (3) |
| .6E | 4.1 D | 9.3E | 5.8E | 6.4 D | 5.4 E | 1.6 | 0.75 DJ | 20,000 | 20,000 | 50 (3) |
| <0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 1.6 | 2 | |
| .44 | 0.5 DJ | 0.47 | 0.85 | 1.2 DJ | 0.84 | 15 E | 14 D | 0.22 | | 0.22 (a) |
| .52 | 0.6 DJ | 0.53 | 1.2 | 1.2 DJ | 1.2 | 10 E | 12 D | | | 0.4 |
| .2 B | <0.8 | 1.2 B | 8.7 BE | 6 BDJ | 6.2 BE | 1.1 B | <3.6 J | 50 | 50 | 50 (3) |
| .056 J | <0.8 | <0.4 | 0.16 J | 0.15 DJ | 0.29 J | <0.36 | <3.6 | 2,000 | | 50 (3) |
| .36 J | 0.49 DJ | 0.57 | 1.6 | 1.3 DJ | 1.8 | 9.3 E | 10 DJ | 0.22 | | 1.1 |
| .45 | 0.45 DJ | 0.61 | 0.69 | 1.1 DJ | 0.75 | 5.1 E | 11 D | 0.22 | | 1.1 |
| .41 | 0.59 DJ | 0.46 | 1.1 | 0.95 DJ | 0.99 | 8.2 E | 11 D | 0.61 | | 0.061 (a) |
| .51 | 0.44 DJ | 0.41 | 1.2 | 0.93 DJ | 1.1 | 8.9 E | 8.9 D | | | 3.2 |
| 0.4 | <0.8 | <0.4 | <0.42 | <2.1 | <0.42 | <0.36 | <3.6 | 0.014 | | 0.014 (a) |
| .46 | 0.34 DJ | 0.33 J | 0.82 | 0.56 DJ | 0.82 | 3.9 E | 3.7 D | | | 50 (3) |
| .62 | 5.12 | 5.76 | 7.85 | 3.64 | 7.71 | 12.09 | 47.09 | | | |

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-06 (RE) | SS-07 | SS-07 (RE)* | SS-08 | SS-08 (RE)* | SS-09 | SS-09 (RE)* | SS-10 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 0.64 | 0.6 | |
| 2-Chlorophenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | 1.6 |
| 1,4-Dichlorobenzene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 7,000 | | 7.9 |
| 2-Methylphenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropene) | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | |
| 4-Methylphenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 0.1 | 0.1 | |
| Hexachloroethane | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 80 | 80 | |
| Nitrobenzene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 40 | 40 | 0.2 (a) |
| Isophorone | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 1,800 | 2,000 | |
| 2-Nitrophenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | |
| 2,4-Dichlorophenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 0.43 | 0.026 J | 0.026 J | 0.13 J | 0.13 J | 0.14 J | 0.14 J | 0.12 J | 300 | | 13 |
| 4-Chloroaniline | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | 0.22 (a) |
| Hexachlorobutadiene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.49 | 0.049 J | 0.051 J | 0.18 J | 0.18 J | 0.28 J | 0.28 J | 0.23 J | | | 36.4 |
| Hexachlorocyclopentadiene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | | | |
| 2-Nitroaniline | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | | | 0.43 (a) |
| Dimethyl Phthalate | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | 0.041 J | 80,000 | | 2 |
| Acenaphthylene | 0.063 J | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 300 | | 41 |
| 2,6-Dinitrotoluene | <0.36 | <0.37 | <0.37 J | <0.69 | <0.69 J | <0.39 | <0.39 J | <0.8 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | | | 0.5 (a) |
| Acenaphthene | 2.4 | 0.033 J | 0.037 J | 0.2 J | 0.2 J | <0.39 | <0.39 J | 0.13 J | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-06 (RE) | SS-07 | SS-07 (RE)* | SS-08 | SS-08 (RE)* | SS-09 | SS-09 (RE)* | SS-10 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 1.9 | 0.025 J | 0.025 J | 0.14 J | 0.16 J | 0.063 J | 0.068 J | 0.074 J | | | 6.2 |
| 2,4-Dinitrotoluene | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 J | <0.39 | <0.39 J | <0.8 | 1 | | |
| Diethylphthalate | 0.036 BJ | 0.031 BJ | <0.37 J | 0.051 BJ | <0.89 J | 0.033 BJ | <0.39 J | <0.8 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 J | <0.39 | <0.39 J | <0.8 | 2,000 | | |
| Fluorene | 3.0 E | 0.03 J | 0.033 J | 0.19 J | 0.22 J | 0.032 J | 0.033 J | 0.11 J | 3,000 | | 50 (3) |
| 4-Nitroaniline | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | | | |
| 4,6-Dinitro-2-Methylphenol | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | 8 | | |
| N-Nitrosodiphenylamine (1) | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 J | 0.1 J | 0.09 J | <0.8 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 J | <0.39 | <0.39 J | <0.8 | | | |
| Hexachlorobenzene | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 J | <0.39 | <0.39 J | <0.8 | 0.41 | | 0.41 |
| Pentachlorophenol | <0.88 | <0.9 | <0.9 J | <2.2 | <2.2 J | <0.94 | <0.94 J | <2 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 12 E | 0.45 | 0.49 J | 2.4 | 2.4 J | 0.63 | 0.67 J | 1.2 | | | 50 (3) |
| Anthracene | 3.3 E | 0.072 J | 0.077 J | 0.47 J | 0.47 J | 0.089 J | 0.093 J | 0.26 J | 20,000 | | 50 (3) |
| Carbazole | 2.7 | 0.056 J | 0.062 J | 0.21 J | 0.21 J | 0.044 J | 0.036 J | 0.13 J | 6.3 | | |
| Di-n-Butylphthalate | 0.12 J | 0.059 J | 0.068 J | 1.6 | 1.7 J | 0.045 J | 0.054 J | 0.95 | 6,000 | 8,000 | 6.1 |
| Fluoranthene | 9.6 E | 0.63 | 0.73 J | 1.9 | 2.1 J | 0.97 | 1.0 J | 1.1 | 3,000 | | 50 (3) |
| Pyrene | 19 E | 1.4 | 1.4 J | 5.1 | 5.8 J | 1.9 | 2.2 J | 2.6 | 2,000 | | 50 (3) |
| Butylbenzylphthalate | 1.6 | 0.52 | 0.55 J | 0.71 J | 0.78 J | 0.17 J | 0.18 J | 11 E | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 J | <0.39 | <0.39 J | <0.8 | 1.6 | 2 | |
| Benzo(a)Anthracene | 16 E | 0.63 | 0.65 J | 2.1 | 2.1 J | 0.61 | 0.52 J | 1.2 | 0.22 | | 0.22 (a) |
| Chrysene | 10 E | 0.66 | 0.66 J | 2.4 | 2.6 J | 0.7 | 0.66 J | 1.3 | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | 1.0 B | 0.47 | 0.49 J | 1.4 | 1.4 J | <0.39 | 0.12 J | 1.8 | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 R | <0.39 | <0.39 R | <0.8 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 9.8 E | 0.69 | 0.57 J | 1.8 | 1.9 J | 0.52 | 0.53 J | 1.2 | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 5.7 E | 0.53 | 0.78 J | 2.9 | 2.6 J | 0.33 J | 0.48 J | 1.4 | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 8.5 E | 0.58 | 0.53 J | 1.9 | 2 J | 0.28 J | 0.3 J | 1.3 | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 6.5 E | 0.27 J | 0.52 J | 1.4 | 1.6 J | 0.28 J | 0.3 J | 1.0 | | | 3.2 |
| Dibenzo(a,h)Anthracene | <0.36 | <0.37 | <0.37 J | <0.89 | <0.89 R | <0.39 | <0.39 R | <0.80 | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 3.5 E | 0.22 J | 0.37 J | 0.88 J | 1.0 J | 0.23 J | 0.22 J | 1.1 | | | 50 (3) |
| Total TICs | 15.76 | 7.02 | 7.51 | 8.78 | 8.44 | 9.46 | 9.22 | 9.1 | | | |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-10 (DL)* | SS-11 | SS-11 (RE)* | SS-12* | SS-12 (RE) | SS-12 (Dup.) | SS-12 (Dup.) (RE) | SS-12 (Dup.) (DL)* | SS-12 (Dup.) (DL RE) | SS-13* | SS-13 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 0.64 | 0.6 | |
| 2-Chlorophenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | 1.6 |
| 1,4-Dichlorobenzene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 7,000 | | 7.9 |
| 2-Methylphenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | |
| 4-Methylphenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 0.1 | 0.1 | |
| Hexachloroethane | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 80 | 80 | |
| Nitrobenzene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 40 | 40 | 0.2 (a) |
| Isophorone | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 1,800 | 2,000 | |
| 2-Nitrophenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | |
| 2,4-Dichlorophenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 2,000 | 2,000 | 3.4 |
| Naphthalene | <4 J | 0.15 J | 0.15 J | 0.26 J | 0.25 J | 0.29 J | 0.28 J | 0.25 DJ | 0.24 DJ | 0.1 J | 0.11 J | 300 | | 13 |
| 4-Chloroaniline | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | 0.22 (a) |
| Hexachlorobutadiene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.32 DJ | 0.15 J | 0.14 J | 0.38 J | 0.37 J | 0.39 J | 0.39 J | 0.39 DJ | 0.39 DJ | 0.17 J | 0.18 J | | | 36.4 |
| Hexachlorocyclopentadiene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 800 | 800 | |
| 2,4,6-Trichlorophenol | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | |
| 2-Nitroaniline | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | | | 0.43 (a) |
| Dimethyl Phthalate | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | 0.037 J | 0.038 J | <0.84 J | <0.84 | <0.86 J | <0.86 | 80,000 | | 2 |
| Acenaphthylene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 300 | | 41 |
| 2,6-Dinitrotoluene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | | | 0.5 (a) |
| Acenaphthene | <4 J | 0.21 J | 0.2 J | 0.77 J | 0.098 J | 0.12 J | 0.12 J | 0.1 DJ | 0.1 DJ | 0.091 J | 0.095 J | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-10 (DL)* | SS-11 | SS-11 (RE)* | SS-12* | SS-12 (RE) | SS-12 (Dup.) | SS-12 (Dup.) (RE) | SS-12 (Dup.) (DL)* | SS-12 (Dup.) (DL RE) | SS-13* | SS-13 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | <4 J | 0.12 J | 0.11 J | 0.14 J | 0.14 J | 0.15 J | 0.15 J | <0.14 DJ | 0.15 DJ | 0.094 J | 0.092 J | | | 6.2 |
| 2,4-Dinitrotoluene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 1 | | |
| Diethylphthalate | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 2,000 | | |
| Fluorene | <4 J | 0.16 J | 0.16 J | 0.099 J | 0.11 J | 0.11 J | 0.11 J | 0.11 DJ | 0.12 DJ | 0.11 J | 0.1 J | 3,000 | | 50 (3) |
| 4-Nitroaniline | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | | | |
| 4,6-Dinitro-2-Methylphenol | <9.8 J | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | 8 | | |
| N-Nitrosodiphenylamine (1) | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | | | |
| Hexachlorobenzene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 0.41 | | 0.41 |
| Pentachlorophenol | <9.8 R | <2 | <2 J | <1.0 J | <1.0 | <1.0 | <1.0 | <2 J | <2 | <2.1 J | <2.1 | 2,000 | 2,000 | 1 (e) |
| Phenanthrene | 1.7 DJ | 2.1 | 2.2 J | 1.7 J | 1.7 | <2.1 | 2.1 | 2 DJ | 20 | 1.7 J | 1.8 | | | 50 (3) |
| Anthracene | 0.37 DJ | 0.4 J | 0.4 J | 0.29 J | 0.29 J | 0.38 J | 0.37 J | 0.33 DJ | 0.34 DJ | 0.32 J | 0.3 J | 20,000 | | 50 (3) |
| Carbazole | 0.24 DJ | 0.19 J | 0.24 J | 0.2 J | 0.2 J | 0.25 J | 0.25 J | 0.25 DJ | 0.26 DJ | 0.24 J | 0.21 J | 8.3 | | |
| Di-n-Butylphthalate | 1.6 DJ | 0.28 J | 0.32 J | 0.63 J | 0.66 J | 0.18 J | 0.17 J | 0.17 DJ | 0.16 DJ | 0.099 J | 0.079 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 2.4 DJ | 1.7 | 2.3 J | 1.4 J | 1.3 | 1.5 | 1.4 | 1.5 DJ | 1.5 D | 1.7 J | 1.7 | 3,000 | | [illegible] |
| Pyrene | 4.1 DJ | 3.6 | 3.9 J | 2.6 J | 3.9 E | 4.1 E | 5.8 E | 3.3 DJ | 5.1 D | 4.9 J | 4.3 | 2,000 | | 50 (3) |
| Butylbenzylphthalate | 15.0 DJ | 0.57 J | 0.49 J | 2.3 J | 3.1 | 0.38 J | 0.47 | <0.84 J | 0.37 DJ | 0.22 J | 0.18 J | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <4 J | <0.82 | <0.82 J | <0.42 | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 1.6 | 2 | |
| Benzo(a)Anthracene | 1.7 DJ | 1.8 | 1.9 J | 1.4 J | 1.4 | 1.8 | 1.7 | 1.6 DJ | 1.6 D | 1.8 J | 1.8 | 0.22 | | 0.224 (e) |
| Chrysene | 1.9 DJ | 2 | 2.1 J | 1.7 J | 1.7 | 2.2 | 2 | 2 DJ | 2.1 D | 2.2 J | 2.2 | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | 2.2 DJ | 0.75 J | 0.78 J | 0.37 J | 0.46 | 0.33 J | 0.36 J | <0.84 J | 0.36 DJ | 1.9 J | 1.9 | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 1.5 DJ | 2.4 | 1.5 J | 1.6 J | 1.4 | 1.8 | 2 | 1.7 DJ | 1.6 D | 2 J | 2.1 | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 1.7 DJ | 1.6 | 2.2 J | 1.2 J | 1.6 | 1.3 | 1.6 | 1.5 DJ | 1.5 D | 2 J | 1.9 | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 1.7 DJ | 1.6 | 1.7 J | 1.3 J | 1.2 | 1.6 | 1.4 | 1.4 DJ | 1.4 D | 1.7 J | 1.8 | 0.61 | | [illegible] (e) |
| Indeno(1,2,3-cd)Pyrene | 1.5 DJ | 1.4 | 1.7 J | 1.1 J | 0.84 | 1.3 | 1.0 | 1.0 DJ | 0.99 D | 1.3 J | 1.3 | | | 3.2 |
| Dibenzo(a,h)Anthracene | <4 J | <0.82 | <0.82 J | <0.42 J | <0.42 | <0.42 | <0.42 | <0.84 J | <0.84 | <0.86 J | <0.86 | 0.014 | | [illegible] (e) |
| Benzo(g,h,i)Perylene | 1.9 DJ | 1.1 | 0.67 J | 1.3 J | 0.9 | 1.4 | 0.97 | 1.0 DJ | 1.1 D | 1.3 J | 1.3 | | | 50 (3) |
| Total TICs | 10.43 | 8.82 | 7.8 | 10.59 | 10.53 | 9.93 | 9.86 | 7.27 | 10.11 | 9.16 | 9.52 | | | |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-14 | SS-14 (RE) | SS-14 (DL) | SS-14 (DL RE)* | SS-15* | SS-15 (RE) | SS-16 | SS-16 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 0.64 | 0.6 | |
| 2-Chlorophenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | 1.6 |
| 1,4-Dichlorobenzene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 7,000 | | 7.9 |
| 2-Methylphenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | 0.16 J | 0.19 J | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | |
| 4-Methylphenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 0.1 | 0.1 | |
| Hexachloroethane | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 80 | 80 | |
| Nitrobenzene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 40 | 40 | 0.2 (a) |
| Isophorone | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 1,800 | 2,000 | |
| 2-Nitrophenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | |
| 2,4-Dichlorophenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 0.12 J | 0.11 J | 0.1 DJ | 0.1 DJ | <0.14 J | 0.15 J | 12 | 11 | 300 | | 13 |
| 4-Chloroaniline | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | 0.22 (a) |
| Hexachlorobutadiene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | 0.039 J | 0.04 J | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.14 J | 0.13 J | 0.12 DJ | 0.13 DJ | 0.12 J | 0.13 J | 4.8 | 4.7 | | | 36.4 |
| Hexachlorocyclopentadiene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | |
| 2-Nitroaniline | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | | | 0.43 (a) |
| Dimethyl Phthalate | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 80,000 | | 2 |
| Acenaphthylene | 0.024 J | 0.028 J | <0.82 | <0.82 J | <0.79 J | <0.79 | 0.13 J | 0.16 J | 300 | | 41 |
| 2,6-Dinitrotoluene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | | | 0.5 (a) |
| Acenaphthene | 0.11 J | 0.11 J | 0.11 DJ | 0.11 DJ | 0.24 J | 0.25 J | 19 E | 16 | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1?

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-14 | SS-14 (RE) | SS-14 (DL) | SS-14 (DL RE)* | SS-15* | SS-15 (RE) | SS-16 | SS-16 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.11 J | 0.12 J | 0.086 DJ | 0.1 DJ | 0.13 J | 0.12 J | 14 | 13 | | | |
| 2,4-Dinitrotoluene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | 8.2 |
| Diethylphthalate | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 1 | | |
| 4-Chlorophenyl-phenylether | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 80,000 | 80,000 | 7.1 |
| Fluorene | 0.11J | 0.11J | 0.086 DJ | 0.11 DJ | 0.23 J | 0.22 J | 18 E | 16 | 2,000 | | |
| 4-Nitroaniline | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | 3,000 | | 50 (3) |
| 4,6-Dinitro-2-Methylphenol | <1.0 | <1.0 | <2 | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | | | |
| N-Nitrosodiphenylamine (1) | <0.41 | <0.41 | <0.82 | <0.82 J | <1.9 J | <1.9 | <5.3 | <5.3 | 8 | | |
| 4-Bromophenyl-phenylether | <0.41 | <0.41 | <0.82 | <0.82 J | 0.11 J | 0.11 J | <2.2 | <2.2 | 140 | 100 | |
| Hexachlorobenzene | <0.41 | <0.41 | <0.82 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | | | |
| Pentachlorophenol | <1.0 | <1.0 | <2 | <0.82 J | <0.79 J | <0.79 | <2.2 | <2.2 | 0.41 | | 0.41 |
| Phenanthrene | 1.7D | 1.8 | 1.5D | <2 J | <1.9 J | <1.9 | <5.3 | <5.3 | 2,000 | 2,000 | 1 (a) |
| Anthracene | 0.3 J | 0.31 J | 0.25DJ | 1.6DJ | 1.9 J | 2 | 120E | 100E | | | 50 (3) |
| Carbazole | 0.17 J | 0.17 J | 0.14 DJ | 0.27 DJ | 0.41 J | 0.41 J | 47 E | 38 E | 20,000 | | 50 (3) |
| Di-n-Butylphthalate | 0.37 J | 0.34 J | 0.34 DJ | 0.18 DJ | 0.19 J | 0.17 J | 28 E | 28 E | 8.3 | | |
| Fluoranthene | 1.6 | 1.5 | 1.3D | 0.31 DJ | 0.14 J | 0.11 J | <2.2 | 0.2 J | 8,000 | 8,000 | 8.1 |
| Pyrene | 4.1E | 5.7E | 3.1D | 1.6DJ | 1.5J | 1.5 | 100E | 85E | 3,000 | | 50 |
| Butylbenzylphthalate | 2.0 | 2.2 | 1.8D | 3.8DJ | 3.7 J | 3.3 | 220E | 260E | 2,000 | | 50 |
| 3,3'-Dichlorobenzidine | <0.41 | <0.41 | <0.82 | 1.6DJ | 0.3 J | 0.23 J | <2.2 | <2.2 | 20,000 | 20,000 | 50 |
| Benzo(a)Anthracene | 1.6 | 1.8 | 1.5D | <0.82R | <0.79 J | <0.79 | <2.2 | <2.2 | 1.8 | 2 | |
| Chrysene | 2 | 1.9 | 1.7D | 1.4DJ | 1.5J | 1.5 | 120E | 130E | 0.22 | | 0.22 (a) |
| Bis(2-Ethylhexyl)Phthalate | 1.3 | 1.2 | 1.2D | 1.7DJ | 1.6J | 1.8 | 120E | 130E | | | 0.4 |
| Di-n-Octyl Phthalate | <0.41 | <0.41 | <0.82 | 1.1DJ | 0.35 J | 0.27 J | <2.2 | <2.2 | 50 | 50 | 50 (3) |
| Benzo(b)Fluoranthene | 2.1 | 2.4 | 1.8D | <0.82 J | <0.79R | <0.79 | <2.2 | <2.2 | 2,000 | | 50 (3) |
| Benzo(k)Fluoranthene | 1.5 | 1.6 | 1.6D | 1.5DJ | 1.4J | 1.4 | 78E | 67E | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 1.6 | 1.6 | 1.5D | 1.7DJ | 2J | 1.6 | 100E | 75E | 0.22 | | 1.1 |
| Indeno(1,2,3-cd)Pyrene | 1.4 | 1.0 | .1D | 1.5DJ | 1.5J | 1.5 | 86E | 86E | 0.61 | | 0.061 (a) |
| Dibenzo(a,h)Anthracene | <0.41 | <0.41 | <0.82 | 1.3DJ | 1.0J | 1.1 | 47E | 66E | | | 3.2 |
| Benzo(g,h,i)Perylene | 1.4 | 1.3 | 1.1D | <0.82 J | <0.79R | <0.79 | <2.2 | <2.2 | 0.014 | | 0.014 (a) |
| Total TICs | 8.01 | 12.55 | 12.11 | 1.5DJ | 1.1 J | 1.1 | 64E | 65E | | | 50 (3) |
| | | | | 12.82 | 26.07 | 27.73 | 60.7 | 67.8 | | | |

(See Notes on Page 24)

TABLE 17

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-16 (DL)* | SS-17 | SS-17 (RE) | SS-17 (DL)* | SS-18* | SS-19* | SS-19 (DL) | SS-20* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 0.64 | 0.6 | |
| 2-Chlorophenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | 1.6 |
| 1,4-Dichlorobenzene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <87 J | <2.1 | <2.1 | <11 J | <0.42 J | <2.3 | <11 | <0.44 J | 7,000 | | 7.9 |
| 2-Methylphenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 J | <2.3 | <11 | <0.44 J | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | |
| 4-Methylphenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 0.1 | 0.1 | |
| Hexachloroethane | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 80 | 80 | |
| Nitrobenzene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 40 | 40 | 0.2 (a) |
| Isophorone | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 1,800 | 2,000 | |
| 2-Nitrophenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | |
| 2,4-Dichlorophenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 18 DJ | 5.8 | 5.8 | 8.4 DJ | <0.42 | 1.3J | 1.4 DJ | <0.44 | 300 | | 13 |
| 4-Chloroaniline | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | 0.22 (a) |
| Hexachlorobutadiene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 80 | 80 | |
| 4-Chloro-3-Methylphenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | 0.24 (a) |
| 2-Methylnaphthalene | 5.6 DJ | 0.96 J | 0.98 J | 1.2 DJ | <0.42 | 0.46J | <11 | <0.44 | | | 36.4 |
| Hexachlorocyclopentadiene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <28 | <1.1 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | |
| 2-Nitroaniline | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <28 | <1.1 | | | 0.43 (a) |
| Dimethyl Phthalate | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 80,000 | | 2 |
| Acenaphthylene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 300 | | 41 |
| 2,6-Dinitrotoluene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <28 | <1.1 | | | 0.5 (a) |
| Acenaphthene | 37 DJ | 4 | 4 | 5.7 DJ | <0.42 | 3.2 | 3.8 DJ | <0.44 | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <28 | <1.1 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <28 | <1.1 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-16 (DL)* | SS-17 | SS-17 (RE) | SS-17 (DL)* | SS-18* | SS-19* | SS-19 (DL) | SS-20* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 25 DJ | 2.4 | 2.3 | 3.3 DJ | <0.42 | 1.6 J | 2 DJ | <0.44 | | | 6.2 |
| 2,4-Dinitrotoluene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 1 | | |
| Diethylphthalate | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 J | <11 | <0.44 | 2,000 | | |
| Fluorene | 44 DJ | 3 | 3 | 4.6 DJ | <0.42 | 3.8 J | 4.4 DJ | <0.44 | 3,000 | | 50 (3) |
| 4-Nitroaniline | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <26 | <1.1 | | | |
| 4,6-Dinitro-2-Methylphenol | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <26 | <1.1 | 8 | | |
| N-Nitrosodiphenylamine[1] | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | | | |
| Hexachlorobenzene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 0.41 | | 0.41 |
| Pentachlorophenol | <210 J | <5.1 | <5.1 | <26 J | <1.0 | <5.6 | <26 | <1.1 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 330 DJ | 18 E | 18 E | 30 DJ | 0.037 J | 32 D | 32 D | 0.25 J | | | 50 (3) |
| Anthracene | 65 DJ | 5.6 | 5.9 | 7.9 DJ | <0.42 | 6.9 | 6.5 DJ | 0.041 J | 20,000 | | 50 (3) |
| Carbazole | 50 DJ | 3.2 | 3.2 | 4.8 DJ | <0.42 | 4.6 | 5.2 DJ | 0.022 J | 8.3 | | |
| Di-n-Butylphthalate | <87 J | <2.1 | <2.1 | <11 J | 0.27 J | 0.32 J | <11 | 0.2 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 370 DJ | 15 | 14 | 30 DJ | 0.07 J | 40 D | 40 D | 0.4 J | 3,000 | | 50 (3) |
| Pyrene | 430 DJ | 35 E | 38 E | 38 DJ | 0.088 J | 31 D | 31 D | 0.77 | 2,000 | | 50 (3) |
| Butylbenzylphthalate | <87 J | <2.1 | <2.1 | <11 J | 0.055 J | <2.3 | <11 | 0.044 J | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 1.6 | 2 | |
| Benzo(a)Anthracene | 160 DJ | 12 | 11 | 15 DJ | 0.029 J | 21 D | 21 D | 0.26 J | 0.22 | | 0.22 (a) |
| Chrysene | 160 DJ | 10 | 11 | 15 DJ | 0.04 J | 18 | 22 D | 0.27 J | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | 1.3 BDJ | <0.44 | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 110 DJ | 8.5 | 9.6 | 12 DJ | 0.037 J | 17 | 18 D | 0.26 J | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 180 DJ | 10 | 8.7 | 11 DJ | 0.032 J | 9 | 18 D | 0.21 J | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 150 DJ | 9.6 | 9.1 | 13 DJ | 0.034 J | 14 | 17 D | 0.24 J | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 95 DJ | 7.4 | 6.3 | 9.8 DJ | 0.034 J | 7.6 | 8.9 DJ | 0.2 J | | | 3.2 |
| Dibenzo(a,h)Anthracene | <87 J | <2.1 | <2.1 | <11 J | <0.42 | <2.3 | <11 | <0.44 | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 91 DJ | 7.9 | 6.5 | 10 DJ | 0.054 J | 6.8 | 8 DJ | 0.25 J | | | 50 (3) |
| Total TICs | 878 | 16.31 | 11.96 | 21.4 | 4.92 | 32.63 | 91.9 | 9.71 | | | |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-21* | SS-21 (DL) | SS-22 | SS-22 (RE) | SS-22 (DL)* | SS-23* | SS-23 (RE) | SS-23 (DL) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 0.64 | 0.6 | |
| 2-Chlorophenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | 1.6 |
| 1,4-Dichlorobenzene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 J | <2.5 | <4.9 | 7,000 | | 7.9 |
| 2-Methylphenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 J | <2.5 | <4.9 | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 J | <2.5 | <4.9 | | | |
| 4-Methylphenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 0.1 | 0.1 | |
| Hexachloroethane | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 80 | 80 | |
| Nitrobenzene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 40 | 40 | 0.2 (a) |
| Isophorone | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 1,800 | 2,000 | |
| 2-Nitrophenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | |
| 2,4-Dichlorophenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 0.11 J | <11 | 0.054 J | 0.054 J | 0.048 DJ | 0.17 J | 0.17 J | <4.9 | 300 | | 13 |
| 4-Chloroaniline | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | 0.22 (a) |
| Hexachlorobutadiene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.16 J | <11 | 0.05 J | 0.05 J | <0.86 | 0.13 J | 0.13 J | <4.9 | | | 36.4 |
| Hexachlorocyclopentadiene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 800 | 800 | |
| 2,4,6-Trichlorophenol | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | |
| 2-Nitroaniline | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | | | 0.43 (a) |
| Dimethyl Phthalate | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 80,000 | | 2 |
| Acenaphthylene | 0.33 J | <11 | 0.11 J | 0.11 J | 0.093 DJ | <2.5 | <2.5 | <4.9 | 300 | | 41 |
| 2,6-Dinitrotoluene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | | | 0.5 (a) |
| Acenaphthene | 0.52 J | <11 | 0.092 J | 0.092 J | 0.079 DJ | 0.41 J | 0.42J | 0.41 DJ | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 J | <6 | <12 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-21* | SS-21 (DL) | SS-22 | SS-22 (RE) | SS-22 (DL)* | SS-23* | SS-23 (RE) | SS-23 (DL) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.5 J | 0.63 DJ | 0.072 J | 0.071 J | 0.056 DJ | 0.35 J | 0.37 J | 0.35 DJ | | | 6.2 |
| 2,4-Dinitrotoluene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 1 | | |
| Diethylphthalate | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <2.2 J | <11 | <0.43 | <0.43 | <0.86 J | <2.5 | <2.5 | <4.9 | 2,000 | | |
| Fluorene | 0.72 J | 0.95 DJ | 0.12 J | 0.12 J | 0.1 DJ | 0.5 J | 0.55 J | 0.52 DJ | 3,000 | | 50 (3) |
| 4-Nitroaniline | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | | | |
| 4,6-Dinitro-2-Methylphenol | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | 8 | | |
| N-Nitrosodiphenylamine (1) | <2.2 J | <11 | <0.43 | <0.43 | <0.86 J | <2.5 | <2.5 | <4.9 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | | | |
| Hexachlorobenzene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 | <2.5 | <4.9 | 0.41 | | 0.41 |
| Pentachlorophenol | <5.3 | <27 | <1.0 | <1.0 | <2.1 | <6 | <6 | <12 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 17 | 24 D | 1.6 | 1.6 | 1.6 D | 7 | 6.9 | 7.9 D | | | 50 (3) |
| Anthracene | 3.6 | 4.5 DJ | 0.34 J | 0.33 J | 0.31 DJ | 1.6 J | 1.8 J | 1.6 DJ | 20,000 | | 50 (3) |
| Carbazole | 1.7 J | 2 DJ | 0.25 J | 0.25 J | 0.21 DJ | 0.89 J | 0.95 J | 0.97 DJ | 8.3 | | |
| Di-n-Butylphthalate | 0.28 J | <11 | 0.16 J | 0.16 J | 0.14 DJ | 0.56 J | 0.82 J | 0.74 DJ | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 38 D | 38 D | 2.3 | 2.4 | 3.1 D | 10 | 8.7 | 13 D | 3,000 | | 50 (3) |
| Pyrene | 31 D | 31 D | 4.2 E | 4.2 E | 2.8 D | 19 D | 23 E | 23 D | 2,000 | | 50 (3) |
| Butylbenzylphthalate | <2.2 | <11 | 0.37 J | 0.38 J | 0.28 DJ | 0.65 J | 0.71 J | <4.9 | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 J | <2.5 | <4.9 | 1.6 | 2 | |
| Benzo(a)Anthracene | 15 | 19 D | 2.1 | 2.1 | 1.9 D | 7.9 J | 8.1 | 6 D | 0.22 | | 0.22 (a) |
| Chrysene | 15 | 20 D | 2.3 | 2.3 | 2.1 D | 7.6 J | 7.9 | 7.9 D | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | <2.2 | 0.91 BDJ | 0.25 BJ | 0.25 BJ | <0.86 | 2.7 BJ | 2.8 B | 2.8 BDJ | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 J | <2.5 | <4.9 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 14 | 15 D | 2.2 | 2.2 | 2.4 D | 7.6 J | 6.8 | 7.1 D | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 9.8 | 14 D | 1.8 | 1.6 | 1.2 D | 4.9 J | 5.8 | 5.8 D | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 11 | 14 D | 1.7 | 1.6 | 1.8 D | 6.2 J | 5.9 | 5.9 D | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 8.3 | 8.2 DJ | 1.5 | 1.5 | 1.1 D | 6.1 J | 5.5 | 5.2 D | | | 3.2 |
| Dibenzo(a,h)Anthracene | <2.2 | <11 | <0.43 | <0.43 | <0.86 | <2.5 J | <2.5 | <4.9 | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 5.5 | 7.5 DJ | 1.4 | 1.4 | 1.0 D | 6.7 J | 5.3 | 5 D | | | 50 (3) |
| Total TICs | 56.66 | 114.8 | 6.43 | 6.13 | 10.59 | 14.23 | 21.85 | 9.3 | | | |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-23 (DL RE) | SS-24 | SS-24 (RE)* | SS-25* | SS-25 (RE) | SS-26 (DL) | SS-26 (DL RE) | SS-[illegible] | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 0.64 | 0.6 | |
| 2-Chlorophenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | 1.6 |
| 1,4-Dichlorobenzene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <4.9 | <2 | <2 J | <0.42 J | <0.42 | <0.85 | <0.85 | <0.45 | 7,000 | | 7.9 |
| 2-Methylphenol | <4.9 | <2 | <2 J | <0.42 J | <0.42 | <0.85 | <0.85 | <0.45 | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <4.9 | <2 | <2 J | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | |
| 4-Methylphenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <4.9 | <2 | <2 J | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 0.1 | 0.1 | |
| Hexachloroethane | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 80 | 80 | |
| Nitrobenzene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 40 | 40 | 0.2 (a) |
| Isophorone | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 1,800 | 2,000 | |
| 2-Nitrophenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | |
| 2,4-Dichlorophenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 2,000 | 2,000 | 3.4 |
| Naphthalene | <4.9 | <2 | <2 | 0.084 J | 0.084 J | 0.075 DJ | 0.078 DJ | 0.13 J | 300 | | 13 |
| 4-Chloroaniline | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | 0.22 (a) |
| Hexachlorobutadiene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | 0.24 (a) |
| 2-Methylnaphthalene | <4.9 | <2 | <2 | 0.11 J | 0.11 J | 0.098 DJ | 0.097 DJ | 0.17J | | | 36.4 |
| Hexachlorocyclopentadiene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <12 | <4.9 | <4.9 | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | |
| 2-Nitroaniline | <12 | <4.9 | <4.9 J | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | | | 0.43 (a) |
| Dimethyl Phthalate | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 80,000 | | 2 |
| Acenaphthylene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | 0.078 J | 300 | | 41 |
| 2,6-Dinitrotoluene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <12 | <4.9 | <4.9 | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | | | 0.5 (a) |
| Acenaphthene | 0.4 DJ | 0.17 J | 0.18 J | 0.21 J | 0.23 J | 0.2 DJ | 0.2 DJ | 0.11 J | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <12 | <4.9 | <4.9 J | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <12 | <4.9 | <4.9 | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-33 (DL RE) | SS-34 | SS-34 (RE)* | SS-35* | SS-35 (RE) | SS-36 (DL) | SS-36 (DL RE) | SS-36 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.32DJ | 0.18J | 0.17 J | 0.14 J | 0.16 J | 0.14DJ | 0.14DJ | 0.11 J | | | 6.2 |
| 2,4-Dinitrotoluene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 1 | | |
| Diethylphthalate | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 2,000 | | |
| Fluorene | 0.49DJ | 0.23 J | 0.22 J | 0.19 J | 0.2 J | 0.16DJ | 0.19DJ | 0.12 J | 3,000 | | 50 (3) |
| 4-Nitroaniline | <12 | <4.9 | <4.9 | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | | | |
| 4,6-Dinitro-2-Methylphenol | <12 | <4.9 | <4.9 | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | 8 | | |
| N-Nitrosodiphenylamine (1) | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | | | |
| Hexachlorobenzene | <4.9 | <2 | <2 | <0.42 | <0.42 | <0.85 | <0.85 | <0.45 | 0.41 | | 0.41 |
| Pentachlorophenol | <12 | <4.9 | <4.9 | <1.0 | <1.0 | <2.1 | <2.1 | <1.1 | 2,000 | 2,000 | 1 (e) |
| Phenanthrene | 7.7D | 2.8 | 2.7 | 1.7 | 1.7 | 1.7D | 1.6D | 1.6 | | | 50 (3) |
| Anthracene | 1.6DJ | 0.56 J | 0.53 J | 0.38 J | 0.38 J | 0.34DJ | 0.36DJ | 0.42 J | 20,000 | | 50 (3) |
| Carbazole | 0.68DJ | 0.35 J | 0.32 J | 0.27 J | 0.28 J | 0.27DJ | 0.27DJ | 0.17 J | 6.3 | | |
| Di-n-Butylphthalate | 0.63DJ | 0.4J | 0.36 J | 0.12 J | 0.11 J | 0.12DJ | 0.12DJ | 0.19 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 12D | 3.3 | 3.2 | 1.7 | 1.5 | 1.9D | 1.9D | 1.7 | 3,000 | | 50 (3) |
| Pyrene | 19D | 6.7 | 6.9 J | 4 DJ | 4.7E | 4D | 3.9D | 4.2E | 2,000 | | 50 (3) |
| Butylbenzylphthalate | <4.9 | <2 | <2 J | 0.69 J | 0.56 | 0.51DJ | 0.47DJ | 0.31 J | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <4.9 | <2 | <2 J | <0.42 J | <0.42 | <0.85 | <0.85 | <0.45 | 1.6 | 2 | |
| Benzo(a)Anthracene | 7.8D | 2.5 | 2.4 J | 1.5 J | 1.4 | 1.3D | 1.30D | 2.7 | 0.22 | | 0.22 (e) |
| Chrysene | 8.1D | 2.4 | 2.4 J | 1.5 J | 1.5 | 1.3D | 1.30D | 2.4 | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | 2.6BDJ | <2 | <2 J | <0.42 J | 0.31 BJ | 0.26BDJ | 0.23BDJ | 3.2B | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <4.9 | <2 | <2 J | <0.42 J | <0.42 | <0.85 | <0.85 | <0.45 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 5.8D | 2.7 | 2.6 J | 1.1 J | 1.4 | 1.3D | 1.30D | 2.9 | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 6.5D | 2 J | 2.3 J | 1.3 J | 1.1 | 0.97D | 0.92D | 1.4 | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 6.3D | 2 J | 2.1 J | 1.2 J | 1.2 | 1.0D | 0.98D | 2.1 | 0.61 | | 0.061 (e) |
| Indeno(1,2,3-cd)Pyrene | 4.9DJ | 2.3 | 1.8 J | 1.2 J | 1.2 | 0.89D | 0.62DJ | 2.3 | | | 3.2 |
| Dibenzo(a,h)Anthracene | <4.9 | <2 | <2 J | <0.42 J | <0.42 | <0.85 | <0.85 | <0.45 | 0.014 | | 0.014 (e) |
| Benzo(g,h,i)Perylene | 4.5DJ | 2.9 | 2 J | 1.4 J | 1.5 | 1.2D | 1.1D | 2.2 | | | 50 (3) |
| Total TICs | 17.1 | 9.05 | 8.74 | 5.55 | 6.72 | 10.72 | 14.67 | 8.25 | | | |

(See Notes on Page 24)

TABLE 1?

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-25 (RE) | SS-26 (DL)* | SS-27* | SS-28* | SS-28 (RE) | SS-29 (DL) | SS-30 (DL RE) | SS-30* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 0.64 | 0.6 | |
| 2-Chlorophenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | 1.6 |
| 1,4-Dichlorobenzene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <0.45 | <0.89 | <2.2 J | <0.39 J | <0.39 | <0.78 | <0.78 | <0.39 J | 7,000 | | 7.9 |
| 2-Methylphenol | <0.45 | <0.89 | <2.2 J | <0.39 J | <0.39 | <0.78 | <0.78 | <0.39 J | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | |
| 4-Methylphenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 0.1 | 0.1 | |
| Hexachloroethane | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 80 | 80 | |
| Nitrobenzene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 40 | 40 | 0.2 (a) |
| Isophorone | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 1,600 | 2,000 | |
| 2-Nitrophenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | |
| 2,4-Dichlorophenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 0.18 J | 0.11 DJ | 0.2 J | 0.052 J | 0.052 J | 0.046 DJ | 0.047 DJ | 0.14 J | 300 | | 13 |
| 4-Chloroaniline | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | 0.22 (a) |
| Hexachlorobutadiene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 80 | 80 | |
| 4-Chloro-3-Methylphenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.18 J | 0.14 DJ | 0.27 J | 0.07 J | 0.072 J | 0.063 DJ | 0.065 DJ | 0.18 J | | | 36.4 |
| Hexachlorocyclopentadiene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 800 | 800 | |
| 2,4,6-Trichlorophenol | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | |
| 2-Nitroaniline | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | | | 0.43 (a) |
| Dimethyl Phthalate | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 80,000 | | 2 |
| Acenaphthylene | 0.081 J | 0.076 DJ | 0.32 J | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 300 | | 41 |
| 2,6-Dinitrotoluene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | | | 0.5 (a) |
| Acenaphthene | 0.095 J | 0.088 DJ | 0.39 J | 0.075 J | 0.083 J | 0.069 DJ | 0.07 DJ | 0.074 J | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-24 (RE) | SS-26 (DL)* | SS-27* | SS-28* | SS-2[illegible] (RE) | SS-24 (DL) | SS-2[illegible] (DL RE) | SS-29* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.11 J | 0.09 DJ | 0.31 J | 0.059 J | 0.084 J | 0.054 DJ | 0.054 DJ | 0.12 J | | | 6.2 |
| 2,4-Dinitrotoluene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 1 | | |
| Diethylphthalate | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <0.45 | <0.89 J | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 2,000 | | |
| Fluorene | 0.13 J | 0.12 DJ | 0.59 J | 0.058 J | 0.067 J | 0.053 DJ | 0.055 DJ | 0.063 J | 3,000 | | 50 (3) |
| 4-Nitroaniline | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | | | |
| 4,6-Dinitro-2-Methylphenol | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | 8 | | |
| N-Nitrosodiphenylamine (1) | <0.45 | <0.89 J | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | 0.089 J | 140 | 100 | |
| 4-Bromophenyl-phenylether | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | | | |
| Hexachlorobenzene | <0.45 | <0.89 | <2.2 | <0.39 | <0.39 | <0.78 | <0.78 | <0.39 | 0.41 | | 0.41 |
| Pentachlorophenol | <1.1 | <2.2 | <5.3 | <0.94 | <0.94 | <1.9 | <1.9 | <0.95 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 1.4 | 1.4 D | 9 | 0.78 | 0.8 | 0.72 DJ | 0.76 DJ | 1.6 | | | 50 (3) |
| Anthracene | 0.38 J | 0.35 DJ | 1.9 J | 0.17 J | 0.18 J | 0.15 DJ | 0.16 DJ | 0.25 J | 20,000 | | 50 (3) |
| Carbazole | 0.15 J | 0.16 DJ | 1.8 J | 0.098 J | 0.1 J | 0.095 DJ | 0.1 DJ | 0.14 J | 6.3 | | |
| Di-n-Butylphthalate | 0.18 J | 0.21 DJ | 0.77 J | 0.067 J | 0.1 J | 0.068 DJ | 0.095 DJ | 0.15 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 1.5 | 2.7 D | 14 | 1.2 | 1.1 | 1.4 D | 1.5 D | 1.2 | 3,000 | | 50 (3) |
| Pyrene | 4.3 E | 3.3 D | 13 | 2.9 DJ | 3.7 E | 2.9 D | 2.7 D | 4.8 DJ | 2,000 | | 50 (3) |
| Butylbenzylphthalate | 0.33 J | 0.25 DJ | <2.2 | 0.3 J | 0.2 J | 0.16 DJ | 0.13 DJ | 0.67 J | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <0.45 | <0.89 | <2.2 | <0.39 J | <0.39 | <0.78 | <0.78 | <0.39 R | 1.6 | 2 | |
| Benzo(a)Anthracene | 2.5 | 2.2 D | 9.7 | 1.3 J | 1.2 | 1.0 D | 1.0 D | 1.7 J | 0.22 | | 0.22 (a) |
| Chrysene | 2.4 | 2.3 D | 10 | 1.2 J | 1.2 | 1.1 D | 1.1 D | 1.9 J | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | 3.1 B | 2.7 BD | <2.2 | <0.39 J | 0.32 BJ | 0.28 BDJ | 0.25 BDJ | 0.34 BJR | 50 | 50 | 50 |
| Di-n-Octyl Phthalate | <0.45 | <0.89 | <2.2 | <0.39 J | <0.39 | <0.78 | <0.78 | <0.39 R | 2,000 | | 50 |
| Benzo(b)Fluoranthene | 2 | 2 D | 10 | 1.1 J | 1.5 | 1.1 D | 1.2 D | 1.9 J | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 2.1 | 2 D | 7.4 | 1.1 J | 0.88 | 0.85 D | 0.8 D | 1.2 J | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 2 | 1.9 D | 7.6 | 1.1 J | 1.1 | 0.96 D | 0.93 D | 1.3 J | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 2.2 | 1.5 D | 4.7 | 1.1 J | 1.2 | 1.1 D | 1.1 D | 1.7 J | | | 3.2 |
| Dibenzo(a,h)Anthracene | <0.45 | <0.89 | <2.2 | <0.39 J | <0.39 | <0.78 | <0.78 | <0.39 R | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 2.1 | 1.3 D | 4.1 | 1.2 J | 1.5 | 1.2 D | 1.2 D | 2.2 J | | | 50 (3) |
| Total TICs | 7.37 | 6.28 | 48.27 | 7.446 | 8.988 | 13.75 | 16.49 | 12.72 | | | |

(See Notes on Page 24)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-29 (RE) | SS-29 (DL) | SS-29 (DL RE) | SS-30 | SS-30 (RE) | SS-30 (DL)* | SS-31* | SS-31 (Dup.)* | SS-31 (Dup.) (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 0.64 | 0.6 | |
| 2-Chlorophenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | | | 1.6 |
| 1,4-Dichlorobenzene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 J | <12 | <11 | <11 | 7,000 | | 7.9 |
| 2-Methylphenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 J | <12 | <11 | <11 | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 J | <12 J | <11 J | <11 | | | |
| 4-Methylphenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 J | <12 | <11 | <11 | 0.1 | 0.1 | |
| Hexachloroethane | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 80 | 80 | |
| Nitrobenzene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 40 | 40 | 0.2 (a) |
| Isophorone | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 1,800 | 2,000 | |
| 2-Nitrophenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | | | |
| 2,4-Dichlorophenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 0.14 J | 0.13 DJ | 0.13 DJ | 0.07 J | 0.07 J | <1.9 | <12 | <11 | <11 | 300 | | 13 |
| 4-Chloroaniline | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | | | 0.22 (a) |
| Hexachlorobutadiene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 80 | 80 | |
| 4-Chloro-3-Methylphenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.18 J | 0.17 DJ | 0.18 DJ | 0.12 J | 0.12 J | 0.12 DJ | 4.1 J | 5.1 J | 6.1 J | | | 36.4 |
| Hexachlorocyclopentadiene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.8 | <30 J | <27 J | <27 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | | | |
| 2-Nitroaniline | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.8 | <30 J | <27 J | <27 | | | 0.43 (a) |
| Dimethyl Phthalate | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 80,000 | | 2 |
| Acenaphthylene | 0.023 J | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | 3.2 J | <11 J | <11 | 300 | | 41 |
| 2,6-Dinitrotoluene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.8 | <30 J | <27 J | <27 | | | 0.5 (a) |
| Acenaphthene | 0.08 J | 0.07 DJ | 0.084 DJ | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.8 J | <30 J | <27 J | <27 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.8 | <30 J | <27 J | <27 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 17

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-29 (RE) | SS-29 (DL) | SS-29 (DL RE) | SS-30 | SS-30 (RE) | SS-30 (DL)* | SS-31* | SS-31 (Dup.)* | SS-31 (Dup.) (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.13 J | 0.12 DJ | 0.12 DJ | 0.039 J | 0.043 J | <1.9 | 1.9 J | <11 J | <11 | | | 6.2 |
| 2,4-Dinitrotoluene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 1 | | |
| Diethylphthalate | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 J | <11 J | <11 | 2,000 | | |
| Fluorene | 0.069 J | 0.073 DJ | 0.078 DJ | <0.38 | 0.025 J | <1.9 | 13 J | 12 J | 13 | 3,000 | | 50 (3) |
| 4-Nitroaniline | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.6 | <30 J | <27 J | <27 | | | |
| 4,6-Dinitro-2-Methylphenol | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.6 | <30 R | <27 R | <27 | 8 | | |
| N-Nitrosodiphenylamine (1) | 0.1 J | <0.79 | <0.79 | 0.027 J | 0.033 J | <1.9 | <12 R | <11 R | <11 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 R | <11 R | <11 | | | |
| Hexachlorobenzene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 R | <11 R | <11 | 0.41 | | 0.41 |
| Pentachlorophenol | <0.95 | <1.9 | <1.9 | <0.92 | <0.92 | <4.6 | <30 R | <27 R | <27 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 1.5 | 1.5 D | 1.5 D | 0.41 | 0.42 | 0.47 DJ | 25 J | <24 J | 26 | | | 50 (3) |
| Anthracene | 0.25 J | 0.24 DJ | 0.24 DJ | 0.062 J | 0.057 J | <1.9 | <12 R | <11 R | <11 | 20,000 | | 50 (3) |
| Carbazole | 0.14 J | 0.14 DJ | 0.14 DJ | 0.039 J | 0.04 J | <1.9 | <12 R | <11 R | <11 | 8.3 | | |
| Di-n-Butylphthalate | 0.14 J | 0.15 DJ | 0.16 DJ | 0.25 J | 0.24 J | 0.3 DJ | <12 R | 6.3 J | 9.6 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 1.1 | 1.3 D | 1.3 D | 0.41 | 0.36 J | 0.57 DJ | 5 J | 2 J | 3.3 J | 3,000 | | 50 (3) |
| Pyrene | 5 E | 4.8 D | 4.4 D | 0.94 | 1.1 | 0.77 DJ | 2.7 J | 1.9 J | 1.2 J | 2,000 | | 50 (3) |
| Butylbenzylphthalate | 0.58 | 0.55 DJ | 0.6 DJ | 9.2 E | 7.8 E | 8 DJ | 1.8 J | 4.1 J | 4.4 J | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 1.9 | 2 | |
| Benzo(a)Anthracene | 1.7 | 1.4 D | 1.5 D | 0.32 J | 0.31 J | 0.33 DJ | 1.8 J | <11 | 0.84 J | 0.22 | | 0.22 (a) |
| Chrysene | 2 | 1.7 D | 1.7 D | 0.39 | 0.36 | 0.44 DJ | 2.3 J | 0.84 J | 1.1 J | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | 0.28 BJ | <0.79 | <0.79 | 0.34 BJ | 0.32 BJ | <1.9 J | <12 J | <11 J | 1.4 BJ | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 J | <12 J | <11 J | <11 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 1.9 | 1.5 D | 1.5 D | 0.39 | 0.41 | 0.37 DJ | 2.1 J | <11 J | 0.56 J | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 1.3 | 1.1 D | 1.0 D | 0.23 J | 0.27 J | 0.31 DJ | 2.2 J | <11 | <11 | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 1.3 | 0.96 D | 1.0 D | 0.25 J | 0.28 J | 0.28 DJ | 2.2 J | <11 | <11 | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 2 | 1.7 D | 1.6 D | 0.29 J | 0.36 J | 0.3 DJ | 1.5 J | <11 | <11 | | | 3.2 |
| Dibenzo(a,h)Anthracene | <0.39 | <0.79 | <0.79 | <0.38 | <0.38 | <1.9 | <12 | <11 | <11 | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 2.5 | 1.9 D | 1.6 D | 0.41 | 0.45 | 0.35 DJ | 1.3 J | <11 | <11 | | | 50 (3) |
| Total TICs | 12.37 | 15.22 | 16.82 | 11.38 | 13.14 | 19.47 | 1068 | 1190 | 6626 | | | |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-32* | SS-33 | SS-33 (RE) | SS-33 (DL)* | SS-34* | SS-35* | SS-36* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 0.64 | 0.6 | |
| 2-Chlorophenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | 1.6 |
| 1,4-Dichlorobenzene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 J | 7,000 | | 7.9 |
| 2-Methylphenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 J | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <0.42 J | <0.42 | <0.42 | <8.4 J | <0.39 | <2 | <2.2 J | | | |
| 4-Methylphenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 J | 0.1 | 0.1 | |
| Hexachloroethane | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 80 | 80 | |
| Nitrobenzene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 40 | 40 | 0.2 (a) |
| Isophorone | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 1,800 | 2,000 | |
| 2-Nitrophenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | |
| 2,4-Dichlorophenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 2,000 | 2,000 | 3.4 |
| Naphthalene | 0.19 J | 0.22 J | 0.21 J | <8.4 | <0.39 | 0.31 J | 0.17 J | 300 | | 13 |
| 4-Chloroaniline | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | 0.22 (a) |
| Hexachlorobutadiene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | 0.087 J | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | 0.24 (a) |
| 2-Methylnaphthalene | 0.24 J | 0.25 J | 0.25 J | <8.4 | <0.39 | 0.18 J | 0.18 J | | | 36.4 |
| Hexachlorocyclopentadiene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 64 | 40 | |
| 2,4,5-Trichlorophenol | <1.0 J | <1.0 | <1.0 | <20 | <0.94 | <4.8 | <5.3 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | |
| 2-Nitroaniline | <1.0 | <1.0 | <1.0 | <20 | <0.94 | <4.8 | <5.3 J | | | 0.43 (a) |
| Dimethyl Phthalate | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 80,000 | | 2 |
| Acenaphthylene | 0.098 J | 0.077 J | 0.065 J | <8.4 | <0.39 | <2 | <2.2 | 300 | | 41 |
| 2,6-Dinitrotoluene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <1.0 | <1.0 | <1.0 | <20 | <0.94 | <4.8 | <5.3 | | | 0.5 (a) |
| Acenaphthene | 0.054 J | 0.58 | 0.56 | 0.6 DJ | <0.39 | 0.65 J | 1.2 J | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <1.0 | <1.0 | <1.0 | <20 | <0.94 | <4.8 | <5.3 J | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <1.0 J | <1.0 | <1.0 | <20 J | <0.94 | <4.8 | <5.3 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-32* | SS-33 | SS-33 (RE) | SS-33 (DL)* | SS-34* | SS-35* | SS-36* | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.1 J | 0.3 J | 0.31 J | <8.4 | <0.39 | 0.47 J | 0.97 J | | | 6.2 |
| 2,4-Dinitrotoluene | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 1 | | |
| Diethylphthalate | <0.42 | 0.034 BJ | 0.034 BJ | <8.4 | <0.39 | <2 | <2.2 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <0.42 | <0.42 | <0.42 | <8.4 | <0.39 | <2 J | <2.2 | 2,000 | | |
| Fluorene | 0.052 J | 0.5 | 0.51 | 0.59 DJ | <0.39 | 0.99 J | 1.7 J | 3,000 | | 50 (3) |
| 4-Nitroaniline | <1.0 | <1.0 | <1.0 | <20 | <0.94 | <4.8 | <5.3 | | | |
| 4,6-Dinitro-2-Methylphenol | <1.0 R | <1.0 | <1.0 | <20 | <0.94 | <4.8 | <5.3 | 8 | | |
| N-Nitrosodiphenylamine (1) | <0.42 R | <0.42 | <0.42 | <8.4 J | <0.39 J | <2 J | <2.2 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <0.42 R | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | | | |
| Hexachlorobenzene | <0.42 R | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 0.41 | | 0.41 |
| Pentachlorophenol | <1.0 R | <1.0 | <1.0 | <20 J | <0.94 | <4.8 | <5.3 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 1.2 J | 3.6 E | 3.6 E | 5.9 DJ | 0.22 J | 7.3 | 9.2 | | | 50 (3) |
| Anthracene | 0.19 J | 0.96 | 0.95 | 1.2 DJ | 0.038 J | 1.4 J | 3.3 | 20,000 | | 50 (3) |
| Carbazole | <0.42 R | 0.65 | 0.62 | 1.2 DJ | 0.032 J | 1.2 J | 1.3 J | 6.3 | | |
| Di-n-Butylphthalate | <0.42 R | 0.14 J | 0.15 J | <8.4 | 0.046 J | <2 | 0.3 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 0.52 J | 1.5 | 1.3 | 9.7 D | 0.37 J | 6.6 | 10 | 3,000 | | 50 (3) |
| Pyrene | 0.64 J | 5.2 E | 4.6 E | 12 D | 0.35 J | 7.5 | 11 D | 2,000 | | 50 (3) |
| Butylbenzylphthalate | <0.42 R | 0.46 | 1.4 | 0.86 DJ | 0.044 J | <2 | 2.9 J | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <0.42 R | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 1.6 | 2 | |
| Benzo(a)Anthracene | 0.81 J | 2 | 2.2 | 8.3 DJ | 0.18 J | 5.3 | 7.7 | 0.22 | | 0.22 (a) |
| Chrysene | 1.2 J | 5.1 E | 5 E | 8.3 DJ | 0.23 J | 6.2 | 6.9 | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | 1.8 BJ | 20 BE | 20 BE | 42 BDJ | <0.39 J | <2 | <2.2 J | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <0.42 R | 0.19 J | 0.17 J | <8.4 J | <0.39 J | <2 | <2.2 J | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 1.2 J | 6.2 E | 5.1 E | 8.4 DJ | 0.23 J | 5.3 | 6 | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 0.66 J | 3.6 E | 4.1 E | 5.9 DJ | 0.16 J | 4.8 | 4.9 | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 0.72 J | 5 E | 4.9 E | 5.6 DJ | 0.15 J | 4.6 | 6.8 | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 1.1 J | 4.7 E | 4.8 E | 4.3 DJ | 0.14 J | 3 | 4.3 | | | 3.2 |
| Dibenzo(a,h)Anthracene | <0.42 R | <0.42 | <0.42 | <8.4 | <0.39 | <2 | <2.2 | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 1.0 J | 3 | 2.9 | 2.7 DJ | 0.095 J | 2.6 | 3.6 | | | 50 (3) |
| Total TICs | 8.17 | 6.5 | 6.59 | 9.3 | 1.37 | 29.41 | 29.58 | | | |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-36 (DL) | SS-37* | SS-37 (RE) | SS-38* | SS-39* | SS-40* | SS-40 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 50,000 | 50,000 | 0.03 (a) |
| Bis(2-Chloroethyl)Ether | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 0.64 | 0.6 | |
| 2-Chlorophenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 400 | 400 | 0.8 |
| 1,3-Dichlorobenzene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | 1.6 |
| 1,4-Dichlorobenzene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 29 | | 8.5 |
| 1,2-Dichlorobenzene | <4.3 | <0.79 J | <0.79 | <0.43 J | <0.43 J | <0.43 J | <0.43 | 7,000 | | 7.9 |
| 2-Methylphenol | <4.3 | <0.79 J | <0.79 | <0.43 J | <0.43 J | <0.43 J | <0.43 | 4,000 | 4,000 | 0.1 (a) |
| 2,2'-oxybis(1-Chloropropane) | <4.3 | <0.79 J | <0.79 | <0.43 | <0.43 | <0.43 J | <0.43 | | | |
| 4-Methylphenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 4,000 | 4,000 | 0.9 |
| N-Nitroso-Di-n-Propylamine | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 0.1 | 0.1 | |
| Hexachloroethane | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 80 | 80 | |
| Nitrobenzene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 40 | 40 | 0.2 (a) |
| Isophorone | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 1,600 | 2,000 | |
| 2-Nitrophenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | 0.33 (a) |
| 2,4-Dimethylphenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 2,000 | | |
| Bis(2-Chloroethoxy)Methane | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | |
| 2,4-Dichlorophenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 200 | 200 | 0.4 |
| 1,2,4-Trichlorobenzene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 2,000 | 2,000 | 3.4 |
| Naphthalene | <4.3 | 0.085 J | 0.088 J | <0.43 | <0.43 | <0.43 | <0.43 | 300 | | 13 |
| 4-Chloroaniline | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | 0.22 (a) |
| Hexachlorobutadiene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 90 | 90 | |
| 4-Chloro-3-Methylphenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | 0.24 (a) |
| 2-Methylnaphthalene | <4.3 | 0.11 J | 0.12 J | <0.43 | <0.43 | <0.43 | <0.43 | | | 36.4 |
| Hexachlorocyclopentadiene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 600 | 600 | |
| 2,4,6-Trichlorophenol | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 84 | 40 | |
| 2,4,5-Trichlorophenol | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.0 | <1.0 | 8,000 | 8,000 | 0.1 |
| 2-Chloronaphthalene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | |
| 2-Nitroaniline | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.0 | <1.0 | | | 0.43 (a) |
| Dimethyl Phthalate | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 80,000 | | 2 |
| Acenaphthylene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 300 | | 41 |
| 2,6-Dinitrotoluene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 1 | 1 (2) | 1 |
| 3-Nitroaniline | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.0 | <1.0 | | | 0.5 (a) |
| Acenaphthene | 1.0DJ | 0.2 J | 0.2 J | <0.43 | <0.43 | <0.43 | <0.43 | 5,000 | | 50 (3) |
| 2,4-Dinitrophenol | <11 | <1.9 J | <1.9 | <1.0 | <1.0 | <1.0 J | <1.0 | 200 | 200 | 0.2 (a) |
| 4-Nitrophenol | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.0 | <1.0 | | | 0.1 (a) |

(See Notes on Page 24)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
SEMIVOLATILE ORGANICS ANALYTICAL RESULTS
NOVEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-36 (DL) | SS-37* | SS-37 (RE) | SS-38* | SS-39* | SS-40* | SS-40 (RE) | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Obj. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | 0.81 DJ | 0.29 J | 0.29 J | <0.43 | <0.43 | <0.43 | <0.43 | | | 6.2 |
| 2,4-Dinitrotoluene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 1 | | |
| Diethylphthalate | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 60,000 | 60,000 | 7.1 |
| 4-Chlorophenyl-phenylether | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 2,000 | | |
| Fluorene | 1.8 DJ | 0.37 J | 0.39 J | <0.43 | <0.43 | <0.43 | <0.43 | 3,000 | | 50 (3) |
| 4-Nitroaniline | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.1 | <1.1 | | | |
| 4,6-Dinitro-2-Methylphenol | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.1 | <1.1 | 8 | | |
| N-Nitrosodiphenylamine (1) | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 140 | 100 | |
| 4-Bromophenyl-phenylether | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | | | |
| Hexachlorobenzene | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 0.41 | | 0.41 |
| Pentachlorophenol | <11 | <1.9 | <1.9 | <1.0 | <1.0 | <1.1 | <1.1 | 2,000 | 2,000 | 1 (a) |
| Phenanthrene | 12 D | 2.4 | 2.4 | <0.43 | <0.43 | <0.43 | <0.43 | | | 50 (3) |
| Anthracene | 3.3 DJ | 0.68 J | 0.69 J | <0.43 | <0.43 | <0.43 | <0.43 | 20,000 | | 50 (3) |
| Carbazole | 1.2 DJ | 0.26 J | 0.27 J | <0.43 | <0.43 | <0.43 | <0.43 | 6.3 | | |
| Di-n-Butylphthalate | 0.28 DJ | 0.16 J | 0.17 J | 0.12 J | 0.044 J | 0.23 J | 0.24 J | 8,000 | 8,000 | 8.1 |
| Fluoranthene | 15 D | 2.4 | 2.6 | 0.025 J | 0.037 J | 0.033 J | 0.034 J | 3,000 | | 50 (3) |
| Pyrene | 11 D | 4.3 | 4.6 | 0.027 J | 0.051 J | 0.04 J | 0.042 J | 2,000 | | 50 (3) |
| Butylbenzylphthalate | 2.1 DJ | <0.79 J | <0.79 | <0.43 | 0.039 J | <0.43 J | <0.43 | 20,000 | 20,000 | 50 (3) |
| 3,3'-Dichlorobenzidine | <4.3 | <0.79 | <0.79 | <0.43 | <0.43 | <0.43 | <0.43 | 1.6 | 2 | |
| Benzo(a)Anthracene | 6.1 D | 1.3 | 1.3 | <0.43 | <0.43 | <0.43 | <0.43 | 0.22 | | 0.22 (a) |
| Chrysene | 7.9 D | 1.3 | 1.3 | <0.43 | <0.43 | <0.43 | <0.43 | | | 0.4 |
| Bis(2-Ethylhexyl)Phthalate | <4.3 | <0.79 J | 0.11 BJ | <0.43 | <0.45 | <0.43 | 0.36 BJ | 50 | 50 | 50 (3) |
| Di-n-Octyl Phthalate | <4.3 | <0.79 J | <0.79 | <0.43 | <0.43 | <0.43 J | <0.43 | 2,000 | | 50 (3) |
| Benzo(b)Fluoranthene | 6.8 D | 1.2 J | 1.3 | <0.43 | <0.43 | <0.43 J | <0.43 | 0.22 | | 1.1 |
| Benzo(k)Fluoranthene | 6.8 D | 1.1 J | 0.98 | <0.43 | <0.43 | <0.43 J | <0.43 | 0.22 | | 1.1 |
| Benzo(a)Pyrene | 8.4 D | 0.99 J | 1.0 | <0.43 | <0.43 | <0.43 J | <0.43 | 0.61 | | 0.061 (a) |
| Indeno(1,2,3-cd)Pyrene | 3.3 DJ | 0.9 J | 0.74 J | <0.43 | <0.43 | <0.43 J | <0.43 | | | 3.2 |
| Dibenzo(a,h)Anthracene | <4.3 | <0.79 J | <0.79 | <0.43 | <0.43 | <0.43 J | <0.43 | 0.014 | | 0.014 (a) |
| Benzo(g,h,i)Perylene | 2.6 DJ | 0.9 J | 0.74 J | <0.43 | <0.43 | <0.43 J | <0.43 | | | 50 (3) |
| Total TICs | 44.4 | 10.52 | 11.75 | 11.54 | 35.68 | 11.91 | 15.93 | | | |

**Notes:**
All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
(RE) – Indicates re-extraction of sample.
(DL) – Indicates dilution.
(Dup.) – Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
E – Identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
D – Identifies all compounds identified in an analysis at a secondary dilution factor.
J – Indicates an estimated value.
B – Indicates analyte was found in associated blank as well as in the sample.
(1) – Indicates this compound cannot be separated from Diphenylamine.
(2) – Indicates this compound cannot be separated from 2,3-Dinitrotoluene.
(3) – As per proposed TAGM, Total VOCs < 10 ppm, Total SVOCs < 500 ppm and individual SVOCs < 50 ppm.
TIC – Indicates Tentatively Identified Compounds.
R – Indicates the sample result is unusable.
(a) – These compounds should not be detected above the TAGM or the method detection limit.

* – All data were validated. These are the recommended samples used in the evaluation of the surface soils.
Shading indicates one of the following was exceeded: state draft soil criteria, state recommended cleanup objectives, or federal action levels.

**References:**
Soil criteria are based on direct human ingestion. These criteria are from NYSDEC Draft Cleanup Policy and Guidelines Document, October 1991, derived from the HEAST Report current through December 1990.

New York State TAGM Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determinations of Soil Cleanup Objectives and Cleanup Levels, January 1994.

RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
PCB ANALYTICAL RESULTS
NOVEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-01 | SS-01 (Dup) | SS-03 | SS-04 | SS-05 | SS-32 | New York State Draft Soil Criteria | New York State TAGM Cleanup Objectives | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | <0.2 | <0.26 | <0.21R | <0.2 | <0.21 | <0.34 | 1ª | 1-10 | 0.09 |
| Aroclor 1221 | <0.41 | <0.53 | <0.44R | <0.41 | <0.43 | <0.69 | 1ª | 1-10 | 0.09 |
| Aroclor 1232 | <0.2 | <0.26 | <0.21R | <0.2 | <0.21 | <0.34 | 1ª | 1-10 | 0.09 |
| Aroclor 1242 | 0.55PJ | <0.26 | <0.21R | <0.2 | <0.21 | <0.34 | 1ª | 1-10 | 0.09 |
| Aroclor 1248 | <0.2 | 1.5PJ | 0.5P | 0.37 | 0.5PR | 1.0PJN | 1ª | 1-10 | 0.09 |
| Aroclor 1254 | 1.0 | 0.88PJN | 1.2 | 1.5 | 0.59PJN | 7.6 | 1ª | 1-10 | 0.09 |
| Aroclor 1260 | 0.67PR | 0.78PR | 0.64PR | 0.72PR | 0.58PR | 0.91PR | 1ª | 1-10 | 0.09 |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectivesare in mg/kg equivalent to parts per million (ppm).
Dup. – Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
P – This flag is used for an Aroclor target analyte when there is greater than 25 percent difference for detected concentrations between the two GC columns. The lower of the two values is reported.
J – Indicates an estimated value.
N – Presumptive evidence of the compound.
R – Indicates the associated value is unusable.
ª – Indicates the sum of Aroclor (PCB) compounds.
New York State TAGM PCB Cleanup Objectives are 1.0 ppm for surface soilsand 10.0 ppm for subsurface soils.
Shading indicates at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October 1991, derived from the HEAST Report current through December 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

# TABLE 1

## SUPPLEMENTAL SURFACE SOIL SAMPLING
## INORGANIC ANALYTICAL RESULTS
## NOVEMBER 1993

## ROSEN SITE
## CORTLAND, NEW YORK

| Compound | SS-01 | SS-01 (Dup) | SS-02 | SS-02 (Dup) | SS-03 | SS-04 | SS-05 | SS-06 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Objectives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 5,660 | 8,560 | 9,550 | 9,190 | 9,840 | 5,680 | 7,430 | 4,930 | | | (*) |
| Antimony | <17.5J | <0.77 | <14.9J | <0.72 | <15.8J | <14.5J | <16.2J | <13.7J | 30 | 30 | (*) |
| Arsenic | 19.1SR | 10.3SJ | 11.4SR | 9.5SJ | 11SR | 12BSR | 19.8R | 8.2BSR | 80 | 80 | 7.5(*) |
| Barium | 293 | 283 | 223 | 146 | 263 | 241 | 307 | 145 | 4,000 | 4,000 | 300(*) |
| Beryllium | 0.98B | <0.77 | <0.75 | <0.74 | <0.79 | <0.72 | <0.81 | <0.68 | 0.16 | 0.2 | 0.16 (*) |
| Cadmium | 7.5BR | 8.8BS | 5.1BR | 6.2BJ | 7.1BR | 7.9BR | 6.4BR | 1.8BR | 80 | 40 | 1 (*) |
| Calcium | 75,900J | 114,000J | 37,100 | 21,600 | 40,000 | 45,000 | 30,800 | 135,000 | | | (*) |
| Chromium | 137R | 170 | 136R | 37.7 | 71.4R | 107R | 84.2R | 51.9R | 400* | 400 | 10(*) |
| Cobalt | 24.9 | 16.3 | 13.2 | 12.5 | 13.7 | 11.4B | 12.9B | 7.8B | | | 30(*) |
| Copper | 756J | 439 | 159J | 128 | 136J | 222J | 218J | 148J | | | 25(*) |
| Iron | 90,400 | 66,400 | 92,700 | 77,200 | 63,900 | 172,000 | 156,000 | 58,300 | | | 2,000(*) |
| Lead | 2,360ER | 347 | 753ER | 1,040 | 541ER | 1,460ER | 1,860ER | 222ER | 250 | | (*) |
| Magnesium | 6,960 | 7,040 | 10,400 | 5,890 | 7,390 | 10,700 | 7,070 | 7,860 | | | (*) |
| Manganese | 1,640 | 1,450 | 1,230 | 1,070 | 1,280 | 2,350 | 2,280 | 3,190 | 20,000 | | (*) |
| Mercury | 1.4 | 0.92 | 0.46 | 0.31 | 1.1 | 0.58 | 0.88 | 0.49 | 20 | 20 | 0.1 |
| Nickel | 136 | 110 | 47.2 | 62.6 | 41.6 | 70.9 | 60.3 | 69.3 | 2,000 | 2,000 | 13(*) |
| Potassium | 867B | 804B | 800B | 672B | 700B | 434B | 702B | 624B | | | (*) |
| Selenium | <0.87J | <0.77J | <0.76J | <0.72J | <0.82J | <0.74J | <0.8J | <0.69J | | | 2(*) |
| Silver | <2.9J | <2.6 | <2.5J | <2.5 | <2.6J | <2.4J | <2.7J | <2.3J | 200 | 200 | (*) |
| Sodium | 421B | 429B | 306B | 322B | 397B | 379B | 372B | 446B | | | (*) |
| Thallium | <0.87J | <0.77J | <0.76J | <0.72J | <0.82J | <0.74J | <0.8J | <0.69J | 6 | | (*) |
| Vanadium | 20.8J | 19.6 | 36.9J | 19.9 | 20.8J | <4.8J | 21.5J | 20.6J | 600 | | 150(*) |
| Zinc | 201,000ER | 1,150 | 1,150EJ | 1,220 | 998EJ | 1,850EJ | 2,800EJ | 842EJ | 20,000 | | 20(*) |
| Cyanide | <1.4 | <1.2 | <1.3 | <1.2 | <1.3 | <1.2 | <1.3 | <1.1 | 2,000 | 2,000 | |

(See Notes on Page 7)

TABLE 1?

SUPPLEMENTAL SURFACE SOIL SAMPLING
INORGANIC ANALYTICAL RESULTS
NOVEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-07 | SS-08 | SS-09 | SS-10 | SS-11 | SS-12 | SS-12 (Dup) | SS-13 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Objectives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 5,700 | 6,030 | 7,960 | 5,210 | 4,830 | 5,190 | 5,850 | 4,900 | | | (*) |
| Antimony | <13.8J | <15.2J | <14.1J | 18.2J | 22.1J | <15.5J | <0.78 | <15.7J | 30 | 30 | (*) |
| Arsenic | 19SR | 43.7SR | 23.8SR | 17.8SR | 37.7SR | 15.4SR | 8.8J | 21.8R | 80 | 80 | 7.5(*) |
| Barium | 109 | 486 | 141 | 359 | 405 | 128 | 135 | 1,010 | 4,000 | 4,000 | 300(*) |
| Beryllium | <0.69 | <0.76 | <0.71 | <0.74 | <0.77 | <0.77 | <0.78 | <0.79 | 0.18 | 0.2 | 0.16(*) |
| Cadmium | 2.3BR | 13.9BR | 16.5BR | 2.9BR | 21.2BR | 4.4BSR | 5.4BS | 2.9BR | 80 | 40 | 1(*) |
| Calcium | 65,300 | 19,000 | 34,100 | 38,100 | 17,900 | 18,000 | 21,700 | 88,100 | | | (*) |
| Chromium | 112R | 119R | 86.5R | 134R | 137R | 102R | 160 | 141R | 400* | 400 | 10(*) |
| Cobalt | 11.5 | 23.4 | 8.4B | 13.6 | 14.6 | 10.8B | 9.5B | 11.3B | | | 30(*) |
| Copper | 242J | 3,220J | 410J | 324J | 4,290J | 529J | 523 | 704J | | | 25(*) |
| Iron | 12,200 | 107,000 | 60,400 | 160,000 | 200,000 | 90,400 | 79,700 | 119,000 | | | 2,000(*) |
| Lead | 255ER | 2,710ER | 716ER | 1,060ER | 1,660ER | 605ER | 543 | 4,280ER | 250 | | (*) |
| Magnesium | 5,950 | 5,100 | 6,800 | 10,600 | 4,090 | 4,910 | 6,300 | 18,600 | | | (*) |
| Manganese | 1,730 | 1,740 | 2,740 | 2,060 | 1,970 | 2,950 | 3,450 | 5,090 | 20,000 | | (*) |
| Mercury | 1.1 | 136 | 2.1 | 0.84 | 4 | 0.55 | 0.69 | 0.46 | 20 | 20 | 0.1 |
| Nickel | 81.5 | 147 | 67.9 | 125 | 117 | 55.7 | 70.9 | 94.5 | 2,000 | 2,000 | 13(*) |
| Potassium | 549B | 763B | 607B | 432B | 381B | 518B | 562B | 462B | | | (*) |
| Selenium | <0.69J | <0.76J | 3SJ | <0.74J | <7.5J | <0.76J | <0.78J | <0.78J | | | 2(*) |
| Silver | <2.3J | <2.5J | <2.4J | <2.5J | 3.3J | <2.6J | <2.6 | <2.8J | 200 | 200 | (*) |
| Sodium | 331B | 526B | 451B | 427B | 331B | 514B | 388B | 351B | | | (*) |
| Thallium | <0.69J | 0.76BJ | <0.71J | <0.74J | 0.75BJ | <0.76J | <0.78J | <0.78J | 6 | | (*) |
| Vanadium | <4.6J | 25.1J | 28.4J | <5J | <5.1J | 40.6J | 52.6 | 108J | 600 | | 150(*) |
| Zinc | 931EJ | 4,810EJ | 2,710EJ | 5,970EJ | 4,340EJ | 1,990EJ | 2,310 | 4,170EJ | 20,000 | | 20(*) |
| Cyanide | <1.1 | 1.7 | <1.1 | <1.2 | 4.7 | <1.3 | <1.2 | <1.3 | 2,000 | 2,000 | |

(See Notes on Page 7)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
INORGANIC ANALYTICAL RESULTS
NOVEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-14 | SS-15 | SS-16 | SS-17 | SS-18 | SS-19 | SS-20 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Objectives |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 4,200 | 6,430 | 7,600 | 7,010 | 11,100 | 3,530 | 4,760 | | | (*) |
| Antimony | 22.2J | 16.0J | <15.5J | <17.6J | <14.8J | <16.8J | <17.3J | 30 | 30 | (*) |
| Arsenic | 84.7R | 33.5 SR | 17.9SR | 14.4SR | 4.9SR | 4.4SR | 3.4SR | 80 | 80 | 7.5(*) |
| Barium | 227 | 136 | 114 | 75.2 | 434 | 154 | 64.4 | 4,000 | 4,000 | 300(*) |
| Beryllium | <0.77 | <0.75 | <0.78 | <0.88 | <0.74 | <0.84 | <0.86 | 0.16 | 0.2 | 0.16(*) |
| Cadmium | 11.2BR | 14.9BR | 3.9BR | 2.6BR | 0.58BSR | 1.1BR | 0.72BR | 80 | 40 | 1(*) |
| Calcium | 71,000 | 35,200 | 53,700 | 255,000 | 3,200 | 24,000 | 3,690 | | | (*) |
| Chromium | 105R | 2,880R | 50.1R | 119R | 17.7R | 12.1R | 9.9R | 400* | 400 | 10(*) |
| Cobalt | 40.6 | 14.6 | 8.4B | 7.8B | 9.1B | <5.6 | 5.8B | | | 30(*) |
| Copper | 1,070J | 349J | 143J | 22J | 14.9J | 67J | 20J | | | 25(*) |
| Iron | 239,000 | 127,000 | 46,800 | 24,700 | 22,800 | 13,800 | 12,000 | | | 2,000(*) |
| Lead | 1,660ER | 734ER | 498ER | 60.5ER | 1,190ER | 681ER | 62.5ER | 250 | | (*) |
| Magnesium | 5,460 | 6,470 | 14,200 | 11,400 | 3,680 | 5,630 | 1,320B | | | (*) |
| Manganese | 2,890 | 2,720 | 894 | 7,520 | 458 | 657 | 886 | 20,000 | | (*) |
| Mercury | 2 | 1.0 | 0.42 | 0.42 | 0.24 | 0.49 | 0.14 | 20 | 20 | 0.1 |
| Nickel | 170 | 119 | 45.1 | 61.8 | 19.7 | 20.5 | 15.9 | 2,000 | 2,000 | 13(*) |
| Potassium | 421B | 606B | 676B | 795B | 517B | 358B | 591B | | | (*) |
| Selenium | 1.5SJ | <7.5J | <0.78J | <0.91J | <0.77J | <0.83J | <0.85J | | | 2(*) |
| Silver | <2.8J | <2.5J | <2.6J | <2.9J | <2.5J | <2.8J | <2.9J | 200 | 200 | (*) |
| Sodium | 385B | 412B | 342B | 501B | <247 | 308B | <288 | | | (*) |
| Thallium | <0.75J | <0.75J | <0.78J | <0.91J | <0.77J | <0.83J | <0.85J | 6 | | (*) |
| Vanadium | <5.1J | 60.1J | 35.1J | 74.6J | 13.6J | 25.8J | 9.5BJ | 600 | | 150(*) |
| Zinc | 3,910EJ | 3,090EJ | 12,500EJ | 128EJ | 564EJ | 831EJ | 186EJ | 20,000 | | 20(*) |
| Cyanide | <1.3 | <1.2 | <1.3 | 1.8 | <1.3 | <1.4 | <1.4 | 2,000 | 2,000 | |

(See Notes on Page 7)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
INORGANIC ANALYTICAL RESULTS
NOVEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-21 | SS-22 | SS-23 | SS-24 | SS-25 | SS-26 | SS-27 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Objectives |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 6,910 | 5,590 | 8,860 | 5,110 | 10,100 | 6,900 | 7,040 | | | (*) |
| Antimony | <16.1J | <15.5J | <17.8J | <15.1J | <15.3J | <15.6J | <16.3J | 30 | 30 | (*) |
| Arsenic | 12.5SR | 11.6R | 14.5SR | 26.7SR | 9.9SR | 13.5SR | 22.3SR | 80 | 80 | 7.5(*) |
| Barium | 127 | 4,890 | 286 | 155 | 127 | 274 | 834 | 4,000 | 4,000 | 300(*) |
| Beryllium | <0.80 | <0.77 | <0.89 | <0.75 | <0.77 | <0.78 | <0.81 | 0.16 | 0.2 | 0.16(*) |
| Cadmium | 1.4B | 1.5B | 7BS | 7BS | 2.7BS | 5.2B | 11.1B | 80 | 40 | 1(*) |
| Calcium | 25,000 | 67,800 | 17,200 | 52,600 | 21,600 | 62,100 | 18,400 | | | (*) |
| Chromium | 58.6R | 74.3R | 102R | 474R | 76.7R | 128R | 89.2R | 400' | 400 | 10(*) |
| Cobalt | 6.7B | 7.1B | 9.6B | 9.2B | 11.7B | 7.4B | 12.3B | | | 30(*) |
| Copper | 112 | 751 | 297 | 398 | 142 | 270 | 720 | | | 25(*) |
| Iron | 99,000EJ | 112,000EJ | 71,600EJ | 123,000EJ | 46,200EJ | 89,500EJ | 96,800EJ | | | 2,000(*) |
| Lead | 244 | 913 | 1,320 | 400 | 459 | 589 | 1,560 | 250 | | (*) |
| Magnesium | 4,900 | 10,900 | 5,180 | 17,500 | 6,420 | 9,270 | 5,190 | | | (*) |
| Manganese | 971 | 809 | 1,860 | 18,400 | 1,650 | 4,580 | 2,440 | 20,000 | | (*) |
| Mercury | 0.68 | 0.94 | 2.4 | 0.19 | 0.49 | 0.53 | 0.15 | 20 | 20 | 0.1 |
| Nickel | 26.9J | 20.7J | 57.5J | 200J | 45.5J | 73.1J | 58.6J | 2,000 | 2,000 | 13(*) |
| Potassium | 750B | 840B | 731B | 433B | 621B | 710B | 760B | | | (*) |
| Selenium | <0.83J | <0.76 | <0.89J | <0.74J | <0.78J | <0.77J | <0.83J | | | 2(*) |
| Silver | <2.7 | <2.6 | <3.0 | <2.5 | <2.6 | <2.6 | <2.7 | 200 | 200 | (*) |
| Sodium | 973B | 1,990 | 648B | 324B | 320B | 366B | 351B | | | (*) |
| Thallium | <0.83J | <0.76J | <0.89J | <0.74J | <0.78J | <0.77J | <0.83J | 6 | | (*) |
| Vanadium | 28.7 | 30.5 | 33.1 | 161 | 33.1 | 57.3 | 75.7 | 600 | | 150(*) |
| Zinc | 525 | 1,500 | 3,330 | 3,150 | 36,200 | 3,730 | 3,730 | 20,000 | | 20(*) |
| Cyanide | <1.4 | <1.3 | <1.5 | <1.2 | <1.3 | <1.3 | <1.4 | 2,000 | 2,000 | |

(See Notes on Page 7)

# TABLE 1

## SUPPLEMENTAL SURFACE SOIL SAMPLING
## INORGANIC ANALYTICAL RESULTS
## NOVEMBER 1993

## ROSEN SITE
## CORTLAND, NEW YORK

| Compound | SS-28 | SS-29 | SS-30 | SS-31 | SS-31 (Dup) | SS-32 | SS-33 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Objectives |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 5,940 | 5,620 | 6,350 | 7,380 | 6,760 | 4,510 | 7,140 | | | (*) |
| Antimony | <13.9J | 19.1J | <13.8J | <14.5J | <0.71 | 22.4J | <15.3J | 30 | 30 | (*) |
| Arsenic | 10.5SR | 21.4SR | 15.4SR | 10.9R | 8.2SJ | 40.1R | 8.2R | 80 | 80 | 7.5(*) |
| Barium | 355 | 111 | 91.9 | 241 | 191 | 315 | 432 | 4,000 | 4,000 | 300(*) |
| Beryllium | <0.7 | <0.72 | <0.69 | <0.73 | <0.73 | <0.77 | <0.77 | 0.16 | 0.2 | 0.16(*) |
| Cadmium | 3.2B | 9.8B | 7.9BS | 17.0BS | 2.8BS | 8.8B | 10.2B | 80 | 40 | 1(*) |
| Calcium | 115,000 | 112,000 | 75,600 | 25,500 | 27,800 | 38,200 | 27,400 | | | (*) |
| Chromium | 346R | 87.5R | 209R | 73.8R | 44.7 | 138R | 363R | 400* | 400 | 10(*) |
| Cobalt | 9.4B | 7.5B | 8.3B | 14.7 | 15 | 18.5 | 11.4B | | | 30(*) |
| Copper | 99.9 | 307 | 261 | 172 | 165 | 1,160 | 675 | | | 25(*) |
| Iron | 71,700EJ | 65,700EJ | 49,000EJ | 146,000EJ | 102,000 | 181,000EJ | 61,800EJ | | | 2,000(*) |
| Lead | 296 | 679 | 367 | 457 | 554 | 2,940S | 1,570 | 250 | | (*) |
| Magnesium | 16,800 | 29,200 | 13,700 | 5,860 | 4,750 | 7,150 | 5,680 | | | (*) |
| Manganese | 11,700 | 2,230 | 4,030 | 2,490 | 1,000 | 1,740 | 3,770 | 20,000 | | (*) |
| Mercury | <0.1 | <0.11 | 0.14 | 0.2 | 0.13 | 8.8 | 0.34 | 20 | 20 | 0.1 |
| Nickel | 131J | 66.6J | 80.0J | 60.9J | 47.4 | 117J | 82.8J | 2,000 | 2,000 | 13(*) |
| Potassium | 708B | 526B | 724B | 635B | 583B | 349B | 583B | | | (*) |
| Selenium | <0.69J | <0.74J | <0.68J | <0.74 | <1.4J | <0.75J | <0.77J | | | 2(*) |
| Silver | <2.3 | <2.4 | <2.3 | <2.4 | <2.4 | <2.6 | <2.6 | 200 | 200 | (*) |
| Sodium | 364B | 404B | 376B | 473B | 372B | 335B | 414B | | | (*) |
| Thallium | <0.69J | <0.74J | <0.68J | <0.74J | <0.71J | <0.75J | <0.77J | 6 | | (*) |
| Vanadium | 288 | 31.1 | 36.9 | 22.9 | 18.4 | <5.1 | 62.2 | 600 | | 150(*) |
| Zinc | 1,250 | 2,210 | 2,740 | 1,220 | 803 | 2,170 | 6,140 | 20,000 | | 20(*) |
| Cyanide | <1.1 | <1.2 | <1.1 | <1.2 | <1.2 | 3.9 | <1.2 | 2,000 | 2,000 | |

(See Notes on Page 7)

TABLE 1

SUPPLEMENTAL SURFACE SOIL SAMPLING
INORGANIC ANALYTICAL RESULTS
NOVEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | SS-34 | SS-35 | SS-36 | SS-37 | SS-38 | SS-39 | SS-40 | New York State Draft Soil Criteria | RCRA Soil Action Levels | New York State TAGM Cleanup Objectives |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 161 | 9,000 | 10,300 | 10,600 | 10,800 | 10,400 | 10,400 | | | (*) |
| Antimony | <14.1J | <15.2J | <15.6J | <14.3J | <15.6J | <14.5J | <15.6J | 30 | 30 | (*) |
| Arsenic | 6.1SR | 6.9R | 4.5SR | 15.8SR | 4.4SR | 4.4SR | 4.8R | 80 | 80 | 7.5(*) |
| Barium | 23.6B | 731 | 93 | 191 | 38B | 40.7B | 41.3B | 4,000 | 4,000 | 300(*) |
| Beryllium | <0.71 | <0.76 | <0.78 | <0.72 | <0.78 | <0.73 | <0.78 | 0.16 | 0.2 | 0.16(*) |
| Cadmium | 0.26BJ | 1.5B | 0.67BS | 6.1BS | 0.1B | 0.1B | 0.13B | 80 | 40 | 1(*) |
| Calcium | <235 | 25,400 | 24,300 | 26,300 | 1,610 | 1,110B | 2,150 | | | (*) |
| Chromium | 19.3R | 28.5R | 20.2R | 31.4R | 15.1R | 15.1R | 14.3R | 400* | 400 | 10(*) |
| Cobalt | <4.7 | 7.8B | 9.9B | 9B | 9.3B | 10.1B | 10.7B | | | 30(*) |
| Copper | 24.6 | 91.6 | 30.1 | 292 | 18.4 | 17.4 | 15 | | | 25(*) |
| Iron | 268,000EJ | 16,900EJ | 22,900EJ | 29,300EJ | 23,400EJ | 22,900EJ | 22,600EJ | | | 2,000(*) |
| Lead | 144 | 181 | 292 | 136 | 8.8S | 9.1S | 12 | 250 | | (*) |
| Magnesium | <235 | 7,150 | 5,350 | 5,600 | 3,790 | 3,610 | 3,620 | | | (*) |
| Manganese | 40 | 694 | 1,150 | 605 | 419 | 552 | 475 | 20,000 | | (*) |
| Mercury | <0.11 | <0.12 | <0.13 | 0.17 | <0.12 | <0.11 | <0.12 | 20 | 20 | 0.1 |
| Nickel | <7.1J | 20.6J | 25J | 31.7J | 23.3J | 22.2J | 21.8J | 2,000 | 2,000 | 13(*) |
| Potassium | 896B | 822B | 983B | 741B | 606B | 535B | 598B | | | (*) |
| Selenium | <0.73J | <0.76J | <0.8J | <0.72J | <0.78J | <0.73J | <0.78J | | | 2(*) |
| Silver | <2.4 | <2.5 | <2.6 | <2.4 | <2.6 | <2.4 | <2.6 | 200 | 200 | (*) |
| Sodium | 4,200 | 280B | 280B | 335B | <261 | <242 | 265B | | | (*) |
| Thallium | <0.73J | <0.76J | <0.8J | <0.72J | <0.78J | <0.73J | <0.76J | 6 | | (*) |
| Vanadium | <4.7 | 15.9 | 23.9 | 19.2 | 15.3 | 14.5 | 14.2 | 600 | | 150(*) |
| Zinc | 54.2 | 330 | 189 | 521 | 66.9 | 62.8 | 84.6 | 20,000 | | 20(*) |
| Cyanide | <1.2 | <1.2 | <1.3 | <1.2 | <1.3 | <1.2 | <1.3 | 2,000 | 2,000 | |

(See Notes on Page 7)

TABLE 1.

SUPPLEMENTAL SURFACE SOIL SAMPLING
INORGANIC ANALYTICAL RESULTS
NOVEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Intervals referenced are in feet below ground level.
E – Indicates a value estimated or not reported due to the presence of interference.
B – Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
S – Indicates value determined by Method of Standard Addition.
J – Indicates an estimated value.
R – Indicates the sample result is unusable.
The < sign indicates the compound was analyzed for but not detected.
*Applies to hexavalent chromium.
(*) New York State TAGM Recommended Soil Cleanup Objective is the value listed or the site background level.
Shading indicates that one of the following was exceeded: state draft soil criteria, state recommended cleanup objectives, or federal action levels.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines, October 1991, derived from the HEAST Report current through December 1990.
New York State TAGM Recommended Cleanup Objectives are from the NYSDEC Division Technical & Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives & Cleanup Levels, January 1992.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 2

SUPPLEMENTAL SOIL CHARACTERIZATION OF POTENTIAL PCB AREA
NOVEMBER/DECEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

PCB FIELD SCREENING RESULTS

| Boring Identification | P-1 | | P-2 | | P-3 | | P-4 | | P-5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) |
| | 0 – 1 | >1, <25 | 0 – 1 | >1, <25 | 0 – 1 | >1, <25 | 0 – 1 | >1, <25 | 0 – 1 | >1, >25 |
| | 1 – 2 | >1, <25 | 1 – 2 | <1 | 1 – 2 | <1 | 1 – 2 | <1 | 0 – 1 (Dup) | >1, >25 |
| | 2 – 3 | >1, >25 | 2 – 3 | <1 | 2 – 3 | <1 | 2 – 3 | <1 | 1 – 2 | >1, >25 |
| | 3 – 4 | <1 | | | | | | | 2 – 3 | >1, >25 |
| | 4 – 5 | <1 | | | | | | | 3 – 4 | No Recovery |
| | | | | | | | | | 4 – 5 | No Recovery |
| | | | | | | | | | 5 – 6 | >1, >25 |
| | | | | | | | | | 6 – 7 | >1, <25 |
| | | | | | | | | | 7 – 8 | >1, <25 |
| Total Depth Drilled (ft) | 5.0 | | 3.0 | | 3.0 | | 3.0 | | 10.0 | |

| Boring Identification | P-6 | | P-7 | | P-8 | | P-9 | | P-10 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) |
| | 0 – 1 | >1, >25 | 0 – 1 | <1 | 0 – 1 | >1, >25 | 0 – 1 | >1, >25 | 0 – 1 | <1 |
| | 1 – 2 | >1, >25 | 1 – 2 | <1 | 1 – 2 | >1, >25 | 1 – 2 | <1 | 1 – 2 | <1 |
| | 2 – 3 | >1, <25 | 2 – 3 | NR | 2 – 3 | <1 | 2 – 3 | <1 | | |
| | 3 – 4 | <1 | 3 – 4 | <1 | 3 – 4 | <1 | | | | |
| | 4 – 5 | NR | 4 – 5 | <1 | 4 – 5 | <1 | | | | |
| | 5 – 6 | <1 | 4 – 5 (Dup) | <1 | | | | | | |
| | 6 – 7 | <1 | | | | | | | | |
| | 6 – 7 (Dup) | <1 | | | | | | | | |
| Total Depth Drilled (ft) | 10.0 | | 8.0 | | 10.0 | | 10.0 | | 10.0 | |

(See Notes on Page 2)

TABLE 2

SUPPLEMENTAL SOIL CHARACTERIZATION OF POTENTIAL PCB AREA
NOVEMBER/DECEMBER 1993
ROSEN SITE
CORTLAND, NEW YORK

PCB FIELD SCREENING RESULTS

| Boring Identification | P-11 | | P-12 | | P-13 | |
|---|---|---|---|---|---|---|
| | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) | Interval (ft) | Result (ppm) |
| | 0 – 1 | >1, <25 | 0 – 1 | >1, <25 | 0 – 1 | <1 |
| | 1 – 2 | >1, <25 | 1 – 2 | <1 | 1 – 2 | <1 |
| | 1 – 2 (Dup) | >1, <25 | 2 – 3 | <1 | 2 – 3 | <1 |
| | 2 – 3 | <1 | 3 – 4 | <1 | | |
| | 3 – 4 | <1 | 4 – 5 | >1, <25 | | |
| | 3 – 4 (Dup) | <1 | 5 – 6 | <1 | | |
| | 4 – 5 | <1 | 6 – 7 | <1 | | |
| | 4 – 5 (Dup) | <1 | 6 – 7 (Dup) | <1 | | |
| | 5 – 6 | <1 | 7 – 8 | <1 | | |
| Total Depth Drilled (ft) | 10.0 | | 9.0 | | 10.0 | |

Notes:
ppm = Parts per million.
Dup = Duplicate sample.
>1 = Greater than 1 ppm.
<25 = Less than 25 ppm.
NR = No recovery of soil in the split barrel sampler.

TABLE 3
TEST BORING SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-6 FT.) | B03 (2-4 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objectives | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Chloromethane | <0.014 | <0.013 | <0.011 | <0.012 | <0.051 | 540 | | |
| Bromomethane | <0.014 | <0.013 | <0.011 | <0.012 | <0.051 | 80 | | 100 |
| Vinyl Chloride | <0.014 | <0.013 | <0.011 | <0.012 | <0.051 | 0.36 | 0.2 | |
| Chloroethane | <0.014 | <0.013 | <0.011 | <0.012 | <0.051 | 540 | 1.9 | |
| Methylene Chloride | <0.007 | <0.007 | 0.002J | <0.006 | <0.025 | 93 | 0.1 | 90 |
| Acetone | 0.099B | 0.18B | 0.021 | <0.012 | 0.085 | 6,000 | 0.2 | 8,000 |
| Carbon Disulfide | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 8,000 | 2.7 | 8,000 |
| 1,1-Dichloroethene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 12 | 0.4 | 10 |
| 1,1-Dichloroethane | 0.04 | <0.007 | <0.006 | 0.012 | <0.025 | 8,000 | 0.2 | |
| 1,2-Dichloroethene (total) | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 800* | | |
| Chloroform | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 110 | 0.3 | 100 |
| 1,2-Dichloroethane | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 7.7 | 0.1 | 8 |
| 2-Butanone | 0.039 | 0.083 | <0.011R | <0.012 | <0.051 | 4,000 | 0.3 | 4,000 |
| 1,1,1-Trichloroethane | 0.012 | <0.007 | 0.027 | 0.028 | 0.027 | 7,000 | 0.8 | 7,000 |
| Carbon Tetrachloride | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 5.4 | 0.6 | 5 |
| Vinyl Acetate | <0.014 | <0.013 | <0.011 | <0.012 | <0.051 | 80,000 | | |
| Bromodichloromethane | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 5.4 | | 0.5 |
| 1,2-Dichloropropane | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 10 | | |
| cis-1,3-Dichloropropene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 20 | | 20 (1) |
| Trichloroethene | <0.007 | <0.007 | 0.002J | <0.006 | 0.004J | 64 | 0.7 | 60 |
| Dibromochloromethane | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 8.3 | | |
| 1,1,2-Trichloroethane | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 120 | | 100 |
| Benzene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 24 | 0.06 | |
| trans-1,3-Dichloropropene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 20 | | 20 (1) |
| Bromoform | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 89 | | 2,000 |
| 4-Methyl-2-Pentanone | <0.014 | <0.013 | <0.011 | <0.012 | <0.051 | 4,000 | 1.0 | 4,000 |
| 2-Hexanone | <0.014 | <0.013 | <0.011R | <0.012 | <0.051 | | | |

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TABLE 3 (Cont.)
TEST BORING SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-6 FT.) | B03 (2-4 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objectives | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 14 | 1.4 | 10 |
| 1,1,2,2-Tetrachloroethane | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 35 | 0.6 | 40 |
| Toluene | 0.01 | <0.007 | <0.006 | <0.006 | 0.076 | 20,000 | 1.5 | 20,000 |
| Chlorobenzene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 2,000 | 1.7 | 2,000 |
| Ethylbenzene | <0.007 | <0.007 | <0.006 | <0.006 | <0.025 | 8,000 | 5.5 | 8,000 |
| Styrene | <0.007 | <0.007 | <0.006 | <0.006J | <0.025 | 23 | | 2,000 |
| Total Xylenes | <0.007 | <0.007 | <0.006 | <0.006 | 0.026 | 200,000 | 1.2 | 200,000 |
| TOTAL TIC | 0.078J | | | | | | | |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Intervals referenced are in feet below ground level.
The < sign indicates the compound was analyzed for but not detected.
TIC - Indicates Tentatively Identified Compounds.
B - Indicates the analyte was found in the associated blank as well as in the sample.
J - Indicates an estimated value.
R - Indicates the sample result is unusable.
(1) - Value presented is for 1,3-Dichloropropene
* - The soil criteria applies to cis-1,2-Dichloroethene only.

References:

Soil criteria are based on direct human ingestion. These criteria are from NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current though December, 1990.
New York State TAGM Recommended Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
TEST BORING SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-6 FT.) | B03 (COMP)* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Phenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 50,000 | 0.03* | 50,000 |
| Bis(2-Chloroethyl)Ether | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 0.64 | | 0.6 |
| 2-Chlorophenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 400 | 0.8 | 400 |
| 1,3-Dichlorobenzene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 1.6 | |
| 1,4-Dichlorobenzene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 29 | 8.5 | |
| Benzyl Alcohol | <0.93 | <0.91 | <0.79 | <0.81J | <0.73J | 20,000 | | |
| 1,2-Dichlorobenzene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 7,000 | 7.9 | |
| 2-Methylphenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 4,000 | 0.1* | 4,000 |
| Bis(2-Chloroisopropyl) Ether | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 100 | | |
| 4-Methylphenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 4,000 | 0.9 | 4,000 |
| N-Nitroso-Di-n-Propylamine | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 0.1 | | 0.1 |
| Hexachloroethane | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 80 | | 80 |
| Nitrobenzene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 40 | 0.2* | 40 |
| Isophorone | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 1,800 | | 2,000 |
| 2-Nitrophenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 0.33* | |
| 2,4-Dimethylphenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 2,000 | | |
| Benzoic Acid | <4.5 | 0.1J | 0.058J | <3.9 | <3.5J | 300,000 | | |
| Bis(2-Chloroethoxy) Methane | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | | |
| 2,4-Dichlorophenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 200 | 0.4 | 200 |
| 1,2,4-Trichlorobenzene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 2,000 | 3.4 | 2,000 |
| Naphthalene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 300 | 13 | |
| 4-Chloroaniline | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 0.22* | |
| Hexachlorobutadiene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 90 | | 90 |
| 4-Chloro-3-Methylphenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 0.24* | |
| 2-Methylnaphthalene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 36.4 | |

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TABLE 3 (Cont.)
TEST BORING SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | [illegible] (4-6 FT.) | B02 (4-6 FT.) | B03 (COMP)* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Hexachlorocyclopentadiene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 600 | | 600 |
| 2,4,6-Trichlorophenol | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 64 | | 40 |
| 2,4,5-Trichlorophenol | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | 8,000 | 0.1 | 8,000 |
| 2-Chloronaphthalene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | | |
| 2-Nitroaniline | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | | 0.43* | |
| Dimethyl Phthalate | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 80,000 | 2 | |
| Acenaphthylene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 300 | 41 | |
| 2,6-Dinitrotoluene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 1 | 1 | 1 (2) |
| 3-Nitroaniline | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | | 0.5* | |
| Acenaphthene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 5,000 | 50 (3) | |
| 2,4-Dinitrophenol | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | 200 | 0.2* | 200 |
| 4-Nitrophenol | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | | 0.1* | |
| Dibenzofuran | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 6.2 | |
| 2,4-Dinitrotoluene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 1 | | |
| Diethylphthalate | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 60,000 | 7.1 | 60,000 |
| 4-Chlorophenyl-phenylether | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 2,000 | | |
| Fluorene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 3,000 | 50.0 (3) | |
| 4-Nitroaniline | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | | | |
| 4,6-Dinitro-2-Methylphenol | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | 8 | | |
| N-Nitrosodiphenylamine (1) | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 140 | | 100 |
| 4-Bromophenyl-phenylether | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | | |
| Hexachlorobenzene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 0.41 | 0.41 | |
| Pentachlorophenol | <4.5 | <4.4 | <3.8 | <3.9 | <3.5J | 2,000 | 1* | 2,000 |
| Phenanthrene | 0.52J | <0.91 | <0.79 | <0.81 | <0.73J | | 50 (3) | |
| Anthracene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 20,000 | 50 (3) | |
| Di-n-Butylphthalate | 0.2J | 0.17J | 0.057J | <0.81 | <0.73J | 8,000 | 8.1 | 8,000 |
| Fluoranthene | 0.7J | <0.91 | <0.79 | <0.81 | <0.73J | 3,000 | 50 (3) | |

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TABLE 3 (Cont.)
TEST BORING SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-8 FT.) | B02 (4-8 FT.) | B03 (COMP)* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Pyrene | 0.83J | <0.91 | <0.79 | <0.81 | <0.73J | 2,000 | 50 (3) | |
| Butylbenzylphthalate | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 20,000 | 50 (3) | 20,000 |
| 3,3'-Dichlorobenzidine | <1.9 | <1.8 | <1.6 | <1.6 | <1.5J | 1.6 | | 2 |
| Benzo(a)Anthracene | 0.45J | <0.91 | <0.79 | <0.81 | <0.73J | 0.22 | 0.22* | |
| Chrysene | 0.36J | <0.91 | <0.79 | <0.81 | <0.73J | | 0.4 | |
| Bis(2-Ethylhexyl) Phthalate | 0.24J | 0.095J | 0.15J | <0.81 | <0.98J | 50 | 50 (3) | 50 |
| Di-n-Octyl Phthalate | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 2,000 | 50 (3) | |
| Benzo(b)Fluoranthene | 0.44J | <0.91 | <0.79 | <0.81 | <0.73J | 0.22 | 1.1 | |
| Benzo(k)Fluoranthene | 0.18J | <0.91 | <0.79 | <0.81 | <0.73J | 0.22 | 1.1 | |
| Benzo(a)Pyrene | 0.24J | <0.91 | 0.28J | <0.81 | <0.73J | 0.061 | 0.061* | |
| Indeno(1,2,3-cd)Pyrene | 0.14J | <0.91 | <0.79 | <0.81 | <0.73J | | 3.2 | |
| Dibenz(a,h)Anthracene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | 0.014 | 0.014* | |
| Benzo(g,h,i)Perylene | <0.93 | <0.91 | <0.79 | <0.81 | <0.73J | | 50 (3) | |
| TOTAL TIC | 20.45J | 8.08J | 2.61J | | | | | |

Notes:
All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Intervals referenced are in feet below ground level.
*Due to the coarseness of the material, an extra sample was submitted and composited for analysis from soil boring B-03.
The < sign indicates the compound was analyzed for but not detected.
J - Indicates an estimated value.
* - These compounds should not be detected above the TAGM or the method detection limit.
(1) - Indicates this compound cannot be separated from Diphenylamine.
(2) - Indicates this compound cannot be separated from 2,3-Dinitrotoluene.
(3) - As per proposed TAGM, total VOCs <10 ppm, total SVOCs <500 ppm, and individual SVOCs <50 ppm.
TIC - Indicates Tentatively Identified Compounds.
Shading indicates at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:
Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
TEST BORING SOIL ANALYTICAL RESULTS
PESTICIDES/PCBs
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-6 FT.) | B03 COMP* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objectives | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| alpha-BHC | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | 0.11 | 0.11 | 0.1 |
| beta-BHC | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | 3.9 | 0.2 | 4 |
| delta-BHC | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | | 0.3 | |
| gamma-BHC(Lindane) | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | 5.4 | 0.06 | 0.5 |
| Heptachlor | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | 0.16 | 0.1 | 0.2 |
| Aldrin | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | 0.041 | 0.041 | 0.06 |
| Heptachlor epoxide | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | 0.77 | 0.02 | 0.08 |
| Endosulfan I | <0.021 | <0.022 | <0.019 | <0.019 | <0.019 | | 0.9 | 4 (1) |
| Dieldrin | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | 0.044 | 0.044 | 0.01 |
| 4,4'-DDE | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | 2.1 | 2.1 | 2 (3) |
| Endrin | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | 200 | 0.1 | 20 |
| Endosulfan II | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | | 0.9 | 4 (1) |
| 4,4'-DDD | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | 2.9 | 2.9 | 3 (4) |
| Endosulfan sulfate | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | | 1.0 | |
| 4,4'-DDT | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | 2.1 | 2.1 | 2 (5) |
| Methoxychlor | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | 80 | 10.0 (6) | |
| Endrin ketone | <0.042 | <0.043 | <0.038 | <0.039 | <0.038 | | | |
| alpha-chlordane | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | | | 0.5 (2) |
| gamma-chlordane | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | | 0.54 | 0.5 (2) |
| Toxaphene | <0.42 | <0.43 | <0.38 | <0.39 | <0.38 | 0.64 | | 0.6 |

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TABLE 3 (Cont.)
TEST BORING SOIL ANALYTICAL RESULTS
PESTICIDE/PCBs
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-8 FT.) | B03 COMP* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objectives | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1221 | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1232 | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1242 | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1248 | <0.21 | <0.22 | <0.19 | <0.19 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1254 | <0.42 | <0.43 | <0.38 | <0.39 | <0.38 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1260 | <0.42 | <0.43 | <0.38 | <0.39 | <0.38 | 1* | 1*, 10* (7) | 0.09 |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Intervals referenced are in feet below ground level.
*Due to the coarseness of the material, an extra sample was submitted and composited for analysis from soil boring B-03.
The < sign indicates the compound was analyzed for but not detected.
* - Indicates the sum of Aroclor (PCB) compounds.
(1) - Value presented is for Endosulfan.
(2) - Value presented is for Chlordane.
(3) - Value presented is for DDE.
(4) - Value presented is for DDD.
(5) - Value presented is for DDT.
(6) - As per proposed TAGM, total pesticide <10 ppm.
(7) - 1.0 is the surface soil cleanup objective; 10.0 is the subsurface soil cleanup objective.
Shading indicates at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
TEST BORING SOIL ANALYTICAL RESULTS
INORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-6 FT.) | B03 (COMP)* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State Recommended Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 11,000E | 14,800E | 13,500E | 6,740E | 12,600E | | (*) | |
| Antimony | 1.2B | <0.68 | <0.61J | <0.61 | <0.56 | 30 | (*) | 30 |
| Arsenic | 10.0 | 4.6 | 9.0S | 51.4 | 6.4 | 80 | 7.5 (*) | 80 |
| Barium | 150 | 119J | 121 | 120 | 106 | 4,000 | 300 (*) | 4,000 |
| Beryllium | <0.77 | <0.67J | 1.1 | <0.61 | <0.57 | 0.16 | 0.16 (*) | 0.2 |
| Cadmium | <0.77 | <0.67 | <0.60 | <0.61 | 0.57 | 80 | 1.0 (*) | 40 |
| Calcium | 11,000E | 2,540E | 39,200E | 1,740E | 2,910E | | (*) | |
| Chromium | 32.4EJ | 25.7EJ | 169E | 16.6E | 22.5E | 400* | 10 (*) | 400 |
| Cobalt | 11.0 | 9.0J | 11.2 | 5.6B | 11.1 | | 30 (*) | |
| Copper | 70.7E | 33.1ER | 75.1E | 44.4E | 20.1E | | 25 (*) | |
| Iron | 51,400E | 32,500E | 62,400E | 78,900E | 29,700E | | 2,000 (*) | |
| Lead | 198J | 73.4J | 36.1 | 18.4J | 18.1J | 250 | (*) | |
| Magnesium | 3,830E | 3,330E | 9,260E | 2,620E | 4,040E | | (*) | |
| Manganese | 2,510E | 730E | 8,020E | 242E | 1,400EJ | 20,000 | (*) | |
| Mercury | <0.13 | <0.12 | <0.01 | <0.09 | 0.25 | 20 | 0.1 | 20 |
| Nickel | 54.8E | 34.4EJ | 123EJ | 20.7EJ | 39.8E | 2,000 | 13 (*) | 2,000 |
| Potassium | 1,090 | 1,130 | 1,160 | 1,620 | 1,450 | | (*) | |
| Selenium | <0.77J | <0.68J | <0.61 | <0.61 | <0.56J | | 2 (*) | |
| Silver | <0.77 | <0.67 | 1.1 | <0.61 | <0.57 | 200 | (*) | 200 |
| Sodium | 277B | 175B | 212B | 712 | 99.3B | | (*) | |
| Thallium | <0.77 | <0.68 | <0.61 | <0.61J | <0.56 | 6.0 | (*) | |

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TABLE 3 (Cont.)
TEST BORING SOIL ANALYTICAL RESULTS
INORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | B01 (4-6 FT.) | B02 (4-6 FT.) | B03 (COMP)* (2-8 FT.) | B04 (6-8 FT.) | B05 (6-8 FT.) | New York State Draft Soil Criteria | New York State Recommended Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|
| Vanadium | 33.5 | 31.1J | 318 | 11.3 | 49.1 | 600 | 150 (*) | |
| Zinc | 1,610E | 321EJ | 426E | 77.4E | 88.4E | 20,000 | 20 (*) | |
| Cyanide | <1.5 | <1.4 | <1.2 | <1.2 | <1.1 | 2,000 | | 2,000 |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
*Due to the coarseness of the material, an extra sample was submitted and composited for analysis from soil boring B-03.
Intervals referenced are in feet below ground level.
E - Indicates a value estimated or not reported due to the presence of interference.
S - Indicates a value determined by Method of Standard Addition.
J - Indicates an estimated value.
The < sign indicates the compound was analyzed for but not detected.
B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
R - Indicates the sample result was rejected.
*Applies to hexavalent Chromium.
(*) - New York State TAGM Recommended Soil Cleanup Objective is the value listed or the site background level.
Shading indicates at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
TEST PIT SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T01 (RE) (3 FT.) | T01 (DL) (3 FT.) | T02 (2-3 FT.) | T02 (DL) (2-3 FT.) | T02 (ML) (2-3 FT.) | T02 (ML/DL) (2-3 FT.) | T03A* (7-8 FT.) | T04 (1-2 FT.) | T04 (RE) (1-2 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <0.013 | <0.012J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 540 | | |
| Bromomethane | <0.013 | <0.012J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 80 | | 100 |
| Vinyl Chloride | <0.013 | <0.012J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 0.36 | 0.2 | |
| Chloroethane | <0.013 | <0.012J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 540 | 1.9 | |
| Methylene Chloride | <0.006 | <0.006J | <0.029 | 0.0008J | 0.008DJ | <0.73 | <1.5 | <0.006 | 0.023J | 0.017J | 93 | 0.1 | 90 |
| Acetone | 0.36E | 0.24BJ | 0.16B | 0.03J | 0.085DJ | <1.5 | <2.9 | <0.011 | 0.022J | 0.019J | 6,000 | 0.2 | 8,000 |
| Carbon Disulfide | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 8,000 | 2.7 | 8,000 |
| 1,1-Dichloroethene | <0.006 | <0.006J | <0.029 | <0.006J | 0.01DJ | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 12 | 0.4 | 10 |
| 1,1-Dichloroethane | <0.006 | <0.006J | <0.029 | 0.057J | 0.47DJ | 0.8 | 0.91DJ | <0.006 | <0.006J | <0.006J | 8,000 | 0.2 | |
| 1,2-Dichloroethene (total) | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 800ª | | |
| Chloroform | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 110 | 0.3 | 100 |
| 1,2-Dichloroethane | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 7.7 | 0.1 | 8 |
| 2-Butanone | 0.036 | 0.045J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 4,000 | 0.3 | 4,000 |
| 1,1,1-Trichloroethane | <0.006 | <0.006J | <0.029 | 0.6EJ | 4.8DEJ | 96E | 44D | 0.004J | 0.01J | 0.02J | 7,000 | 0.8 | 7,000 |
| Carbon Tetrachloride | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 5.4 | 0.6 | 5 |
| Vinyl Acetate | <0.013 | <0.012J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 80,000 | | |
| Bromodichloromethane | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 5.4 | | 0.5 |
| 1,2-Dichloropropane | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 10 | | |
| cis-1,3-Dichloropropene | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | | | 20 (1) |
| Trichloroethene | <0.006 | <0.006J | <0.029 | 0.001J | <0.027J | <0.73 | <1.5 | 0.001J | <0.006J | 0.003J | 64 | 0.7 | 60 |
| Dibromochloromethane | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 8.3 | | |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T01 (RE) (3 FT.) | T01 (DL) (3 FT.) | T02 (2-3 FT.) | T02 (DL) (2-3 FT.) | T02 (ML) (2-3 FT.) | T02 (ML/DL) (2-3 FT.) | T03A* (7-8 FT.) | T04 (1-2 FT.) | T04 (RE) (1-2 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 120 | | 100 |
| Benzene | 0.002J | 0.003J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | 0.0006J | 24 | 0.6 | |
| trans-1,3-Dichloropropene | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | | | 20 (1) |
| Bromoform | <0.006 | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 89 | | 2,000 |
| 4-Methyl-2-Pentanone | <0.013J | <0.012J | <0.058 | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | 4,000 | 1.0 | 4,000 |
| 2-Hexanone | <0.013J | <0.012R | <0.058R | <0.012J | <0.054J | <1.5 | <2.9 | <0.011 | <0.012J | <0.012J | | | |
| Tetrachloroethene | <0.006J | <0.006J | <0.029 | 0.001J | 0.007DJ | <0.73 | <1.5 | <0.006 | <0.006J | 0.002J | 14 | 1.4 | 10 |
| 1,1,2,2-Tetrachloroethane | <0.006J | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 35 | 0.6 | 40 |
| Toluene | 0.022J | 0.034J | 0.022J | 0.21J | 0.57DJ | 4.2 | 5.3D | <0.006 | <0.006J | <0.006J | 20,000 | 1.5 | 20,000 |
| Chlorobenzene | <0.006J | <0.006J | <0.029 | <0.006J | <0.027J | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 2,000 | 1.7 | 2,000 |
| Ethylbenzene | 0.062J | 0.1J | 0.069 | 0.004J | 0.01DJ | 0.15J | 0.18DJ | <0.006 | <0.006J | <0.006J | 8,000 | 5.5 | 8,000 |
| Styrene | <0.006J | <0.006J | <0.029 | <0.006J | <0.027DJ | <0.73 | <1.5 | <0.006 | <0.006J | <0.006J | 23 | | 2,000 |
| Total Xylenes | 0.6EJ | 0.89EJ | 0.62 | 0.053J | 0.16DJ | 4.3 | 5.6D | <0.006 | <0.006J | <0.006J | 200,000 | 1.2 | 200,000 |
| TOTAL TIC | 0.011J | 1.0J | | | | | | | | | | | |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T05 (1-2 FT.) | T05 (RE) (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T09 (RE) (0-1 FT.) | T10A (7-8 FT.) | T10A (ML) (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 540 | | |
| Bromomethane | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 80 | | 100 |
| Vinyl Chloride | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 0.36 | 0.2 | |
| Chloroethane | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 540 | 1.9 | |
| Methylene Chloride | 0.013J | 0.005J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | 0.031J | <0.025 | <1.4 | 93 | 0.1 | 90 |
| Acetone | 0.046J | <0.012J | 0.071 | 0.079 | 0.1 | 0.014J | <0.011J | <0.011J | 0.046J | <2.7 | 6,000 | 0.2 | 8,000 |
| Carbon Disulfide | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 8,000 | 2.7 | 8,000 |
| 1,1-Dichloroethene | <0.006J | 0.0007J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 12 | 0.4 | 10 |
| 1,1-Dichloroethane | <0.006J | <0.006J | 0.016J | 0.016J | 0.01 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 8,000 | 0.2 | |
| 1,2-Dichloroethene (total) | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 800* | | |
| Chloroform | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 110 | 0.3 | 100 |
| 1,2-Dichloroethane | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 7.7 | 0.1 | 8 |
| 2-Butanone | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 4,000 | 0.3 | 4,000 |
| 1,1,1-Trichloroethane | 0.008J | 0.007J | 0.28 | 0.24 | 0.01 | <0.007 | 0.044J | 0.004J | <0.025 | <1.4 | 7,000 | 0.8 | 7,000 |
| Carbon Tetrachloride | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 5.4 | 0.6 | 5 |
| Vinyl Acetate | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 80,000 | | |
| Bromodichloromethane | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 5.4 | | 0.5 |
| 1,2-Dichloropropane | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 10 | | |
| cis-1,3-Dichloropropene | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 20 | | 20 (1) |
| Trichloroethene | <0.006J | <0.006J | <0.033 | <0.033 | 0.001J | <0.007 | 0.002J | 0.001J | <0.025 | <1.4 | 64 | 0.7 | 60 |
| Dibromochloromethane | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 8.3 | | |
| 1,1,2-Trichloroethane | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 120 | | 100 |
| Benzene | 0.001J | 0.002J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | 0.003J | <1.4 | 24 | 0.06 | |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T05 (1-2 FT.) | T05 (RE) (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T09 (RE) (0-1 FT.) | T10A (7-8 FT.) | T10A (ML) (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| trans-1,3-Dichloropropene | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | | | 20 (1) |
| Bromoform | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 89 | | 2,000 |
| 4-Methyl-2-Pentanone | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | 4,000 | 1.0 | 4,000 |
| 2-Hexanone | <0.012J | <0.012J | <0.066 | <0.066 | <0.014 | <0.015 | <0.011J | <0.011J | <0.05 | <2.7 | | | |
| Tetrachloroethene | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | | | |
| 1,1,2,2-Tetrachloroethane | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 14 | 1.4 | 10 |
| Toluene | 0.002J | 0.003J | <0.033 | <0.033 | <0.007 | <0.007 | 0.01J | 0.004J | 9.2E | 27 | 35 | 0.6 | 40 |
| Chlorobenzene | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | <0.025 | <1.4 | 20,000 | 1.5 | 20,000 |
| Ethylbenzene | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | <0.006J | 0.59 | 3.2 | 2,000 | 1.7 | 2,000 |
| Styrene | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007J | <0.006J | <0.006J | <0.025 | <1.4 | 8,000 | 5.5 | 8,000 |
| Total Xylenes | <0.006J | <0.006J | <0.033 | <0.033 | <0.007 | <0.007 | <0.006J | 0.025J | 5.2E | 33 | 23 | - | 2,000 |
| TOTAL TIC | | 0.007J | 2.81J | 8.45J | 0.478J | 0.011J | 1.84J | 0.025J | 0.029J | | 200,000 | 1.2 | 200,000 |

Notes:
All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
(RE) - Indicates re-extraction of sample.
(DL) - Indicates dilution.
(ML) - Indicates medium level extraction of sample.
Dup. - Indicates field duplicate sample.
Intervals referenced are in feet below ground level.
The < sign indicates the compound was analyzed for but not detected.
J - Indicates an estimated value.
B - Indicates analyte was found in associated blank as well as in sample.
E - Identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
D - Identifies all compounds identified in an analysis at a secondary dilution factor.
R - Indicates the associated value is unusable.
TIC - Indicates Tentatively Identified Compounds.
*Test pit sample T-03 (5-8.3') was broken in transit to the laboratory. A replacement sample T-03A (7-8') was submitted.
(1) - Value presented is for 1,3-Dichloropropane.
* - The soil criteria applies to cis-1,2-Dichloroethene only.
Shading indicates at least one of the following was exceeded: State criteria, cleanup objective, or federal action level.

References:
Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
TEST PIT SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T01 (RE) (3 FT.) | T01 (DL) (3 FT.) | T02 (2-3 FT.) | T03A (7-8 FT.) | T03 (5-8.5 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <0.84 | <0.84 | <42 | <1.6J | 0.64BJ | <0.82 | <0.8 | <1.6J | 50,000 | 0.03* | 50,000 |
| Bis(2-Chloroethyl)Ether | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 0.64 | | 0.6 |
| 2-Chlorophenol | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 400 | 0.8 | 400 |
| 1,3-Dichlorobenzene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | 1.6 | |
| 1,4-Dichlorobenzene | 0.051J | 0.052J | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 29 | 8.5 | |
| Benzyl Alcohol | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 20,000 | | |
| 1,2-Dichlorobenzene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 7,000 | 7.9 | |
| 2-Methylphenol | 0.29J | 0.32J | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 4,000 | 0.1* | 4,000 |
| Bis(2-Chloroisopropyl) Ether | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 100 | | |
| 4-Methylphenol | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 4,000 | 0.9 | 4,000 |
| N-Nitroso-Di-n-Propylamine | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 0.1 | | 0.1 |
| Hexachloroethane | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 80 | | 80 |
| Nitrobenzene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 40 | 0.2* | 40 |
| Isophorone | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 1,800 | | 2,000 |
| 2-Nitrophenol | <0.84 | <0.84 | <42 | <1.6J | 0.071J | <0.82 | <0.8 | <1.6J | | 0.33* | |
| 2,4-Dimethylphenol | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 2,000 | | |
| Benzoic Acid | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8J | 300,000 | | |
| Bis(2-Chloroethoxy) Methane | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | | |
| 2,4-Dichlorophenol | <0.84 | <0.84 | <42 | <1.6J | <740 | <0.82 | <0.8 | <1.6J | 200 | 0.4 | 200 |
| 1,2,4-Trichlorobenzene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 2,000 | 3.4 | 2,000 |
| Naphthalene | 57E | 58E | 110D | 0.44J | <0.74 | <0.82 | <0.8 | 1.4J | 300 | 13 | |
| 4-Chloroaniline | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | 0.22* | |
| Hexachlorobutadiene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 90 | | 90 |
| 4-Chloro-3-Methylphenol | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | 0.24* | |
| 2-Methylnaphthalene | 26E | 27E | 32DJ | 0.64J | <0.74 | <0.82 | <0.8 | 2.1J | | 36.4 | |
| Hexachlorocyclopentadiene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 600 | | 600 |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T01 (RE) (3 FT.) | T01 (DL) (3 FT.) | T02 (2-3 FT.) | T03A (7-8 FT.) | T03 (5-8.3 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4,6-Trichlorophenol | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 64 | | 40 |
| 2,4,5-Trichlorophenol | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8J | 8,000 | 0.1 | 6,000 |
| 2-Chloronaphthalene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | | |
| 2-Nitroaniline | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8J | | | |
| Dimethyl Phthalate | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | 0.43* | |
| Acenaphthylene | 3.5 | 3.6 | 2.6DJ | <1.6J | <0.74 | <0.82 | <0.8 | 0.37J | 80,000 | 2 | |
| 2,6-Dinitrotoluene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 300 | 41 | |
| 3-Nitroaniline | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8 | 1 | 1 | 1 (2) |
| Acenaphthene | 19E | 19E | 24DJ | <1.6J | <0.74 | <0.82 | <0.8 | 8.6J | | 0.5* | |
| 2,4-Dinitrophenol | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8J | 5,000 | 50 (3) | |
| 4-Nitrophenol | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8J | 200 | 0.2* | 200 |
| Dibenzofuran | 19E | 20E | 21DJ | <1.6J | <0.74 | <0.82 | <0.8 | 7.2J | | 0.1* | |
| 2,4-Dinitrotoluene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | 6.2 | |
| Diethylphthalate | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 1 | | |
| 4-Chlorophenyl-phenylether | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 60,000 | 7.1 | 60,000 |
| Fluorene | 22E | 23E | 27DJ | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 2,000 | | |
| 4-Nitroaniline | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | 9.8J | 3,000 | 50 (3) | |
| 4,6-Dinitro-2-Methylphenol | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <7.8J | | | |
| N-Nitrosodiphenylamine (1) | 0.65J | 0.52J | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <7.8J | 8 | | |
| 4-Bromophenyl-phenylether | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | 140 | | 100 |
| Hexachlorobenzene | <0.84 | <0.84 | <42 | <1.6J | <0.74 | <0.82 | <0.8 | <1.6J | | | |
| Pentachlorophenol | <4.1 | <4.1 | <200 | <7.6J | <3.6 | <4 | <3.9 | <1.6J | 0.41 | 0.41 | |
| Phenanthrene | 55E | 50E | 97D | <7.6J | <0.74 | <0.82 | <0.8 | <7.8J | 2,000 | 1* | 2,000 |
| Anthracene | 16E | 14E | 18DJ | <1.6J | <0.74 | <0.82 | <0.8 | 29EJ | | 50 (3) | |
| Di-n-Butylphthalate | 24E | 24E | 26DJ | 0.49J | <2.8 | <0.82 | <0.8 | 6.1J | 20,000 | 50 (3) | |
| Fluoranthene | 39E | 41E | 49D | 1.1J | <0.74 | <0.82 | <0.8 | <1.6J | 8,000 | 8.1 | 8,000 |
| | | | | | | | | 11J | 3,000 | 50 (3) | |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T01 (RE) (3 FT.) | T01 (DL) (3 FT.) | T02 (2-3 FT.) | T03A (7-8 FT.) | T03 (5-6.5 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pyrene | 42E | 38E | 45D | 3.9J | <0.74 | <0.82 | <0.8 | 7.5J | 2,000 | 50 (3) | |
| Butylbenzylphthalate | 16E | 14E | 12DJ | 0.26J | 3.1 | <0.82 | <0.8 | <1.6J | 20,000 | 50 (3) | 20,000 |
| 3,3'-Dichlorobenzidine | <1.7 | <1.7 | <84 | <3.1J | <1.5 | <1.6 | <1.6 | <3.2J | 1.6 | | 2 |
| Benzo(a)Anthracene | 17E | 18E | 17DJ | 1.4J | <0.74 | <0.82 | <0.8 | 2.4J | 0.22 | 0.22* | |
| Chrysene | 14E | 14E | 18DJ | 3.9J | <0.74 | <0.82 | <0.8 | 2.2J | | 0.4 | |
| Bis(2-Ethylhexyl) Phthalate | 17E | 15E | 18DJ | 0.61BJ | 0.33J | <0.82 | <0.8 | <1.6J | 50 | 50 (3) | 50 |
| Di-n-Octyl Phthalate | <0.84J | <0.84J | <42 | <1.6J | <0.74R | <0.82 | <0.8 | <1.6J | 2,000 | 50 (3) | |
| Benzo(b)Fluoranthene | 39EJ | 26EJ | 9.1DJ | 2.1J | <0.74R | <0.82 | <0.8 | 1.4J | 0.22 | 1.1 | |
| Benzo(k)Fluoranthene | 18EJ | 10J | 4.2DJ | <1.6J | <0.74R | <0.82 | <0.8 | 0.87J | 0.22 | 1.1 | |
| Benzo(a)Pyrene | 12J | 11J | 6.1DJ | 1.2J | <0.74R | <0.82 | <0.8 | 0.96J | 0.61 | 0.061* | |
| Indeno(1,2,3-cd)Pyrene | <0.84J | <0.84J | <42 | 1.2J | <0.74R | <0.82 | <0.8 | 0.63J | | 3.2 | |
| Dibenzo(a,h)Anthracene | <0.84J | <0.84J | <42 | 0.55J | <0.74R | <0.82 | <0.8 | 0.12J | 0.014 | 0.014* | |
| Benzo(g,h,i)Perylene | <0.84J | <0.84J | <42 | 3.1J | <0.74R | <0.82 | <0.8 | 0.47J | | 50 (3) | |
| TOTAL TICs | 33.65J | 55.43J | 23J | 46.17J | 16.32J | 2.74J | 0.82J | 10.15J | | | |

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TEST PIT SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T05 (DL) (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T06 Dup. (RE) (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <4J | 0.14J | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 50,000 | 0.03* | 50,000 |
| Bis(2-Chloroethyl)Ether | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 0.64 | | 0.6 |
| 2-Chlorophenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 400 | 0.8 | 400 |
| 1,3-Dichlorobenzene | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | | 1.6 | |
| 1,4-Dichlorobenzene | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 29 | 8.5 | |
| Benzyl Alcohol | <4J | <0.96 | <0.94 | <0.94 | <0.9J | <0.98J | <0.72J | <0.78J | 20,000 | | |
| 1,2-Dichlorobenzene | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 7,000 | 7.9 | |
| 2-Methylphenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 4,000 | 0.1* | 4,000 |
| Bis(2-Chloroisopropyl) Ether | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 100 | | |
| 4-Methylphenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 4,000 | 0.9 | 4,000 |
| N-Nitroso-Di-n-Propylamine | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 0.1 | | 0.1 |
| Hexachloroethane | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 80 | | 80 |
| Nitrobenzene | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 40 | 0.2* | 40 |
| Isophorone | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 1,600 | | 2,000 |
| 2-Nitrophenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | | 0.33* | |
| 2,4-Dimethylphenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 2,000 | | |
| Benzoic Acid | <19J | <4.6 | <4.5 | <4.5 | <4.4 | 0.063J | <3.5J | <3.8J | 300,000 | | |
| Bis(2-Chloroethoxy) Methane | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | | | |
| 2,4-Dichlorophenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 200 | 0.4 | 200 |
| 1,2,4-Trichlorobenzene | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 2,000 | 3.4 | 2,000 |
| Naphthalene | 1.4DJ | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | 0.84J | <0.78J | 300 | 13 | |
| 4-Chloroaniline | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | | 0.22* | |
| Hexachlorobutadiene | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 90 | | 90 |
| 4-Chloro-3-Methylphenol | <4J | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | | 0.24* | |
| 2-Methylnaphthalene | 2DJ | <0.96 | <0.94 | <0.94 | <0.9 | <0.98 | 0.52J | <0.78J | | 36.4 | |
| Hexachlorocyclopentadiene | <4J | <0.96 | <.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 600 | | 600 |
| 2,4,6-Trichlorophenol | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 64 | | 40 |
| 2,4,5-Trichlorophenol | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | 8,000 | 0.1 | 8,000 |
| 2-Chloronaphthalene | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | | | |
| 2-Nitroaniline | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | | 0.43* | |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T05 (DL) (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T06 Dup. (RE) (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimethyl Phthalate | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 80,000 | 2 | |
| Acenaphthylene | 0.35DJ | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | 0.32J | <0.78J | 300 | 41 | |
| 2,6-Dinitrotoluene | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 1 | 1 | 1 (2) |
| 3-Nitroaniline | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | | 0.5* | |
| Acenaphthene | 7.1DJ | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | 0.16J | <0.78J | 5,000 | 50 (3) | |
| 2,4-Dinitrophenol | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | 200 | 0.2* | 200 |
| 4-Nitrophenol | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | | 0.1 | |
| Dibenzofuran | 7.6DJ | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | 0.42J | <0.78J | | 6.2 | |
| 2,4-Dinitrotoluene | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 1 | | |
| Diethylphthalate | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 60,000 | 7.1 | 60,000 |
| 4-Chlorophenyl-phenylether | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 2,000 | | |
| Fluorene | 10DJ | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 3,000 | 50 (3) | |
| 4-Nitroaniline | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | | | |
| 4,6-Dinitro-2-Methylphenol | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | 8 | | |
| N-Nitrosodiphenylamine (1) | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 140 | | 100 |
| 4-Bromophenyl-phenylether | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | | | |
| Hexachlorobenzene | <4J | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | <0.72J | <0.78J | 0.41 | 0.41 | |
| Pentachlorophenol | <19J | <4.6 | <4.5 | <4.5J | <4.4 | <4.8 | <3.5J | <3.8J | 2,000 | 1* | 2,000 |
| Phenanthrene | 33DJ | 0.13J | 0.22J | 0.19J | 0.11J | <0.98 | 2.5J | <0.78J | | 50 (3) | |
| Anthracene | 6.2DJ | <0.96 | <0.94 | <0.94J | <0.9 | <0.98 | 1J | <0.78J | 20,000 | 50 (3) | |
| Di-n-Butylphthalate | <4J | <0.96 | <0.94 | <0.94J | 0.061J | <0.98 | <0.72J | <0.78J | 8,000 | 8.1 | 8,000 |
| Fluoranthene | 12DJ | <0.96 | 0.19J | 0.23J | 0.072J | <0.98 | 5.4BJ | <0.78J | 3,000 | 50 (3) | |
| Pyrene | 7.5DJ | 0.26J | 0.98J | 0.46J | 0.09J | <0.98 | 5.1BJ | <0.78J | 2,000 | 50 (3) | |
| Butylbenzylphthalate | <4J | <0.96 | <0.94J | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 20,000 | 50 (3) | 20,000 |
| 3,3'-Dichlorobenzidine | <8J | <1.9 | <1.9J | <1.9 | <1.8 | <2 | <1.4J | <1.6J | 1.6 | | 2 |
| Benzo(a)Anthracene | 2.4DJ | <0.96 | <0.94J | <0.94 | 0.076JN | <0.98 | 3BJ | <0.78J | 0.22 | 0.22* | |
| Chrysene | 2.2DJ | 0.23J | <0.94J | <0.94 | 0.15J | <0.98 | 3.3BJ | <0.78J | | 0.4 | |
| Bis(2-Ethylhexyl) Phthalate | <4DJ | <0.96 | <0.94J | <0.94 | 0.055J | <0.98 | <0.72J | <0.78J | 50 | 50 (3) | 50 |
| Di-n-Octyl Phthalate | <4J | <0.96 | <0.94R | <0.94 | <0.9 | <0.98 | <0.72J | <0.78J | 2,000 | 50 (3) | |
| Benzo(b)Fluoranthene | 1.4DJ | 0.11J | <0.94R | <0.94 | 0.092J | <0.98 | 5BJ | <0.78J | 0.22 | 1.1 | |

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TABLE 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T05 (DL) (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T06 Dup. (RE) (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(k)Fluoranthene | 0.6DJ | 0.04J | <0.94R | <0.94 | 0.041J | <0.98 | 1.7BJ | <0.78J | 0.22 | 1.1 | |
| Benzo(a)Pyrene | 0.98DJ | <0.96 | <0.94R | <0.94 | <0.9 | <0.98 | 2.4BJ | <0.78J | 0.061 | 0.061* | |
| Indeno(1,2,3-cd)Pyrene | 0.51DJ | <0.96 | <0.94R | <0.94 | <0.9 | <0.98 | 1.2BJ | <0.78J | | 3.2 | |
| Dibenzo(a,h)Anthracene | <4J | <0.96 | <0.94R | <0.94 | <0.9 | <0.98 | 0.21J | <0.78J | 0.014 | 0.014* | |
| Benzo(g,h,i)Perylene | 0.38DJ | <0.96 | <0.94R | <0.94 | <0.9 | <0.98 | 0.76BJ | <0.78J | | 50 (3) | |
| TOTAL TICs | 28.5J | 48.73J | 60.1J | 68.4J | 48.7J | 13.14J | 11.63J | 2.93J | | | |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
(RE) - indicates re-extraction of sample.
(DL) - indicates dilution.
Dup. - indicates field duplicate.
Intervals referenced are in feet below ground level.
The < sign indicates the compound was analyzed for but not detected.
E - Identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
D - Identifies all compounds identified in an analysis at a secondary dilution factor.
J - Indicates an estimated value.
B - Indicates analyte was found in associated blank as well as in the sample.
N - Presumptive evidence of the compound.
R - Indicates the associated value is unusable.
(1) - Indicates this compound cannot be separated from Diphenylamine.
(2) - Indicates this compound cannot be separated from 2,3-Dinitrotoluene.
(3) - As per proposed TAGM, Total VOCs <10 ppm, Total SVOCs <500 ppm, and Individual SVOCs <50 ppm.
*These compounds should not be detected above the TAGM or the method detection limit.
TIC - Indicates Tentatively Identified Compounds.
Shading indicates that at least one of the following was exceeded: State criteria, cleanup objective, or federal action levels.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994 -
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

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## TABLE 3
## TEST PIT SOIL ANALYTICAL RESULTS
## PESTICIDES/PCBs
## JANUARY/FEBRUARY 1991

## ROSEN SITE
## CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T02 (2-3 FT.) | T03 (5-6.3 FT.) | T03A (7-8 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | 0.11 | 0.11 | 0.1 |
| beta-BHC | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | 3.9 | 0.2 | 4 |
| delta-BHC | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | | 0.3 | |
| gamma-BHC(Lindane) | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | 5.4 | 0.06 | 0.5 |
| Heptachlor | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | 0.16 | 0.1 | 0.2 |
| Aldrin | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.028 | <0.022 | <0.024 | <0.02 | <0.019 | 0.041 | 0.041 | 0.04 |
| Heptachlor epoxide | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | 0.77 | 0.02 | 0.08 |
| Endosulfan I | <0.019 | <0.019 | <0.02 | <0.017 | <0.018 | <0.017 | <0.026 | <0.026 | <0.022 | <0.024 | <0.02 | <0.019 | | 0.9 | 4 (1) |
| Dieldrin | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | 0.044 | 0.044 | 0.04 |
| 4,4'-DDE | <0.039 | 0.016J | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | 2.1 | 2.1 | 2 (3) |
| Endrin | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | 200 | 0.1 | 20 |
| Endosulfan II | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | | 0.9 | 4 (1) |
| 4,4'-DDD | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | 2.9 | 2.9 | 3 (4) |
| Endosulfan sulfate | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | | 1.0 | |
| 4,4'-DDT | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | 2.1 | 2.1 | 2 (5) |
| Methoxychlor | <0.19 | 0.066J | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.19 | 80 | 10.0 (6) | |
| Endrin ketone | <0.039 | <0.037 | <0.04 | <0.034 | <0.037 | <0.035 | <0.052 | <0.051 | <0.044 | <0.048 | <0.039 | <0.038 | | | |
| alpha-chlordane | <0.19 | <0.19 | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.019 | | | 0.5 (2) |
| gamma-chlordane | <0.19 | <0.19 | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.019 | | 0.54 | 0.5 (2) |
| Toxaphene | <0.39 | <0.37 | <0.4 | <0.34 | <0.37 | <0.35 | <0.52 | <0.51 | <0.44 | <0.48 | <0.39 | <0.38 | 0.64 | | 0.6 |

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TABLE 3. (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
PESTICIDES/PCBs
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T02 (2-3 FT.) | T03 (5-8.3 FT.) | T03A (7-8 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | T06 (4-5 FT.) | T06 Dup. (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.19 | <0.19 | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1221 | <0.19 | <0.19 | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1232 | <0.19 | <0.19 | <0.2 | <[illegible] | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1242 | <0.19 | <0.19 | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1248 | <0.19 | <0.19 | <0.2 | <0.17 | <0.18 | <0.17 | <0.26 | <0.26 | <0.22 | <0.24 | <0.2 | <0.19 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1254 | <0.39 | <0.37 | <0.4 | <0.34 | <0.37 | <0.35 | <0.52 | <0.51 | <0.44 | <0.48 | <0.39 | <0.38 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1260 | 0.61 | <0.37 | <0.4 | <0.34 | <0.37 | <0.35 | <0.52 | <0.51 | <0.44 | <0.48 | <0.39 | <0.38 | 1* | 1*, 10* (7) | 0.09 |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Dup. - Indicates field duplicate.
Intervals referenced are in feet below ground level.
The < sign indicates the compound was analyzed for but not detected.
J - Indicates an estimated value.
* - Indicates the sum of Aroclor (PCB) compounds.
(1) - Value presented is for Endosulfan.
(2) - Value presented is for Chlordane.
(3) - Value presented is for DDE.
(4) - Value presented is for DDD.
(5) - Value presented is for DDT.
(6) - As per proposed TAGM, total pesticide <10 ppm.
(7) - 1.0 is the surface soil cleanup objective; 10.0 is the subsurface soil cleanup objective.
Shading indicates at least one of the following was exceeded: state criteria, cleaning objective, or federal action level.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 199[illegible].
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
TEST PIT SOIL ANALYTICAL RESULTS
INORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T02 (2-3 FT.) | T03 (5-8.3 FT.) | T03A (7-8 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | T06 (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Soil Cleanup | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 6,480E | 4,230E | 10,900E | 11,500EJ | 1,240E | 2,800E | 15,400EJ | 18,900E | 5,540E | 8,280EJ | 11,900E | | (*) | |
| Antimony | 5.6B | 15.2J | <0.56 | <0.57J | 11.5J | 5.2BJ | <0.82 | <0.72 | <0.75 | 1.6B | <0.59 | 30 | (*) | 30 |
| Arsenic | 24.3 | 15.25J | 8.0 | 6.1J | 57.5 | 22.9 | 5.1S | 5.6 | 4.5 | 15.0 | 9.7 | 80 | 7.5 (*) | 80 |
| Barium | 263 | 291 | 61.6 | 45.2B | 29.3 | 134 | 158 | 139 | 24.8B | 169 | 84.3 | 4,000 | 300 (*) | 4,000 |
| Beryllium | <0.62 | 0.75 | <0.56 | <0.57 | <0.58 | <0.54 | <0.82 | 0.78 | <0.74 | <0.62 | <0.58 | 0.16 | 0.16 (*) | 0.2 |
| Cadmium | <0.62 | <0.59 | <0.56 | 10.8J | <0.58 | <0.54 | <0.82 | <0.72 | <0.74 | 1.7 | <0.58 | 80 | 1 (*) | 40 |
| Calcium | 36,600E | 66,300E | 2,410E | 1,290J | 4,850E | 26,300E | 3,540E | 1,800E | 4,030E | 60,800EJ | 1,240E | | (*) | |
| Chromium | 90.4EJ | 126E | 16.6E | 19.6J | 15.8E | 68.1E | 17.5EJ | 27.9E | 6.5E | 282EJ | 23.4E | 400* | 10 (*) | 400 |
| Cobalt | 12.9 | 8.1 | 8.1 | 10.4B | 9.0 | 15.3 | 10.7 | 14.9 | <3.0 | 10.4 | 8.2 | | 30 (*) | |
| Copper | 272E | 149E | 29.4E | 22.4J | 87.8E | 168E | 22.1EJ | 33.3E | 10.6E | 700EJ | 32.9E | | 25 (*) | |
| Iron | 83,100E | 75,600E | 30,200E | 28,800EJ | 94,100E | 173,000E | 23,400EJ | 35,400E | 13,400E | 68,200EJ | 54,100E | | 2,000 (*) | |
| Lead | 1,150J | 223 | 17.0 | 17.5J | 84.4 | 379 | 29.5J | 25.8J | 23.9J | 624J | 24.8J | 250 | (*) | |
| Magnesium | 5,770E | 5,800E | 3,970E | 4,150EJ | 1,510E | 3,960E | 2,990E | 4,180E | 1,120E | 10,800EJ | 3,800E | | (*) | |
| Manganese | 1,620E | 4,660E | 558E | 801EJ | 1,070E | 4,360E | 2,020EJ | 1,070E | 53.1E | 19,100EJ | 574EJ | 20,000 | (*) | |
| Mercury | 0.33 | 0.22 | <0.09 | <0.11 | 0.28 | 0.89 | <0.14 | <0.12 | <0.13 | 0.24 | <0.11 | 20 | 0.1 | 20 |
| Nickel | 361E | 90.9EJ | 30.4EJ | 35.3J | 38.2EJ | 86.9EJ | 48.6EJ | 67.2EJ | 6.5EJ | 219EJ | 31.2E | 2,000 | 13 (*) | 2,000 |
| Potassium | 874 | 628 | 816 | 675BJ | 127B | 234B | 1,180 | 1,270 | 805 | 1,090J | 1,350 | | (*) | |
| Selenium | <0.61J | <0.59 | <0.56 | <0.57 | <0.58 | 0.54 | <0.82 | <0.72 | <0.75 | 1.0J | <0.59J | | 2 (*) | |
| Silver | <0.61 | <0.59 | <0.56 | <0.57J | <0.58 | <0.54 | <0.82 | <0.72 | <0.74 | 3.7 | <0.58 | 200 | (*) | 200 |
| Sodium | 254B | 169B | 10,900 | 122B | 106B | 121B | 191B | 128B | 91.9B | 226BJ | 96.0B | | (*) | |

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TAB!E 3 (Cont.)
TEST PIT SOIL ANALYTICAL RESULTS
INORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | T01 (3 FT.) | T02 (2-3 FT.) | T03 (5-8.3 FT.) | T03A (7-8 FT.) | T04 (1-2 FT.) | T05 (1-2 FT.) | T06 (4-5 FT.) | T07 (2-3 FT.) | T08 (10-12 FT.) | T09 (0-1 FT.) | T10A (7-8 FT.) | New York State Draft Soil Criteria | New York State TAGM Soil Cleanup | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | <0.61 | <0.59J | <0.56J | <0.57 | <0.58J | <0.54J | <0.62J | <0.72J | <0.75J | <0.62 | <0.59 | 6.0 | (*) | |
| Vanadium | 40.4 | 284 | 14.9 | 14.7 | 5.8 | 129 | 21.1 | 22.1 | 16.8 | 164J | 11.3 | 600 | 150 (*) | |
| Zinc | 1,920E | 1,510E | 77.8E | 84.7EJ | 226E | 2,230E | 114EJ | 119E | 32.2E | 2,160EJ | 86.0E | 20,000 | 20 (*) | |
| Cyanide | <1.2 | <1.2 | <1.1 | <1.1 | 1.4 | 28.4 | <1.6 | <1.4 | <1.5 | <1.2 | <1.2 | 2,000 | | 2,000 |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Intervals referenced are in feet below ground level.
E - Indicates a value estimated or not reported due to the presence of interference.
B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
S - Indicates value determined by Method of Standard Addition.
J - Indicates an estimated value.
The < sign indicates the compound was analyzed for but not detected.
*Applies to hexavelant Chromium.
(*) - New York State TAGM Recommended Soil Cleanup Objective is the value listed or the site background level.
Shading indicates at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

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TABLE 3
SUPPLEMENTAL SOURCE CHARACTERIZATION NEAR WELL W-06
SOIL ANALYTICAL RESULTS
VOLATILE ORGANICS
DECEMBER 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | TW-6A (4-6 ft.) | TW-6B (4-6 ft.) | TW-6C* (4-6 ft.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objectives | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|
| Acetone | 0.3 B | 0.027 B | 4.4 B | 8,000 | 0.2 | 8,000 |
| Benzene | <0.007 | <0.007 | <0.86 | 24 | 0.06 | |
| Bromodichloromethane | <0.007 | <0.007 | <0.86 | 5.4 | | 0.5 |
| Bromoform | <0.007 | <0.007 | <0.86 | 89 | | 2,000 |
| Bromomethane | <0.015 | <0.014 | <1.7 | 80 | | 100 |
| 2-Butanone | 0.1 | <0.014 | <1.7 | 4,000 | 0.3 | 4,000 |
| Carbon Disulfide | 0.003 J | <0.007 | <0.86 | 8,000 | 2.7 | 8,000 |
| Carbon Tetrachloride | <0.007 | <0.007 | <0.86 | 5.4 | 0.6 | 5 |
| Chlorobenzene | <0.007 | <0.007 | <0.86 | 2,000 | 1.7 | 2,000 |
| Chloroethane | 0.03 | <0.014 | <1.7 | 540 | 1.9 | |
| Chloroform | <0.007 | <0.007 | <0.86 | 110 | 0.3 | 100 |
| Chloromethane | <0.015 | <0.014 | <1.7 | 540 | | |
| Dibromochloromethane | <0.007 | <0.007 | <0.86 | 8.3 | | |
| 1,1-Dichloroethane | 0.052 | <0.007 | <0.86 | 8,000 | 0.2 | |
| 1,2-Dichloroethane | <0.007 | <0.007 | <0.86 | 7.7 | 0.1 | 8 |
| 1,1-Dichloroethene | <0.007 | <0.007 | <0.86 | 12 | 0.4 | 10 |
| 1,2-Dichloroethene (Total) | <0.007 | <0.007 | <0.86 | 800[a] | | |
| 1,2-Dichloropropane | <0.007 | <0.007 | <0.86 | 10 | | |
| cis-1,3-Dichloropropene | <0.007 | <0.007 | <0.86 | 20 | | 20 (1) |
| trans-1,3-Dichloropropene | <0.007 | <0.007 | <0.86 | 20 | | 20 (1) |
| Ethylbenzene | <0.007 | <0.007 | 1.2 | 8,000 | 5.5 | 8,000 |
| 2-Hexanone | <0.015 | <0.014 | <1.7 | | | |
| Methylene Chloride | 0.032 B | 0.023 B | 11 | 93 | 0.1 | 90 |
| 4-Methyl-2-Pentanone | <0.015 | <0.014 | <1.7 | 4,000 | 1.0 | 4,000 |
| Styrene | <0.007 | <0.007 | <0.86 | 23 | | 2,000 |
| 1,1,2,2-Tetrachloroethane | <0.007 | <0.007 | <0.86 | 35 | 0.6 | 40 |
| Tetrachloroethene | <0.007 | <0.007 | <0.86 | 14 | 1.4 | 10 |
| Toluene | <0.007 | 0.006 J | 24 | 20,000 | 1.5 | 20,000 |
| 1,1,1-Trichloroethane | 0.017 | 0.003 J | <0.86 | 7,000 | 0.8 | 7,000 |
| 1,1,2-Trichloroethane | <0.007 | <0.007 | <0.86 | 120 | | 100 |
| Trichloroethene | <0.007 | <0.007 | <0.86 | 64 | 0.7 | 60 |
| Vinyl Acetate | <0.015 | <0.014 | <1.7 | 80,000 | | |
| Vinyl Chloride | <0.015 | <0.014 | <1.7 | 0.36 | 0.2 | |
| Total Xylenes | <0.007 | <0.007 | 13 | 200,000 | 1.2 | 200,000 |

**Notes:**

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are reported as mg/kg equivalent to parts per million (ppm).
Results of the analyses of soil samples have been corrected for moisture content, and are reported on a dry weight basis.
Intervals referenced are in feet below ground level.
The < sign indicates the compound was analyzed for but not detected.
* Sample TW-6C was analyzed at a medium level due to elevated levels of several target compounds.
B - Indicates the analyte was found in the associated blank as well as in the sample.
J - Indicates an estimated value.
(1) - Value presented is for 1,3-Dichloropropene.
Data has not been validated. Shading indicates State and/or Federal Standards exceeded.
[a] - The soil criteria applies to cis-1,2-Dichloroethene only.

**References:**

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December 1990.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.

TABLE 3
PERIMETER SOIL BORING ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A (14-16 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <1.3 | <0.013 | | | |
| Bromomethane | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <1.3 | <0.013 | | | |
| Vinyl Chloride | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <1.3 | <0.013 | 80 | | 100 |
| Chloroethane | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <1.3 | <0.013 | 0.36 | 0.2 | |
| Methylene Chloride | <0.54 | <0.005J | <0.005 | <0.025 | <0.027 | <0.73 | <0.006 | 540 | 1.9 | |
| Acetone | <1.1 | <0.011J | 0.009J | <0.051 | <0.048 | <1.3 | <0.013 | 93 | 0.1 | 90 |
| Carbon Disulfide | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 8,000 | 0.2 | 8,000 |
| 1,1-Dichloroethene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 8,000 | 2.7 | 8,000 |
| 1,1-Dichloroethane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 12 | 0.4 | 10 |
| 1,2-Dichloroethene (total) | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 8,000 | 0.2 | |
| Chloroform | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 800* | | |
| 1,2-Dichloroethane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006J | 110 | 0.3 | 100 |
| 2-Butanone | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <0.64 | <0.006 | 7.7 | 0.1 | 8 |
| 1,1,1-Trichloroethane | 2.1 | <0.005J | 0.003J | <0.025 | <0.024 | <1.3 | <0.013 | 4,000 | 0.3 | 4,000 |
| Carbon Tetrachloride | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 7,000 | 0.8 | 7,000 |
| Vinyl Acetate | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <0.64 | <0.006 | 5.4 | 0.6 | 5 |
| Bromodichloromethane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <1.3 | <0.013 | 80,000 | | |
| 1,2-Dichloropropane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 5.4 | | 0.5 |
| cis-1,3-Dichloropropene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 10 | | |
| Trichloroethene | <0.54 | <0.005J | 0.0006J | <0.025 | 0.012J | <0.64 | <0.006 | 20 | | 20 (1) |
| Dibromochloromethane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 64 | 0.7 | 60 |
| 1,1,2-Trichloroethane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 8.3 | | |
| Benzene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 120 | | 100 |
| trans-1,3-Dichloropropene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 24 | 0.06 | |
| Bromoform | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 20 | | 20 (1) |
| | | | | | | | | 89 | | 2,000 |

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TABLE 3 (Cont.)
PERIMETER SOIL BORING ANALYTICAL RESULTS
VOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A (14-16 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Methyl-2-Pentanone | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <1.3 | <0.013 | 4,000 | 1.0 | 4,000 |
| 2-Hexanone | <1.1 | <0.011J | <0.01 | <0.051 | <0.048 | <1.3 | <0.013 | | | |
| Tetrachloroethene | <0.54 | <0.005J | <0.005 | <0.025 | 0.48 | 2.9 | <0.006 | 14 | 1.4 | 10 |
| 1,1,2,2-Tetrachloroethane | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 35 | 0.6 | 40 |
| Toluene | <0.54 | <0.005J | 0.001J | <0.025J | <0.024 | <0.64 | <0.006 | 20,000 | 1.5 | 20,000 |
| Chlorobenzene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 2,000 | 1.7 | 2,000 |
| Ethylbenzene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 8,000 | 5.5 | 8,000 |
| Styrene | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 23 | | 2,000 |
| Total Xylenes | <0.54 | <0.005J | <0.005 | <0.025 | <0.024 | <0.64 | <0.006 | 200,000 | 1.2 | 200,000 |
| TOTAL TIC | 16.82J | 0.009J | | 0.504J | 1.651J | 12.32J | | | | |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Dup. - indicates field duplicate.
Intervals referenced are in feet below ground level.
The < sign indicates compound was analyzed for but not detected.
J - indicates an estimated value.
R - indicates the sample result is unusable.
TIC - indicates Tentatively Identified Compounds.
(1) - value presented is for 1,3-Dichloropropene
* - the soil criteria applies to cis-1,2-Dichloroethene only.

References:

Soil criteria are based on direct human ingestion. These criteria are from NYSDEC draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

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TABLE 3
PERIMETER SOIL BORING ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A (14-16 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 50,000 | 0.03[a] | 50,000 |
| Bis(2-Chloroethyl)Ether | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.64 | | 0.6 |
| 2-Chlorophenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 400 | 0.8 | 400 |
| 1,3-Dichlorobenzene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 1.6 | |
| 1,4-Dichlorobenzene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 29 | 8.5 | |
| Benzyl Alcohol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 20,000 | | |
| 1,2-Dichlorobenzene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 7,000 | 7.9 | |
| 2-Methylphenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 4,000 | 0.1[a] | 4,000 |
| Bis(2-Chloroisopropyl) Ether | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 100 | | |
| 4-Methylphenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 4,000 | 0.9 | 4,000 |
| N-Nitroso-Di-n-Propylamine | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.1 | | 0.1 |
| Hexachloroethane | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 80 | | 80 |
| Nitrobenzene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 40 | 0.2[a] | 40 |
| Isophorone | <22 | <0.76 | <0.71 | <0.73 | <0.68 | 0.73 | <0.82 | 1,800 | | 2,000 |
| 2-Nitrophenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 0.33[a] | |
| 2,4-Dimethylphenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 2,000 | | |
| Benzoic Acid | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | 300,000 | | |
| Bis(2-Chloroethoxy) Methane | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | | |
| 2,4-Dichlorophenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 200 | 0.4 | 200 |
| 1,2,4-Trichlorobenzene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 2,000 | 3.4 | 2,000 |
| Naphthalene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 300 | 13 | |
| 4-Chloroaniline | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 0.22[a] | |
| Hexachlorobutadiene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 90 | | 90 |
| 4-Chloro-3-Methylphenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 0.24[a] | |
| 2-Methylnaphthalene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 36.4 | |
| Hexachlorocyclopentadiene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 600 | | 600 |

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TABLE 3 (Cont.)
PERIMETER SOIL BORING ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A (14-16 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4,6-Trichlorophenol | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 64 | | 40 |
| 2,4,5-Trichlorophenol | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | 8,000 | 0.1 | 8,000 |
| 2-Chloronaphthalene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | | |
| 2-Nitroaniline | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | | 0.43* | |
| Dimethyl Phthalate | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 80,000 | 2 | |
| Acenaphthylene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 300 | 41 | |
| 2,6-Dinitrotoluene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 1 | 1 | 1 (2) |
| 3-Nitroaniline | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | | 0.5* | |
| Acenaphthene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 5,000 | 50 (3) | |
| 2,4-Dinitrophenol | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | 200 | 0.2* | 200 |
| 4-Nitrophenol | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | | 0.1* | |
| Dibenzofuran | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 6.2 | |
| 2,4-Dinitrotoluene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 1 | | |
| Diethylphthalate | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 60,000 | 7.1 | 60,000 |
| 4-Chlorophenyl-phenylether | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 2,000 | | |
| Fluorene | <22 | <0.76 | <0.71 | 0.12J | <0.68 | <0.73 | <0.82 | 3,000 | 50.0 (3) | |
| 4-Nitroaniline | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | | | |
| 4,6-Dinitro-2-Methylphenol | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | 8 | | |
| N-Nitrosodiphenylamine (1) | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 140 | | 100 |
| 4-Bromophenyl-phenylether | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | | |
| Hexachlorobenzene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.41 | 0.41 | |
| Pentachlorophenol | <110 | <3.7 | <3.4 | <3.6 | <3.3 | <3.5 | <4 | 2,000 | 1* | 2,000 |
| Phenanthrene | <22 | 0.11J | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 50 (3) | |
| Anthracene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 20,000 | 50 (3) | |
| Di-n-Butylphthalate | <22 | <0.76 | <7.5 | <7.6 | <0.68J | <0.73J | <0.82J | 8,000 | 8.1 | 8,000 |
| Fluoranthene | <22 | 0.048J | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 3,000 | 50 (3) | |

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TABLE 3 (Cont.)
PERIMETER SOIL BORING ANALYTICAL RESULTS
SEMIVOLATILE ORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A (14-16 FT.) | New York State Draft Soil Criteria | New York State TAGM Cleanup Objective | RCRA Soil Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| Pyrene | <22 | 0.05J | <0.71 | <0.73 | <0.68 | <0.73 | 0.94 | 2,000 | 50 (3) | |
| Butylbenzylphthalate | <22 | <0.76 | 0.85 | 0.34J | <0.68 | 0.17J | <0.82 | 20,000 | 50 (3) | 20,000 |
| 3,3'-Dichlorobenzidine | <45 | <1.5 | <1.4 | <1.5 | <1.4 | <1.5 | <1.6 | 1.6 | | 2 |
| Benzo(a)Anthracene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.22 | 0.22* | |
| Chrysene | <22 | 0.1J | <0.71 | <0.73 | <0.68 | 0.072J | 0.14J | | 0.4 | |
| Bis(2-Ethylhexyl) Phthalate | <22 | 0.13J | 1.2 | 11 | 0.8 | 0.17J | <0.82 | 50 | 50 (3) | 50 |
| Di-n-Octyl Phthalate | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 2,000 | 50 (3) | |
| Benzo(b)Fluoranthene | <22 | 0.055J | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.22 | 1.1 | |
| Benzo(k)Fluoranthene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.22 | 1.1 | |
| Benzo(a)Pyrene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.061 | 0.061* | |
| Indeno(1,2,3-cd)Pyrene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 3.2 | - |
| Dibenz(a,h)Anthracene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | 0.014 | 0.014* | |
| Benzo(g,h,i)Perylene | <22 | <0.76 | <0.71 | <0.73 | <0.68 | <0.73 | <0.82 | | 50 (3) | |
| TOTAL TICs | 486J | 9.16J | 1.05J | 27.58J | 35.36J | 16.56J | 46.08J | | | |

Notes:
All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Dup. - Indicates field duplicate.
Intervals referenced are in feet below ground level.
The < sign indicates compound was analyzed for but not detected.
J - Indicates an estimated value.
TIC - Indicates Tentatively Identified Compounds.
* - These compounds should not be detected above the TAGM or the method detection limit.
(1) - Indicates this compound cannot be separated from Diphenylamine.
(2) - Indicates this compound cannot be separated from 2,3-Dinitrotoluene.
(3) - As per proposed TAGM, total VOCs <10 ppm, total SVOCs <5uu ,-pm, and individual SVOCs <50 ppm.
Shading indicates at least one of the following was exceeded: state criteria, cleanup objective, or federal action levels.

References:
Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guideline Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994
RCRA Soil Action levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

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TABLE 3
PERIMETER SOIL BORING ANALYTICAL RESULTS
PESTICIDES/PCBs
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13 A 14-16 FT. | New York State Draft Soil Criteria | New York State Cleanup Objective | RCRA Soil Action Level |
|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | 0.11 | 0.11 | 0.1 |
| beta-BHC | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | 3.9 | 0.2 | 4 |
| delta-BHC | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | | 0.3 | |
| gamma-BHC(Lindane) | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | 5.4 | 0.06 | 0.5 |
| Heptachlor | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | 0.16 | 0.1 | 0.2 |
| Aldrin | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | 0.041 | 0.041 | 0.04 |
| Heptachlor epoxide | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | 0.77 | 0.02 | 0.08 |
| Endosulfan I | <0.13 | <0.018 | <0.017 | <0.017 | <0.018 | <0.017 | <0.021 | | 0.9 | 4 (1) |
| Dieldrin | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | 0.044 | 0.044 | 0.04 |
| 4,4'-DDE | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | 2.1 | 2.1 | 2 (3) |
| Endrin | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | 200 | 0.1 | 20 |
| Endosulfan II | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | | 0.9 | 4 (1) |
| 4,4'-DDD | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | 2.9 | 2.9 | 3 (4) |
| Endosulfan sulfate | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | | 1.0 | |
| 4,4'-DDT | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | 2.1 | 2.1 | 2 (5) |
| Methoxychlor | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | 80 | 10 (6) | |
| Endrin ketone | <0.26 | <0.037 | <0.034 | <0.034 | <0.035 | <0.034 | <0.043 | | | |
| alpha-chlordane | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | | | 0.5 (2) |
| gamma-chlordane | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | | 0.54 | 0.5 (2) |
| Toxaphene | <2.6 | <0.37 | <0.34 | <0.34 | <0.35 | <0.34 | <0.43 | 0.64 | | 0.6 |

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TABLE 3 (Cont.)
PERIMETER SOIL BORING ANALYTICAL RESULTS
PESTICIDES/PCBs
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13 A 14-16 FT. | New York State Draft Soil Criteria | New York State Cleanup Objective | RCRA Soil Action Level |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1221 | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1232 | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1242 | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1248 | <1.3 | <0.18 | <0.17 | <0.17 | <0.18 | <0.17 | <0.21 | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1254 | 5.8 | <0.37 | <0.34 | <0.34 | 0.12J | 0.087J | 0.36J | 1* | 1*, 10* (7) | 0.09 |
| Aroclor-1260 | <2.6 | <0.37 | <0.34 | <0.34 | <0.35 | <0.34 | <0.43 | 1* | 1*, 10* (7) | 0.09 |

Notes:

All concentrations and detection levels are in mg/kg equivalent to parts per million (ppm).
Dup. - Indicates field duplicate.
Intervals referenced are in feet below ground level.
The < sign indicates compound was analyzed for but not detected.
J - Indicates an estimated value.
* - Indicates the sum of Aroclor (PCB) compounds.
(1) - value presented is for Endosulfan.
(2) - value presented is for Chlordane.
(3) - value presented is for DDE.
(4) - value presented is for DDD.
(5) - value presented is for DDT.
(6) - as per proposed TAGM, total pesticide <10 ppm.
(7) - 1.0 is the surface soil cleanup objective; 10.0 is the subsurface soil cleanup objective.
Shading indicated at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:

Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 3
PERIMETER SOIL BORING ANALYTICAL RESULTS
INORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A 14-16 FT | New York State Draft Soil Criteria | New York State TAGM Soil Cleanup | RCRA Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 8,180E | 5,250 | 4,070EJ | 7,330E | 8,180EJ | 7,930EJ | 13,800 EJ | | (*) | |
| Antimony | <1.0 | <1.2J | <1.1 | <1.1 | <1.1J | <1.1J | <1.4J | 30 | (*) | 30 |
| Arsenic | 4.4 | 9.8SJ | 1.9B | 3.8 | 3.6J | 4.4S | 10.4R | 80 | 7.5 (*) | 80 |
| Barium | 33.2B | 83.8J | 19.4B | 32.7B | 28.5B | 28.9 | 47.7B | 4,000 | 300 (*) | 4,000 |
| Beryllium | <0.52 | <0.87J | <0.54 | <0.53 | <1.1 | <1.1 | <1.4 | 0.16 | 0.16 (*) | 0.2 |
| Cadmium | 4.7 | <0.6J | 2.4 | 4.0 | <1.1J | <1.1J | <1.4J | 80 | 1 (*) | 40 |
| Calcium | 12,000 | 10,400J | 138,000 | 66,400 | 36,500J | 31,500J | 1,250BJ | | (*) | |
| Chromium | 14.7J | 102J | 7.9J | 14.6J | 13.1 | 13.2 | 19.8 | 400[a] | 10 (*) | 400 |
| Cobalt | 15.7 | 9.2BJ | 4.7B | 9.1B | 7.9B | 6.8B | 11.5B | | 30 (*) | |
| Copper | 39.1 | 36.9J | 14.8 | 19.5 | 19.8 | 20.4 | 17.1J | | 25 (*) | |
| Iron | 23,700E | 23,700 | 12,800E | 22,100E | 20,000E | 18,600E | 30,900EJ | | 2,000 (*) | |
| Lead | 11.3J | 31.6J | 8.4J | 34.2J | 13.2J | 12.0J | 17.7 | 250 | (*) | |
| Magnesium | 5,490E | 3,200EJ | 69,300E | 11,100E | 8,950E | 8,600E | 4,450EJ | | (*) | |
| Manganese | 437E | 1,880 | 494E | 818E | 643EJ | 645EJ | 968EJ | 20,000 | (*) | |
| Mercury | <0.01 | <0.1 | <0.1 | <0.09 | <0.1J | 0.35J | <0.13 | 20 | 0.1 | 20 |
| Nickel | 32.2 | 41.3J | 10.3 | 31.2 | 23.3J | 26.7J | 37.2J | 2,000 | 13 (*) | 2,000 |
| Potassium | 726B | 411B | 549B | 798B | 668B | 723B | 780B | | (*) | |
| Selenium | <1.0 | <1.2 | <1.1 | <1.1 | <1.1 | <1.1 | <1.4 | | 2 (*) | |
| Silver | <0.52 | <1.2J | <0.54 | <0.53 | <1.1J | <1.1J | <1.4J | 200 | (*) | 200 |

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TABLE 3 (Cont.)
PERIMETER SOIL BORING ANALYTICAL RESULTS
INORGANICS
JANUARY/FEBRUARY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W07 (18-20 FT.) | W08 (2-4 FT.) | W10 (14-16 FT.) | W11 (14-16 FT.) | W12 (14-16 FT.) | W12 Dup. (14-16 FT.) | W13A 14-16 FT | New York State Draft Soil Criteria | New York State TAGM Soil Cleanup | RCRA Action Levels |
|---|---|---|---|---|---|---|---|---|---|---|
| Sodium | 101B | 209B | 185B | 122B | 153B | 187B | 124B | | (*) | |
| Thallium | <1.0 | <1.2J | <1.1 | <1.1 | <1.1 | <1.1 | <1.4 | 6.0 | (*) | |
| Vanadium | 15.0 | 177R | 9.0B | 15.0 | 13.4 | 13.1 | 21.8 | 600 | 150 (*) | |
| Zinc | 109E | 101J | 36.1E | 59.2E | 310EJ | 250EJ | 54.9EJ | 20,000 | 20 (*) | |
| Cyanide | 2.1 | <1.2 | 1.2 | 1.5 | <1.1 | <1.1 | <1.4 | 2,00 | | 2,000 |

Notes:

All concentrations, detection levels, draft soil criteria, action levels, and cleanup objectives are in mg/kg equivalent to parts per million (ppm).
Dup. - indicates duplicate sample.
Intervals referenced are in feet below ground level.
E - Indicates a value estimated or not reported due to the presence of interference.
The < sign indicates the compound was analyzed for but not detected.
B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
S - Indicates value determined by Method of Standard Addition.
J - Indicates an estimated value.
R - Indicates the sample result is unusable.
* - applies to hexavelant Chromium.
(*) - New York State TAGM Recommended Soil Cleanup Objective is the value listed or the site background level.
Shading indicates that at least one of the following was exceeded: state criteria, cleanup objective, or federal action level.

References:
Soil criteria are based on direct human ingestion. These criteria are from the NYSDEC Draft Cleanup Policy and Guidelines Document, October, 1991, derived from the HEAST Report current through December, 1990.
New York State TAGM Recommended Soil Cleanup Objectives are from the NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 1994.
RCRA Soil Action Levels are from the Federal Register, Vol. 55, No. 145, July 27, 1990.

TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
VOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-01 | W-02 | W-02DL | W-03 | W-04 | W-05 | W-06 | W-06DL | W-07 | W-07DL | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 5 | |
| Bromomethane | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 5 | |
| Vinyl Chloride | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 2 | 2/0 (G) |
| Chloroethane | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 5 | |
| Methylene Chloride | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 5/0 (G) |
| Acetone | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 50 (G) | |
| Carbon Disulfide | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | | |
| 1,1-Dichloroethene | <1 | 3 | 2DJ | <1 | <1 | <1 | 8J | <100 | <1 | <10 | 5 | 7/7 (G) |
| 1,1-Dichloroethane | 2 | 37 | 28D | 2 | <1 | <1 | 420E | 430D | 6 | 15D | 5 | |
| 1,2-Dichloroethene (total) | <1 | 0.1J | <10 | <1 | <1 | <1 | 56 | <100 | <1 | <10 | 5[a] | 70/100[b] |
| Chloroform | <1 | 0.04J | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 7 | 100[c]/100 (G) |
| 1,2-Dichloroethane | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 5/0 (G) |
| 2-Butanone | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 50 (G) | |
| 1,1,1-Trichloroethane | 19 | 180E | 120D | 4 | <1 | 4 | 2800E | 3400D | 70E | 140D | 5 | 200/200 (G) |
| Carbon Tetrachloride | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 5/0 (G) |
| Vinyl Acetate | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | | |
| Bromodichloromethane | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 50(G) | 100[c]/0 (G) |
| 1,2-Dichloropropane | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 5/0 (G) |
| cis-1,3-Dichloropropene | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | |
| Trichloroethene | 0.2J | 0.5J | <10 | 0.3J | <1 | 1 | 45 | 42DJ | <1 | 1DJ | 5 | 5/0 (G) |
| Dibromochloromethane | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 50(G) | |
| 1,1,2-Trichloroethane | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 5/3(G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
VOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-01 | W-02 | W-02DL | W-03 | W-04 | W-05 | W-06 | W-06DL | W-07 | W-07DL | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 0.7 | 5/0 (G) |
| trans-1,3-Dichloropropene | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | |
| Bromoform | 0.1J | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 50(G) | 100°/0 (G) |
| 4-Methyl-2-Pentanone | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | | |
| 2-Hexanone | <2 | <2 | <20 | <2 | <2 | <2 | <20 | <200 | <2 | <20 | 50(G) | |
| Tetrachloroethene | <1 | <1 | <10 | 4 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 5/0 (G) |
| 1,1,2,2-Tetrachloroethane | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | |
| Toluene | <1 | <1 | <10 | <1 | <1 | <1 | 2J | <100 | <1 | <10 | 5 | 1,000/1,000(G) |
| Chlorobenzene | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 100/100 (G) |
| Ethylbenzene | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 700/700 (G) |
| Styrene | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5 | 100/100 (G) |
| Total Xylenes | <1 | <1 | <10 | <1 | <1 | <1 | <10 | <100 | <1 | <10 | 5[d] | 10,000/10,000 (G) |
| TOTAL TIC | | | | | | | | | | | | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
VOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-08 | W-08 dup. | W-09 | W-09 dup. | W-10 | W-11 | W-11DL | W-12 | W-12DL | W-13 | W-14 | New York State Standard/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 5 | |
| Bromomethane | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 5 | |
| Vinyl Chloride | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 2 | 2/0 (G) |
| Chloroethane | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 5 | |
| Methylene Chloride | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 5/0.0(G) |
| Acetone | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 50 (G) | |
| Carbon Disulfide | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | | |
| 1,1-Dichloroethene | 0.1J | <1 | <1 | <1 | 0.6J | 13 | 13D | 5 | 4DJ | <1 | <1 | 5 | 7/7 (G) |
| 1,1-Dichloroethane | 3 | 3 | <1 | <1 | 10 | 100 | 98D | 29 | 26D | <1 | <1 | 5 | |
| 1,2-Dichloroethene (total) | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5[a] | 70/100[b] |
| Chloroform | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 7 | 100[c]/100 (G) |
| 1,2-Dichloroethane | <1 | <1 | <1 | <1 | <2 | 0.7J | <10 | 0.4J | <10 | <1 | <1 | 5 | 5/0 (G) |
| 2-Butanone | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 50 (G) | |
| 1,1,1-Trichloroethane | 20 | 19 | <1 | <1 | 73 | 260E | 270D | 200E | 140D | 4 | 4 | 5 | 200/200 (G) |
| Carbon Tetrachloride | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 5/0 (G) |
| Vinyl Acetate | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | | |
| Bromodichloromethane | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 50(G) | 100[c]/0 (G) |
| 1,2-Dichloropropane | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 5/0 (G) |
| cis-1,3-Dichloropropene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | |
| Trichloroethene | 0.03J | <1 | <1 | <1 | 0.7J | <5 | 0.4DJ | 11 | 8DJ | <1 | <1 | 5 | 5/0 (G) |
| Dibromochloromethane | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 50(G) | |
| 1,1,2-Trichloroethane | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 5/3(G) |
| Benzene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 0.7 | 5/0 (G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
VOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-08 | W-08 dup. | W-09 | W-09 dup. | W-10 | W-11 | W-11DL | W-12 | W-12DL | W-13 | W-14 | New York State Standard/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| trans-1,3-Dichloropropene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | |
| Bromoform | <1 | <1 | 0.1J | <1 | <2 | <5 | <10 | 0.2J | <10 | <1 | <1 | 50(G) | 100[c]/0 (G) |
| 4-Methyl-2-Pentanone | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 50 | |
| 2-Hexanone | <2 | <2 | <2 | <2 | <4 | <10 | <20 | <2 | <20 | <2 | <2 | 50(G) | |
| Tetrachloroethene | <1 | <1 | <1 | <1 | 0.1J | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 5/0 (G) |
| 1,1,2,2-Tetrachloroethane | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | |
| Toluene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 1,000/1,000 (G) |
| Chlorobenzene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 100/100 (G) |
| Ethylbenzene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 700/700 (G) |
| Styrene | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 100/100 (G) |
| Total Xylenes | <1 | <1 | <1 | <1 | <2 | <5 | <10 | <1 | <10 | <1 | <1 | 5 | 10,000/10,000(G) |
| TOTAL TIC | 5J | | 4J | 8J | | | | | 167J | 4J | | | |

Notes:

All concentrations and detection levels are reported as ug/L equivalent to parts per billion (ppb).
DL - indicates dilution.
Dup. - indicates field duplicate.
J - indicates an estimated value.
B - indicates the analyte was found in the associated blank as well as in the sample.
D - identifies all compounds identified in an analysis at a secondary dilution factor.
E - identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
The < sign indicates the compound was analyzed for but not detected.
TIC - indicates Tentatively Identified Compounds.
[a] - The standard value of 5 ug/L applies to each isomer individually.
[b] - The MCL of 70 ug/L applies to the cis-isomer; the MCL of 100 ug/L applies to the trans-isomer.
[c] - Applies to the total of trihalomethanes.
Bold indicates NYSDEC standards exceeded; shading indicates federal MCLs exceeded.

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels] and MCLGs [Maximum Contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
SEMIVOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W01 | W02 | W03 | W04 | W05 | W06 | W07 | W08 | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| Bis(2-Chloroethyl)Ether | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1.0 | |
| 2-Chlorophenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| 1,3-Dichlorobenzene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| 1,4-Dichlorobenzene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 4.7 | 750/750 (G) |
| Benzyl Alcohol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| 1,2-Dichlorobenzene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 4.7 | 600/600 (G) |
| 2-Methylphenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| Bis(2-Chloroisopropyl)Ether | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| 4-Methylphenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| N-Nitroso-di-n-Propylamine | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| Hexachloroethane | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| Nitrobenzene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| Isophorone | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| 2-Nitrophenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| 2,4-Dimethylphenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| Benzoic Acid | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | | |
| Bis(2-Chloroethoxy)Methane | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| 2,4-Dichlorophenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| 1,2,4-Trichlorobenzene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | 70/70(G) |
| Naphthalene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 10(G) | |
| 4-Chloroaniline | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| Hexachlorobutadiene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| 4-Chloro-3-Methylphenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |
| 2-Methylnaphthalene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| Hexachlorocyclopentadiene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | 50/50(G) |
| 2,4,6-Trichlorophenol | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 1[a] | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
SEMIVOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W01 | W02 | W03 | W04 | W05 | W06 | W07 | W08 | New York State Standards/ Guidance Values | MCLSs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4,5-Trichlorophenol | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 1* | |
| 2-Chloronaphthalene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 10(G) | |
| 2-Nitroaniline | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 5 | |
| Dimethyl Phthalate | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| Acenaphthylene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| 2,6-Dinitrotoluene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| 3-Nitroaniline | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 5 | |
| Acenaphthene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 20(G) | |
| 2,4-Dinitrophenol | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 1* | |
| 4-Nitrophenol | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 1* | |
| Dibenzofuran | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| 2,4-Dinitrotoluene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 5 | |
| Diethylphthalate | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| 4-Chlorophenyl-phenylether | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| Fluorene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| 4-Nitroaniline | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 5 | |
| 4,6-Dinitro-2-methylphenol | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 1* | |
| N-Nitrosodiphenylamine (1) | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| 4-Bromophenyl-phenylether | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| Hexachlorobenzene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 0.35 | 1/0.0(G) |
| Pentachlorophenol | <50 | <62 | <50 | <62 | <56 | <56 | <52 | <50 | 1* | 1/0 (G) |
| Phenanthrene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| Anthracene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| Di-n-Butylphthalate | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50 | |
| Fluoranthene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| Pyrene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
SEMIVOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W01 | W02 | W03 | W04 | W05 | W06 | W07 | W08 | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| Butylbenzylphthalate | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | 100/0 (G) |
| 3,3'-Dichlorobenzidine | <20 | <25 | <20 | <25 | <22 | <22 | <21 | <20 | 5 | |
| Benzo(a)Anthracene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 0.002(G) | 0.1/0 (G) |
| Chrysene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 0.002(G) | 0.2/0 (G) |
| Bis(2-Ethylhexyl)Phthalate | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50 | 6/0.0(G) |
| Di-n-Octyl Phthalate | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 50(G) | |
| Benzo(b)Fluoranthene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 0.002(G) | 0.2/0 (G) |
| Benzo(k)Fluoranthene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 0.002(G) | 0.2/0 (G) |
| Benzo(a)Pyrene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | ND | 0.2/0 (G) |
| Indeno(1,2,3-cd)Pyrene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | 0.002(G) | 0.4/0 (G) |
| Dibenz(a,h)Anthracene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | 0.3/0 (G) |
| Benzo(g,h,i)Perylene | <10 | <12 | <10 | <12 | <11 | <11 | <10 | <10 | | |
| TOTAL TIC | | | | | | | 21J | | | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
SEMIVOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W08 dup. | W09 | W09 dup. | W10 | W11 | W12 | W13 | W14 | New York State Standards/ Guidance Values | MCLSs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| Bis(2-Chloroethyl)Ether | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1.0 | |
| 2-Chlorophenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 4.7 | 750/750 (G) |
| Benzyl Alcohol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 4.7 | 600/600 (G) |
| 2-Methylphenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| Bis(2-Chloroisopropyl)Ether | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| 4-Methylphenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| N-Nitroso-di-n-Propylamine | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| Hexachloroethane | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| Nitrobenzene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| Isophorone | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| 2-Nitrophenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| 2,4-Dimethylphenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| Benzoic Acid | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | | |
| Bis(2-Chloroethoxy)Methane | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| 2,4-Dichlorophenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| 1,2,4-Trichlorobenzene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | 70/70(G) |
| Naphthalene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 10(G) | |
| 4-Chloroaniline | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| Hexachlorobutadiene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| 4-Chloro-3-Methylphenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |
| 2-Methylnaphthalene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | 50/50 (G) |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 1[a] | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
SEMIVOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W08 dup. | W09 | W09 dup. | W10 | W11 | W12 | W13 | W14 | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4,5-Trichlorophenol | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | $1^a$ | |
| 2-Chloronaphthalene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 10(G) | |
| 2-Nitroaniline | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | 5 | |
| Dimethyl Phthalate | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| Acenaphthylene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| 2,6-Dinitrotoluene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| 3-Nitroaniline | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | 5 | |
| Acenaphthene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 20(G) | |
| 2,4-Dinitrophenol | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | $1^a$ | |
| 4-Nitrophenol | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | $1^a$ | |
| Dibenzofuran | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 5 | |
| Diethylphthalate | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| 4-Chlorophenyl-phenylether | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| Fluorene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| 4-Nitroaniline | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | 5 | |
| 4,6-Dinitro-2-methylphenol | <50 | <50 | <50 | <62 | <62 | <56 | <62 | <62 | $1^a$ | |
| N-Nitrosodiphenylamine (1) | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| 4-Bromophenyl-phenylether | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| Hexachlorobenzene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 0.35 | 1/0.0(G) |
| Pentachlorophenol | <50 | <50 | R | <62 | <62 | <56 | <62 | <62 | $1^a$ | 1/0 (G) |
| Phenanthrene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| Anthracene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| Di-n-Butylphthalate | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50 | |
| Fluoranthene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| Pyrene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| Butylbenzylphthalate | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | 100/0 (G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
SEMIVOLATILE ORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W08 dup. | W09 | W09 dup. | W10 | W11 | W12 | W13 | W14 | New York State Standards/ Guidance Values | MCLSs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,3'-Dichlorobenzidine | <20 | <20 | <20 | <25 | <25 | <22 | <25 | <25 | 5 | |
| Benzo(a)Anthracene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 0.002(G) | 0.1/0 (G) |
| Chrysene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 0.002(G) | 0.2/0 (G) |
| Bis(2-Ethylhexyl)Phthalate | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50 | 6/0.0(G) |
| Di-n-Octyl Phthalate | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 50(G) | |
| Benzo(b)Fluoranthene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 0.002(G) | 0.2/0 (G) |
| Benzo(k)Fluoranthene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 0.002(G) | 0.2/0 (G) |
| Benzo(a)Pyrene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | ND | 0.2/0 (G) |
| Indeno(1,2,3-cd)Pyrene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | 0.002(G) | 0.4/0 (G) |
| Dibenz(a,h)Anthracene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | 0.3/0 (G) |
| Benzo(g,h,i)Perylene | <10 | <10 | <10 | <12 | <12 | <11 | <12 | <12 | | |
| TOTAL TIC | | | | | | 7J | | | | |

Notes:

All concentrations, detection levels, standards, guidance values, MCLs/MCLGs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
(1) - This compound cannot be separated from Diphenylamine.
*The standard value of 1 ug/L applies to the maximum limit for the sum of all phenolic compound concentrations.
TIC - Indicates Tentatively Identified Compounds.
J - Indicates and estimated value.
R - Indicates the associated value is unusable.
ND - Non-Detectable

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels] and MCLGs [Maximum contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

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TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
PESTICIDES/PCBs
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W01 | W02 | W03 | W04 | W05 | W06 | W07 | W08 | New York State Standards/Guidance Values | MCLs/ MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | | |
| beta-BHC | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | |
| delta-BHC | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | |
| gamma-BHC(Lindane) | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | |
| Heptachlor | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | 0.2/0.2 (G) |
| Aldrin | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | 0.4/0 (G) |
| Heptachlor epoxide | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | |
| Endosulfan I | <0.052 | <0.050 | <0.054 | <0.050 | <0.056 | <0.052 | <0.056 | <0.052 | ND | 0.2/0 (G) |
| Dieldrin | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.056 | <0.052 | | |
| 4,4'-DDE | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | ND | |
| Endrin | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | ND | |
| Endosulfan II | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | ND | 2/2(G) |
| 4,4'-DDD | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | | |
| Endosulfan sulfate | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | ND | |
| 4,4'-DDT | <0.10 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | <0.11 | <0.10 | | |
| Methoxychlor | <0.52 | <0.50 | <0.54 | <0.50 | <0.11 | <0.10 | <0.11 | <0.10 | ND | |
| Endrin ketone | <0.10 | <0.10 | <0.11 | <0.10 | <0.56 | <0.52 | <0.56 | <0.52 | 35 | 40/40 (G) |
| alpha-chlordane | <0.52 | <0.50 | <0.54 | <0.50 | <0.11 | <0.10 | <0.11 | <0.10 | 5 | |
| gamma-chlordane | <0.52 | <0.50 | <0.54 | <0.50 | <0.56 | <0.52 | <0.56 | <0.52 | 0.1[a] | 2/0 (G)[a] |
| Toxaphene | <1.0 | <1.0 | <1.1 | <1.0 | <0.56 | <0.52 | <0.56 | <0.52 | 0.1[a] | 2/0 (G)[a] |
| Aroclor-1016 | <0.52 | <0.50 | <0.54 | <0.50 | <1.1 | <1.0 | <1.1 | <1.0 | ND | 3/0 (G) |
| Aroclor-1221 | <0.52 | <0.50 | <0.54 | <0.50 | <0.56 | <0.52 | <0.56 | <0.52 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1232 | <0.52 | <0.50 | <0.54 | <0.50 | <0.56 | <0.52 | <0.56 | <0.52 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1242 | <0.52 | <0.50 | <0.54 | <0.50 | <0.56 | <0.52 | <0.56 | <0.52 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1248 | <0.52 | <0.50 | <0.54 | <0.50 | <0.56 | <0.52 | <0.56 | <0.52 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1254 | <1.0 | <1.0 | <1.1 | <1.0 | <1.1 | <1.0 | 11 | <0.52 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1260 | <1.0 | <1.0 | <1.1 | <1.0 | <1.1 | <1.0 | <1.1 | <1.0 | 0.1[b] | 0.5/0 (G)[b] |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
PESTICIDES/PCBs
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W08 dup. | W09 | W09 dup. | W10 | W11 | W12 | W13 | W14 | New York State Standards/Guidance Values | MCLs/ MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | |
| beta-BHC | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | |
| delta-BHC | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | |
| gamma-BHC(Lindane) | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | 0.2/0.2 (G) |
| Heptachlor | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | 0.4/0 (G) |
| Aldrin | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | |
| Heptachlor epoxide | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | ND | 0.2/0 (G) |
| Endosulfan I | <0.056 | <0.050 | <0.050 | <0.062 | <0.055 | <0.052 | <0.062 | <0.050 | | |
| Dieldrin | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | ND | |
| 4,4'-DDE | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | ND | |
| Endrin | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | ND | 0.2 |
| Endosulfan II | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | | |
| 4,4'-DDD | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | ND | |
| Endosulfan sulfate | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | | |
| 4,4'-DDT | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | ND | |
| Methoxychlor | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 35 | 40/40 (G) |
| Endrin ketone | <0.11 | <0.10 | <0.10 | <0.12 | <0.11 | <0.10 | <0.12 | <0.10 | 5 | |
| alpha-chlordane | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[a] | 2/0 (G)[a] |
| gamma-chlordane | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[a] | 2/0 (G)[a] |
| Toxaphene | <1.1 | <1.0 | <1.0 | <1.2 | <1.1 | <1.0 | <1.2 | <1.0 | ND | 3/0 (G) |
| Aroclor-1016 | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1221 | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1232 | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1242 | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1248 | <0.56 | <0.50 | <0.50 | <0.62 | <0.55 | <0.52 | <0.62 | <0.50 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1254 | <1.1 | <1.0 | <1.0 | <1.2 | <1.1 | <1.0 | <1.2 | <1.0 | 0.1[b] | 0.5/0 (G)[b] |
| Aroclor-1260 | <1.1 | <1.0 | <1.0 | <1.2 | <1.1 | <1.0 | <1.2 | <1.0 | 0.1[b] | 0.5/0 (G)[b] |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
PESTICIDES/PCBs
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

Notes:

All concentrations, detection levels, standard values, guidance values, and MCLs/MCLGs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
[a] The standard value and MCLs/MCLGs apply to chlordane.
[b] The standard value and MCLs/MCLGs apply to the sum of all Aroclor concentrations detected.
ND - Non-detectable concentration by the approved analytical methods referenced in section 700.3 of 6 NYCRR Parts 700-705, Water Quality Regulations.
Bold indicates NYSDEC standards exceeded; shading indicates federal MCL exceeded.

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels] and MCLGs [Maximum contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
INORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W01 | W02 | W03 | W04 | W05 | W06 | W07 | W08 | New York State Standards/Guidance Values | MCLs/MCLGs/ SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 3,010E | 10,800 | 2,260 | 2,250E | 38,600 | 15,700 | 56,100 | 2,210E | | 50 to 200 (S) |
| Antimony | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 3(G) | 6/6(G) |
| Arsenic | <5.0 | 6.0B | <5.0 | <5.0 | 18.0 | 13.0 | 116S | <5.0 | 25 | 50 |
| Barium | 38.0B | 109B | 41.5B | 45.4B | 578 | 381 | 614 | 145B | 1,000 | 2,000/2,000 (G) |
| Beryllium | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | .3(G) | 4/4(G) |
| Cadmium | <5.0J | 16.0 | <5.0 | <5.0J | 46.6 | 18.4 | 89.8 | <5.0J | 10 | 5/5 (G) |
| Calcium | 38,100E | 138,000 | 59,300 | 80,300E | 84,600 | 112,000 | 132,000 | 131,000E | | |
| Chromium | <10.0 | 17.6 | <10.0 | <10.0 | 162 | 26.7 | 168 | 20.9 | 50 | 100/100 (G) |
| Cobalt | <20.0 | <20.0 | <20.0 | <20.0 | 31.5B | 24.8B | 102 | <20.0 | | |
| Copper | 16.5B | 32.2 | 11.7B | 8.9B | 248 | 280 | 671 | 11.7B | 200 | 1000(S) |
| Iron | 6,830E | 26,800 | 4,530 | 4,670E | 88,500 | 27,400 | 177,000 | 4,760E | 300 | 300(S) |
| Lead | 15.4SJ | 62.0 | 8.0 | 9.0R | 195J | 122J | 160J | 2,700J | 25 | 15 |
| Magnesium | 7,640E | 40,600 | 11,100 | 15,200E | 30,600 | 46,500 | 51,900 | 34,300EJ | 35,000(G) | |
| Manganese | 440E | 2,960 | 1,110 | 138E | 7,580 | 2,310 | 4,370 | 561E | (500)*300 | 50(S) |
| Mercury | <0.20 | 0.32 | <0.20 | <0.20 | 1.2 | 1.3 | <0.20 | <0.20 | 2 | 2/2 (G) |
| Nickel | <20.0 | 61.2 | 30.1B | <20.0 | 180 | 77.3 | 202 | <20.0 | | 100/100(G) |
| Potassium | 2,100B | 5,480 | 2,370B | 1,290B | 9,070 | 8,680 | 11,600 | 1,940B | | |
| Selenium | <5.0J | <5.0J | <5.0J | <5.0J | <5.0J | <50.0J | <5.0J | <5.0J | 10 | 50/50 (G) |
| Silver | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | 50 | 100 (S) |
| Sodium | 13,100E | 22,900E | 21,100E | 62,700E | 31,900E | 13,300E | 21,700E | 78,000E | 20,000 | |
| Thallium | <5.0J | <5.0 | <5.0 | <5.0J | <5.0 | <5.0 | <5.0 | <5.0J | 4(G) | 2/0.5 (G) |
| Vanadium | <30.0 | <30.0 | <30.0 | <30.0 | 278 | 34.2B | 108 | <30.0 | | |
| Zinc | 64.2E | 90.9 | 311 | 27.5E | 566 | 787 | 964 | 55.3E | 300 | 5000(S) |
| Cyanide | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | 100 | 200/200 (G) |

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TABLE 4 · (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 1
INORGANICS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W08 dup. | W09 | W09 dup. | W10 | W11 | W12 | W13 | W14 | New York State Standards/Guidance Values | MCLs/MCLGs/ SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 2,210E | 158BE | 266E | 57,000EJ | 11,600E | 2,710 | 49,500E | 51.1BE | | 50 to 200 (S) |
| Antimony | <5.0 | <5.0 | <5.0 | <5.0J | <5.0 | <5.0 | <5.0 | <5.0 | 3(G) | 6/6(G) |
| Arsenic | <5.0 | <5.0 | <5.0 | 6.0BR | 6.0B | <5.0 | <5.0 | <5.0 | 25 | 50 |
| Barium | 140B | 366 | 362 | 402J | 196B | 41.8B | 370 | 45.1B | 1,000 | 2,000/2,000 (G) |
| Beryllium | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 3(G) | 4/4(G) |
| Cadmium | <5.0J | <5.0J | <5.0J | 60.2J | 16.3J | <5.0 | 55.4J | <5.0J | 10 | 5/5 (G) |
| Calcium | 129,000E | 144,000E | 141,000E | 232,000EJ | 403,000E | 230,000 | 88,700E | 108,000E | | |
| Chromium | 17.1 | <10.0 | <10.0 | 139J | 36.6 | 14.3 | 137 | <10.0 | 50 | 100/100 (G) |
| Cobalt | <20.0 | <20.0 | <20.0 | 54.0 | <20.0 | <20.0 | 32.1B | <20.0 | | |
| Copper | 10.6B | 5.6B | 5.3B | 178J | 43.9 | 15.3B | 348 | <5.0 | 200 | 1000(S) |
| Iron | 4,470E | 613E | 788E | 127,000EJ | 37,400E | 4,930 | 139,000E | 110E | 300 | 300(S) |
| Lead | 10.5SJ | 3.0R | 7.0R | 129SJ | 27.0J | 11.0 | 129SJ | 5.0R | 25 | 15 |
| Magnesium | 33,800EJ | 40,700E | 40,200E | 77,500EJ | 32,900E | 20,600 | 23,800E | 14,200E | 35,000(G) | |
| Manganese | 556E | 252E | 252E | 5,810EJ | 1,580E | 1,040 | 2,350E | 6.3BE | (500)*300 | 50(S) |
| Mercury | <0.20 | <0.20 | 0.28 | 0.24 | <0.20 | 2.3 | <0.20 | <0.20 | 2 | 2/2 (G) |
| Nickel | <20.0 | <20.0 | <20.0 | 201J | 54.8 | <20.0 | 141 | <20.0 | | 100/100(G) |
| Potassium | 1,920B | 1,620B | 1,610B | 8,710J | 3,840B | 1,960B | 8,030 | 1,170B | | |
| Selenium | <5.0J | <5.0J | <5.0J | <50.0R | <5.0J | <5.0J | <5.0J | <5.0J | 10 | 50/50 (G) |
| Silver | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | <6.0 | 50 | 100 (S) |
| Sodium | 76,800E | 93,800E | 92,400E | 20,000EJ | 23,900E | 20,600E | 30,700 | 27,200E | 20,000 | |
| Thallium | <5.0J | <5.0J | <5.0J | <5.0J | <5.0J | <5.0 | <5.0J | <5.0J | 4(G) | 2/0.5(G) |
| Vanadium | <30.0 | <30.0 | <30.0 | 99.7 | <30.0 | <30.0 | 81.8 | <30.0 | | |
| Zinc | 52.9E | 6.9BE | 12.0BE | 506EJ | 115E | 35.1 | 524E | 10.4BE | 300 | 5000(S) |
| Cyanide | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | 100 | 200/200 (G) |

Notes:

All concentrations, detection levels, standards, guidance values, and MCLs/MCGLs/SMCLs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
E - Indicates a value estimated or not reported due to the presence of interference.
S - Indicates value determined by Method of Standard Addition.
R - Indicates the associated value is unusable.
J - Indicates an estimated value.
* - Applies to the sum of iron (maximum 300 ug/L) and manganese.
**Bold** indicates NYSDEC standard or guidance value exceeded; shading indicates federal MCLs/SMCLs exceeded.

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.
MCLs [Maximum Contaminant Levels], MCLGs [Maximum contaminant Level Goals, designated by (G)] and SMCLs [Secondary Maximum Contaminant Levels, designated by (S)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

TABLE 4
GROUND-WATER ANALYTICAL RESULTS
EVENT 1
GENERAL WATER QUALITY PARAMETERS
MAY 1991

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W01 | W02 | W02 Dup. | W03 | W10 | W11 |
|---|---|---|---|---|---|---|
| Total Alkalinity | 89 | 223 | 222 | 137 | 134 | 206 |
| Biochemical Oxygen Demand | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Total Organic Carbon | <1.0 | 1.8 | 2.1 | <1.0 | 1.8 | 2.0 |
| Chemcial Oxygen Demand | 10 | 22 | 19 | 11 | 52 | 29 |
| Total Hardness | 143 | 502 | 473 | 235 | 786 | 1,320 |
| Filterable Residue (180°C) | 181 | 491 | 510 | 275 | 312 | 1,390 |
| Non-Filterable Residue (103°C) | 298 | 1,350 | 786 | 158 | 5,000 | 1,490 |
| Sulfate | 78 | 284 | 320 | 65 | 688 | 882 |
| Silicon Dioxide | 8.8 | 17 | 8.6 | 5.1 | 110 | 36 |

Notes:

All concentrations and detection levels are reported as mg/L equivalent to parts per million (ppm).
Dup. - indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.

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# TABLE 4.
## GROUND-WATER ANALYTICAL RESULTS - EVENT 2
## VOLATILE ORGANICS
## FEBRUARY 1992

## ROSEN SITE
## CORTLAND, NEW YORK

| Compound | W-01 | W-01DL | W-02 | W-02DL | W-02 dup | W-02DL dup | W-03 | W-03DL | W-04 | W-05 | W-06 | W-06DL | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | |
| Bromomethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | |
| Vinyl Chloride | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 2 | 2/0 (G) |
| Chloroethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 2 | <40 | 5 | |
| Methylene Chloride | <1 | <0.3J | <1 | <10 | <1 | <10 | <1 | <0.6J | <1 | <1 | <2 | <8DJ | 5 | 5/0.0(G) |
| Acetone | <5 | <10 | <5 | <50 | <5 | <50 | <5 | <25 | <5 | <5 | <5 | <200 | 50 (G) | |
| Carbon Disulfide | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | | |
| 1,1-Dichloroethene | 0.06J | <2 | 3 | 3DJ | 2 | 3DJ | <1 | <5 | <1 | <1 | 2 | <40 | 5 | 7/7 (G) |
| 1,1-Dichloroethane | 9 | 9D | 53E | 78D | 51E | 80D | 3 | 4DJ | <1 | 0.4J | 320E | 340D | 5 | |
| cis-1,2-Dichloroethene | <1 | <2 | <1 | <10 | <1 | <10 | 0.06J | <5 | <1 | <1 | 31 | 32DJ | | 70/70 (G) |
| trans-1,2-Dichloroethene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.06J | <40 | 5 | 100/100 (G) |
| Chloroform | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.3J | <40 | 7 | 100*/100 (G) |
| 1,2-Dichloroethane | <1 | <2 | 0.6J | <10 | 0.6J | <10 | <1 | <5 | <1 | <1 | 1 | <40 | 5 | 5/0 (G) |
| 2-Butanone | <5 | <10 | <5 | <50 | <5 | <50 | <5 | <25 | <5 | <5 | <5 | <200 | 50 (G) | |
| 1,1,1-Trichloroethane | 42E | 40D | 150E | 190D | 150E | 200D | 8 | 7D | <1 | 7 | 480E | 1,100D | 5 | 200/200 (G) |
| Carbon Tetrachloride | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | 5/0 (G) |
| Vinyl Acetate | <2 | <4 | <2 | <20 | <2 | <20 | <2 | <10 | <2 | <2 | <2 | <80 | | |
| Bromodichloromethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 50(G) | 100*0 (G) |
| 1,2-Dichloropropane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.4J | <40 | 5 | 5/0 (G) |
| cis-1,3-Dichloropropene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | |
| Trichloroethene | 0.2J | 0.1DJ | 0.6J | 0.6DJ | 0.6J | 0.4DJ | 0.5J | 0.3DJ | <1 | 0.6J | 16 | 14DJ | 5 | 5/0 (G) |
| Dibromochloromethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 50(G) | |

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TABLE 4 (Cont.)
GROUND-WATER ANAYLTICAL RESULTS - EVENT 2
VOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-01 | W-01DL | W-02 | W-02DL | W-02 dup | W-02DL dup | W-03 | W-03DL | W-04 | W-05 | W-06 | W-06DL | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.3J | <40 | 5 | 5/3(G) |
| Benzene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 0.7 | 5/0 (G) |
| trans-1,3-Dichloropropene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | |
| Bromoform | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 50(G) | 100[a]/0 (G) |
| 4-Methyl-2-Pentanone | <5 | <10 | <5 | <50 | <5 | <50 | <5 | <25 | <5 | <5 | <5 | <200 | | |
| 2-Hexanone | <5 | <10 | <5 | <50 | <5 | <50 | <5 | <25 | <5 | <5 | <5 | <200 | 50(G) | |
| Tetrachloroethene | <1 | <2 | 0.1J | <10 | 0.1J | <10 | 81E | 77D | <1 | 0.08J | 0.2J | <40 | 5 | 5/0 (G) |
| 1,1,2,2-Tetrachloroethane | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | |
| Toluene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.6J | <40 | 5 | 1,000/1,000 (G) |
| Chlorobenzene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | 100/100 (G) |
| Ethylbenzene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.07J | <40 | 5 | 700/700 (G) |
| Styrene | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | <1 | <40 | 5 | 100/100 (G) |
| Total Xylenes | <1 | <2 | <1 | <10 | <1 | <10 | <1 | <5 | <1 | <1 | 0.3J | <40 | 5[b] | 10,000/10,000 (G) |
| TOTAL TIC | 1J | | | | | | 3J | | 3J | 1J | 1J | | | |

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TABLE 4 (Cont.)
GROUND-WATER ANAYLTICAL RESULTS - EVENT 2
VOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-07 | W-08 | W-08DL | W-09 | W-10 | W-10DL | W-11 | W-11DL | W-11 dup | W-11DL dup | W-12 | W-12DL | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | |
| Bromomethane | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | |
| Vinyl Chloride | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 2 | 2/0 (G) |
| Chloroethane | <1 | <1J | <4 | <1 | <1 | <10 | 0.3J | <40 | 0.3J | <40 | <1 | <5 | 5 | |
| Methylene Chloride | <2 | <0.1J | <0.8DJ | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <1J | 5 | 5/0.0(G) |
| Acetone | <5 | <5J | <20 | <5 | <5 | <50 | <5 | <200 | <5 | <200 | <5 | <25 | 50 (G) | |
| Carbon Disulfide | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | | |
| 1,1-Dichloroethene | 0.2J | 1J | 0.4DJ | <1 | 3 | 2DJ | 14 | 11DJ | 13 | 10DJ | 4 | 3DJ | 5 | 7/7 (G) |
| 1,1-Dichloroethane | 9 | 18J | 11D | <1 | 27 | 28D | 110E | 100D | 110E | 100D | 20 | 22D | 5 | |
| cis-1,2-Dichloroethene | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | | 70/70 (G) |
| trans-1,2 | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 100/100 (G) |
| Chloroform | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 7 | 100*/100 (G) |
| 1,2-Dichloroethane | <1 | <1J | <4 | <1 | <1 | <10 | 1 | <40 | 0.9J | <40 | <1 | <5 | 5 | 5/0 (G) |
| 2-Butanone | <5 | <5J | <20 | <5 | <5 | <50 | <5 | <200 | <5 | <200 | <5 | <25 | 50 (G) | |
| 1,1,1-Trichloroethane | 29 | 92EJ | 61D | <1 | 210E | 190D | 440E | 380D | 440E | 390D | 140E | 120D | 5 | 200/200 (G) |
| Carbon Tetrachloride | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 5/0 (G) |
| Vinyl Acetate | <2 | <2J | <8 | <2 | <2 | <20 | <2 | <80 | <2 | <80 | <2 | <10 | | |
| Bromodichloromethane | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 50(G) | 100*/0 (G) |
| 1,2-Dichloropropane | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 5/0 (G) |
| cis-1,3-Dichloropropene | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | |
| Trichloroethene | 0.2J | 0.2J | <4 | <1 | 1 | 0.9DJ | 0.3J | <40 | 0.3J | <40 | 24 | 19D | 5 | 5/0 (G) |
| Dibromochloromethane | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 50(G) | |

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TABLE 4 (Cont.)
GROUND-WATER ANAYLTICAL RESULTS - EVENT 2
VOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-07 | W-08 | W-08DL | W-09 | W-10 | W-10DL | W-11 | W-11DL | W-11 dup | W-11DL dup | W-12 | W-12DL | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 5/3(G) |
| Benzene | 0.7J | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 0.7 | 5/0 (G) |
| trans-1,3 | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | |
| Bromoform | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 50(G) | 100°/0 (G) |
| 4-Methyl-2-Pentanone | <5 | <5J | <20 | <5 | <5 | <50 | <5 | <200 | <5 | <200 | <5 | <25 | | |
| 2-Hexanone | <5 | <5J | <20 | <5 | <5 | <50 | <5 | <200 | <5 | <200 | <5 | <25 | 50(G) | |
| Tetrachloroethene | <1 | <1J | <4 | <1 | 0.1J | <10 | <1 | <40 | 0.01J | <40 | <1 | <5 | 5 | 5/0 (G) |
| 1,1,2,2 | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | |
| Toluene | 2 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <0.03J | <40 | <1 | <5 | 5 | 1,000/1,000(G) |
| Chlorobenzene | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 100/100 (G) |
| Ethylbenzene | 0.2J | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 700/700 (G) |
| Styrene | <1 | <1J | <4 | <1 | <1 | <10 | <1 | <40 | <1 | <40 | <1 | <5 | 5 | 100/100 (G) |
| Total Xylenes | 0.8J | <1J | <4 | <1 | <1 | <10 | <1 | <40 | 0.1J | <40 | <1 | <5 | 5[a] | 10,000/10,000 (G) |
| TOTAL TIC | 9J | 6J | | 2J | 7J | | 17J | | 16J | | 2J | 17J | | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
VOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-13 | W-14 | W-15 | W-16 | W-17 | W-17RE | W-18 | W-18 dup | W-19 | W-19DL | W-20 | W-21 | W-22 | New York State Standards/Guidance Value | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | |
| Bromomethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | |
| Vinyl Chloride | <1 | <1 | <1 | <1 | <1J | <1J | 2 | 2 | <1 | <20 | <1 | <1 | <1 | 2 | 2/0 (G) |
| Chloroethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | |
| Methylene Chloride | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 5/0.0(G) |
| Acetone | <5 | <5 | <5 | <5 | <5J | <5J | <5 | <5 | <5 | <100 | <5 | <5 | <5 | 50 (G) | |
| Carbon Disulfide | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | 1 | <1 | | |
| 1,1-Dichloroethene | <1 | <1 | <1 | <1 | <1J | <1J | 1 | 1 | 12 | 10DJ | <1 | <1 | <1 | 5 | 7/7 (G) |
| 1,1-Dichloroethane | <1 | <1 | <1 | 3 | 1J | 2J | 25 | 26 | 100E | 86D | <1 | <1 | <1 | 5 | |
| cis-1,2-Dichloroethene | <1 | <1 | <1 | <1 | 1J | 1J | 29 | 29 | 0.2J | <20 | <1 | <1 | <1 | | 70/70 (G) |
| trans-1,2 | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 100/100 (G) |
| Chloroform | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 7 | 100*/100 (G) |
| 1,2-Dichloroethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | 0.8J | <20 | <1 | <1 | <1 | 5 | 5/0 (G) |
| 2-Butanone | <5 | <5 | <5 | <5 | <5J | <5J | <5 | <5 | <5 | <100 | <5 | <5 | <5 | 50 (G) | |
| 1,1,1-Trichloroethane | 10 | 5 | <1 | 36 | 16J | 16J | 28 | 27 | 340E | 260D | <1 | <1 | <1 | 5 | 200/200 (G) |
| Carbon Tetrachloride | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 5/0 (G) |
| Vinyl Acetate | <2 | <2 | <2 | <2 | <2J | <2J | <2 | <2 | <2 | <40 | <2 | <2 | <2 | | |
| Bromodichloromethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 50(G) | 100*/0 (G) |
| 1,2-Dichloropropane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 5/0 (G) |
| cis-1,3-Dichloropropene | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | |
| Trichloroethene | <1 | <1 | <1 | 2 | 19J | 19J | 19 | 18 | 0.7J | <20 | <1 | <1 | 3 | 5 | 5/0 (G) |
| Dibromochloromethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 50(G) | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
VOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-13 | W-14 | W-15 | W-16 | W-17 | W-17RE | W-18 | W-18 dup | W-19 | W-19DL | W-20 | W-21 | W-22 | New York State Standards/Guidance Value | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 5/3(G) |
| Benzene | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 0.7 | 5/0 (G) |
| trans-1,3 | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | |
| Bromoform | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 50(G) | 100*/0 (G) |
| 4-Methyl-2-Pentanone | <5 | <5 | <5 | <5 | <5J | <5J | <5 | <5 | <5 | <100 | <5 | <5 | <5 | | |
| 2-Hexanone | <5 | <5 | <5 | <5 | <5J | <5J | <5 | <5 | <5 | <100 | <5 | <5 | <5 | 50(G) | |
| Tetrachloroethene | <1 | <1 | <1 | <1 | 2J | 2J | 0.5J | 0.5J | <1 | <20 | <1 | <1 | <1 | 5 | 5/0 (G) |
| 1,1,2,2 | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | |
| Toluene | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 1,000/1,000 |
| Chlorobenzene | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 100/100 (G) |
| Ethylbenzene | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | <1 | <1 | 5 | 700/700 (G) |
| Styrene | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | 0.7J | <1 | 5 | 100/100 (G) |
| Total Xylenes | <1 | <1 | <1 | <1 | <1J | <1J | <1 | <1 | <1 | <20 | <1 | 0.8J | <1 | 5[b] | 10,000/10,000 (G) |
| TOTAL TIC | 1J | 5J | | | | | 5J | 11J | 5J | | | | | | |

Notes:
All concentrations, detection levels, standard values, guidance values, and MCLs/MCLGs are reported as ug/L equivalent to parts per billion (ppb).
DL - Indicates dilution.
Dup - Indicates field duplicate.
J - Indicates an estimated value.
D - Identifies all compounds identified in an analysis at a secondary dilution factor.
E - Identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
The < sign indicates the compound was analyzed for but not detected.
* - Applies to the total of trihalomethanes.
b - The standard value of 5 ug/L applies to each isomer individually.
TIC - Tentatively Identified Compounds.
Bold indicates NYSDEC standards exceeded; shading indicates federal MCLs exceeded.

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.
MCLs [Maximum Contaminant Levels] and MCLGs [Maximum contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

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## TABLE 4
## GROUND-WATER ANALYTICAL RESULTS - EVENT 2
## SEMIVOLATILE ORGANICS
## FEBRUARY 1992

## ROSEN SITE
## CORTLAND, NEW YORK

| Compound | W-15 | W-16 | W-17 | W-18 | W-18 Dup. | W-19 | W-20 | W-21 | W-22 | New York State Standards/Guidance Values | MCLs/ MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| Bis(2-Chloroethyl)Ether | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1.0 | |
| 2-Chlorophenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| 1,3-Dichlorobenzene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| 1,4-Dichlorobenzene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 4.7 | 750/750 (G) |
| Benzyl Alcohol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| 1,2-Dichlorobenzene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 4.7 | 600/600 (G) |
| 2-Methylphenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| Bis(2-Chloroisopropyl)Ether | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| 4-Methylphenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| N-Nitroso-di-n-Propylamine | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| Hexachloroethane | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| Nitrobenzene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| Isophorone | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| 2-Nitrophenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| 2,4-Dimethylphenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| Benzoic Acid | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | | |
| Bis(2-Choloroethoxy)Methane | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| 2,4-Dichlorophenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| 1,2,4-Trichlorobenzene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | 70/70(G) |
| Naphthalene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 10(G) | |
| 4-Chloroaniline | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| Hexachlorobutadiene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| 4-Chloro-3-Methylphenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |
| 2-Methylnaphthalene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| Hexachlorocyclopentadiene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | 50/50 (G) |
| 2,4,6-Trichlorophenol | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 1* | |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
SEMIVOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-15 | W-16 | W-17 | W-18 | W-18 Dup. | W-19 | W-20 | W-21 | W-22 | New York State Standards/Guidance Values | MCLs/ MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4,5-Trichlorophenol | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 1* | |
| 2-Chloronaphthalene | <12 | <[illegible] | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 10(G) | |
| 2-Nitroaniline | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 5 | |
| Dimethyl Phthalate | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| Acenaphthylene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| 2,6-Dinitrotoluene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| 3-Nitroaniline | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 5 | |
| Acenaphthene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 20(G) | |
| 2,4-Dinitrophenol | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 1* | |
| 4-Nitrophenol | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 1* | |
| Dibenzofuran | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| 2,4-Dinitrotoluene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 5 | |
| Diethylphthalate | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| 4-Chlorophenyl-phenylether | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| Fluorene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| 4-Nitroaniline | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 5 | |
| 4,6-Dinitro-2-Methylphenol | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 1* | |
| N-Nitrosodiphenylamine (1) | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| 4-Bromophenyl-phenylether | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| Hexachlorobenzene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 0.35 | 1/0 (G) |
| Pentachlorophenol | <62 | <59 | <62 | <62 | <62 | <62 | <56 | <91 | <62 | 1* | 1/0 (G) |
| Phenanthrene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| Anthracene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | 50 |
| Di-n-Butylphthalate | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50 | |
| Fluoranthene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| Pyrene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |

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TABLE 4. (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
SEMIVOLATILE ORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-15 | W-16 | W-17 | W-18 | W-18 Dup. | W-19 | W-20 | W-21 | W-22 | New York State Standards/Guidance Values | MCLs/ MCLGs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Butylbenzylphthalate | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | 100/0 (G) |
| 3,3'-Dichlorobenzidine | <25 | <24 | <25 | <25 | <25 | <25 | <22 | <36 | <25 | 5 | |
| Benzo(a)Anthracene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 0.002(G) | 0.1/0 (G) |
| Chrysene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 0.002(G) | 0.2/0 (G) |
| Bis(2-Ethylhexyl)Phthalate | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50 | 6/0.0(G) |
| Di-n-Octyl Phthalate | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 50(G) | |
| Benzo(b)Fluoranthene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 0.002(G) | 0.2/0 (G) |
| Benzo(k)Fluoranthene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 0.002(G) | 0.2/0 (G) |
| Benzo(a)Pyrene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | ND | 0.2/0 (G) |
| Indeno(1,2,3-cd)Pyrene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | 0.002(G) | 0.4/0 (G) |
| Dibenz(a,h)Anthracene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | 0.3/0 (G) |
| Benzo(g,h,i)Perylene | <12 | <12 | <12 | <12 | <12 | <12 | <11 | <18 | <12 | | |
| TOTAL TIC | | | | 535J | 778J | 17J | | | | | |

Notes:

All concentrations, detection levels, standard values, guidance values, and MCLs/MCLGs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
(1) - This compound cannot be separated from Diphenylamine.
* The standard value of 1 ug/L applies to the maximum limit for the sum of all Phenolic compound concentrations.
TIC - Tentatively Identified Compounds.
ND - Non-detectable.
J - Indicates an estimated value.

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels] and MCLGs [Maximum contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

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TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
PESTICIDES/PCBs
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-01 | W-02 | W-02 Dup. | W-03 | W-04 | W-05 | W-06 | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.62 | <0.62 | <0.62 | <0.56 | <0.54 | <0.62 | <0.58 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1221 | <0.62 | <0.62 | <0.62 | <0.56 | <0.54 | <0.62 | <0.58 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1232 | <0.62 | <0.62 | <0.62 | <0.56 | <0.54 | <0.62 | <0.58 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1242 | <0.62 | <0.62 | <0.62 | <0.56 | <0.54 | <0.62 | <0.58 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1248 | <0.62 | <0.62 | <0.62 | <0.56 | <0.54 | <0.62 | <0.58 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1254 | <1.2 | <1.2 | <1.2 | <1.1 | <1.1 | <1.2 | <1.2 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1260 | <1.2 | <1.2 | <1.2 | <1.1 | <1.1 | <1.2 | <1.2 | 0.1[a] | 0.5/0 (G)[a] |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
PESTICIDES/PCBs
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-07 | W-08 | W-09 | W-10 | W-11 | W-11 Dup. | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.62 | <0.62J | <0.62 | <0.56 | <0.62 | <0.62 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1221 | <0.62 | <0.62J | <0.62 | <0.56 | <0.62 | <0.62 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1232 | <0.62 | <0.62J | <0.62 | <0.56 | <0.62 | <0.62 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1242 | <0.62 | <0.62J | <0.62 | <0.56 | <0.62 | <0.62 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1248 | <0.62 | <0.62J | <0.62 | <0.56 | <0.62 | <0.62 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1254 | 4.3 | <1.2J | <1.2 | <1.1 | <1.2 | <1.2 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1260 | <1.2 | <1.2J | <1.2 | <1.1 | <1.2 | <1.2 | 0.1[a] | 0.5/0 (G)[a] |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
PESTICIDES/PCBs
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-12 | W-13 | W-14 | W-15 | W-16 | W-17 | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.62 | <0.62 | <0.62 | <0.56 | <0.56 | <0.56 | 0.1* | 0.5/0 (G)* |
| Aroclor-1221 | <0.62 | <0.62 | <0.62 | <0.56 | <0.56 | <0.56 | 0.1* | 0.5/0 (G)* |
| Aroclor-1232 | <0.62 | <0.62 | <0.62 | <0.56 | <0.56 | <0.56 | 0.1* | 0.5/0 (G)* |
| Aroclor-1242 | <0.62 | <0.62 | <0.62 | <0.56 | <0.56 | <0.56 | 0.1* | 0.5/0 (G)* |
| Aroclor-1248 | <0.62 | <0.62 | <0.62 | <0.56 | <0.56 | <0.56 | 0.1* | 0.5/0 (G)* |
| Aroclor-1254 | <1.2 | <1.2 | <1.2 | <1.1 | <1.1 | <1.1 | 0.1* | 0.5/0 (G)* |
| Aroclor-1260 | <1.2 | <1.2 | <1.2 | <1.1 | <1.1 | <1.1 | 0.1* | 0.5/0 (G)* |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
PESTICIDES/PCBs
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-18 | W-18 Dup. | W-19 | W-20 | W-21 | W-22 | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1221 | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1232 | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1242 | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1248 | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1254 | <1.1 | <1.1 | <1.1 | <1.2 | <2.2 | <1.1 | 0.1[a] | 0.5/0 (G)[a] |
| Aroclor-1260 | <1.1 | <1.1 | <1.1 | <1.2 | <2.2 | <1.1 | 0.1[a] | 0.5/0 (G)[a] |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
PESTICIDES/PCBs
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-15 | W-16 | W-17 | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|
| alpha-BHC | <0.056 | <0.056 | <0.056 | ND | |
| beta-BHC | <0.056 | <0.056 | <0.056 | ND | |
| delta-BHC | <0.056 | <0.056 | <0.056 | ND | |
| gamma-BHC(Lindane) | <0.056 | <0.056 | <0.056 | ND | 0.2/0.2 (G) |
| Heptachlor | <0.056 | <0.056 | <0.056 | ND | 0.4/0 (G) |
| Aldrin | <0.056 | <0.056 | <0.056 | ND | |
| Heptachlor epoxide | <0.056 | <0.056 | <0.056 | ND | 0.2/0 (G) |
| Endosulfan I | <0.056 | <0.056 | <0.056 | | |
| Dieldrin | <0.11 | <0.11 | <0.11 | ND | |
| 4,4'-DDE | <0.11 | <0.11 | <0.11 | ND | |
| Endrin | <0.11 | <0.11 | <0.11 | ND | 2/2(G) |
| Endosulfan II | <0.11 | <0.11 | <0.11 | | |
| 4,4'-DDD | <0.11 | <0.11 | <0.11 | ND | |
| Endosulfan sulfate | <0.11 | <0.11 | <0.11 | | |
| 4,4'-DDT | <0.11 | <0.11 | <0.11 | ND | |
| Methoxychlor | <0.56 | <0.56 | <0.56 | 35 | 40/40 (G) |
| Endrin ketone | <0.11 | <0.11 | <0.11 | 5 | |
| alpha-chlordane | <0.56 | <0.56 | <0.56 | 0.1[b] | 2/0 (G)[b] |
| gamma-chlordane | <0.56 | <0.56 | <0.56 | 0.1[b] | 2/0 (G)[b] |
| Toxaphene | <1.1 | <1.1 | <1.1 | ND | 3/0 (G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
PESTICIDES/PCBs
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-18 | W-18 Dup. | W-19 | W-20 | W-21 | W-22 | New York State Standards/Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| alpha-BHC | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | |
| beta-BHC | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | |
| delta-BHC | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | |
| gamma-BHC(Lindane) | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | 0.2/0.2 (G) |
| Heptachlor | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | 0.4/0 (G) |
| Aldrin | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | |
| Heptachlor epoxide | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | ND | 0.2/0 (G) |
| Endosulfan I | <0.056 | <0.056 | <0.056 | <0.062 | <0.11 | <0.056 | | |
| Dieldrin | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | ND | |
| 4,4'-DDE | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | ND | |
| Endrin | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | ND | 2/2(G) |
| Endosulfan II | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | | |
| 4,4'-DDD | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | ND | |
| Endosulfan sulfate | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | | |
| 4,4'-DDT | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | ND | |
| Methoxychlor | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 35 | 40/40 (G) |
| Endrin ketone | <0.11 | <0.11 | <0.11 | <0.12 | <0.22 | <0.11 | 5 | |
| alpha-chlordane | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[b] | 2/0 (G)[b] |
| gamma-chlordane | <0.56 | <0.56 | <0.56 | <0.62 | <1.1 | <0.56 | 0.1[b] | 2/0 (G)[b] |
| Toxaphene | <1.1 | <1.1 | <1.1 | <1.2 | <2.2 | <1.1 | ND | 3/0 (G) |

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## TABLE 4 (Cont.)
## GROUND-WATER ANALYTICAL RESULTS - EVENT 2
## PESTICIDES/PCBs
## FEBRUARY 1992

## ROSEN SITE
## CORTLAND, NEW YORK

Notes:

All concentrations, detection levels, standard values, guidance values, MCLs, and MCLGs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
[a] The standard value and MCLs/MCLGs apply to the maximum limit for the sum of all Aroclor concentrations.
[b] The standard value and MCLs/MCLGs apply to chlordane.
J - Indicates and estimated value.
ND - Non-detectable concentration by the approved analytical methods referenced in section 700.3 of 6 NYCRR Parts 700-705, Water Quality Regulations.
- Did not analyze for this parameter.
Bold indicates NYSDEC standard exceeded; shading indicates federal MCL exceeded.

References:

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels] and MCLGs [Maximum contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
INORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-01 | W-02 | W-02 Dup. | Filtered W-02 | W-03 | Filtered W-03 | W-04 | W-05 | New York State Standards/Guidance Values | MCLs/MCLGs SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 85.9B | 2,670 | 3,800 | <50 | 5,950 | <50 | 5,720 | 24,300 | | 50 to 200(S) |
| Antimony | <5.0J | 59.2BJ | <50.0J | <50 | <50.0J | <50 | <5.0J | 50.8BJ | 3(G) | 6/6(G) |
| Arsenic | <5.0R | <5.0R | <5.0R | <5 | <5.0R | <5.0 | <5.0R | 8.0R | 25 | 50 |
| Barium | <30.0 | 77.2B | 75B | 47.5B | 69.4B | 34.2B | 60.5B | 274 | 1,000 | 2,000/2,000 (G) |
| Beryllium | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <10.0 | <5.0 | <5.0 | 3(G) | 4/4(G) |
| Cadmium | <1.0 | 9.3S | <1.0 | <0.30R | <1.0 | <0.30R | <1.0 | 13.3J | 10 | 5/5 (G) |
| Calcium | 54,200EJ | 160,000EJ | 158,000EJ | 150,000J | 97,100EJ | 85,600J | 80,900EJ | 62,200EJ | | |
| Chromium | 1.4B | 6.8BS | 5.9B | <1.0J | 8.8BS | <1.0J | 13.2BJ | 70.0BS | 50 | 100 |
| Cobalt | <20.0 | <20.0 | <20.0 | <40.0 | <20.0 | <40.0 | <20.0 | <20.0 | | |
| Copper | <10.0 | 15.2B | 12B | <10.0 | 14.4B | <10.0 | 13.1B | 133 | 200 | 1,000(S) |
| Iron | 89.9B | 11,500 | 15,500 | <60.0 | 9,770 | <60.0 | 9,170 | 55,800 | 300 | 300(S) |
| Lead | <3.0 | 7 | 11J | <3.0R | 8 | 4.0R | 7 | 71.0 | 25 | 15 |
| Magnesium | 9,020 | 33,600 | 33,000 | 29,300 | 19,200 | 14,200 | 14,500 | 20,500 | 35,000(G) | |
| Manganese | <5.0 | 1,860 | 1,880 | 742 | 1,490 | 354 | 303 | 3,770 | 500* 300 | 50(S) |
| Mercury | <0.20 | <0.20 | <0.20 | NA | <0.20 | NA | <0.20 | 0.21 | 2 | 2/2 (G) |
| Nickel | <20.0 | 40.8 | 43.6 | <40.0 | 35.4B | <40.0 | <20.0 | 98.0 | | 100/100(G) |
| Potassium | <5,000 | <5,000 | <5,000 | <10,000 | <5,000 | <10,000 | <5,000 | <5,000 | | |
| Selenium | <5.0R | <5.0R | <5.0R | <5.0 | <5.0R | <5.0 | <50.0R | <5.0R | 10 | 50/50 (G) |
| Silver | <10.0 | <10.0 | <10.0 | <10.0R | <10.0 | <10.0R | <10.0 | <10.0 | 50 | 100 (S) |
| Sodium | 28,000J | 24,100J | 24,000J | 26,900 | 17,800J | 20,900 | 28,500J | 14,000J | 20,000 | |
| Thallium | <7.0J | <7.0J | <7.0J | <7.0 | <7.0J | <7.0 | <7.0J | <7.0J | 4(G) | 2/0.5(G) |
| Vanadium | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | 144 | | |
| Zinc | 13B | 46.7 | 42.6 | <20.0 | 612 | 119 | 40.4 | 362 | 300 | 5,000(S) |
| Cyanide | <10.0 | <10.0 | <10.0 | NA | <10.0 | NA | <10.0 | <10.0 | 100 | 200/200(G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
INORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | Filtered W-05 | W-06 | Filtered W-06 | W-07 | Filtered W-07 | W-08 | W-09 | W-10 | New York State Standards/Guidance Values | MCLs/MCLGs SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | <50 | 67,000 | <50 | 19,900 | <50 | 862 | 1068 | 59,100 | | 50 to 200(S) |
| Antimony | <50 | <50.0J | <50 | <50.0J | <50 | <5.0J | <5.0J | 72.2J | 3(G) | 6/6(G) |
| Arsenic | <5.0 | 18.4SR | <5.0 | 36.0SR | <5.0 | <5.0R | <5.0R | 13.2SR | 25 | 50 |
| Barium | 33.2B | 516 | 53.5 | 208 | 46.7B | 205 | 341 | 418 | 1,000 | 2,000/2,000 (G) |
| Beryllium | <10.0 | <5.0 | <10.0 | <5.0 | <10.0 | <5.0 | <5.0 | <5.0 | 3(G) | 4/4(G) |
| Cadmium | <0.30R | 33.9S | <0.30R | <1.0 | <0.30R | <1.0 | <1.0 | 15.6S | 10 | 5/5 (G) |
| Calcium | 48,500J | 117,000EJ | 88,100J | 89,900EJ | 73,000J | 158,000EJ | 139,000EJ | 242,000EJ | | |
| Chromium | <1.0J | 80.0B | <1.0J | 52.0BS | <1.0J | 3.7BJ | 1.0BJ | 200B | 50 | 100 |
| Cobalt | <40.0 | 43.9B | <40.0 | <20.0 | <40.0 | <20.0 | <20.0 | 48.4B | | |
| Copper | <10.0 | 310 | 10.4B | 147 | <10.0 | 11.5B | <10.0 | 153 | 200 | 1,000(S) |
| Iron | <60.0 | 151,000 | <60.0 | 58,700 | 415 | 1,250 | 285 | 124,000 | 300 | 300(S) |
| Lead | 5.0R | 138 | 3.0R | 44.0 | <3.0R | 4.0 | <3.0 | 116S | 25 | 15 |
| Magnesium | 8,360 | 59,300 | 39,900 | 24,600 | 15,800 | 33,900 | 41,200 | 77,900 | 35,000(G) | |
| Manganese | 15.7 | 3,970 | <5.0 | 1,510 | 798 | 1,050 | 234 | 5,760 | 500* 300 | 50(S) |
| Mercury | NA | 0.34 | NA | <0.20 | NA | <0.20 | <0.20 | <0.20 | 2 | 2/2 (G) |
| Nickel | <40.0 | 210J | <40.0 | 54.5 | <40.0 | <20.0 | <20.0 | 230J | | 100/100(G) |
| Potassium | <10,000 | 11,500 | <10,000 | 5,170 | <10,000 | <5,000 | <5,000 | 8,660 | | |
| Selenium | <5.0 | <5.0R | <5.0 | <5.0R | <5.0 | <5.0R | <5.0R | <50.0R | 10 | 50/50 (G) |
| Silver | <10.0R | <10.0 | <10.0R | <10.0 | <10.0R | <10.0 | <10.0 | <10.0 | 50 | 100 (S) |
| Sodium | 16,800 | 17,400J | 24,700 | 17,200J | 19,500 | 76,500J | 99,300J | 24,700J | 20,000 | |
| Thallium | <7.0 | <7.0J | <7.0 | <7.0J | <7.00 | <7.0J | <7.0J | <7.0J | 4(G) | 2/0.5(G) |
| Vanadium | <30.0 | 117 | <30.0 | 38.3B | <30.0 | <30.0 | <30.0 | 96.9 | | |
| Zinc | <20.0 | 1,130 | <20.0 | 258 | <20.0 | 14.6B | <10.0 | 446 | 300 | 5,000(S) |
| Cyanide | NA | <10.0 | NA | <10.0 | NA | <10.0 | <10.0 | <10.0 | 100 | 200/200(G) |

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# TABLE 4 (Cont.)
## GROUND-WATER ANALYTICAL RESULTS - EVENT 2
## INORGANICS
## FEBRUARY 1992

## ROSEN SITE
## CORTLAND, NEW YORK

| Compound | Filtered W-10 | W-11 | W-11 Dup. | Filtered W-11 Dup. | W-12 | W-13 | W-14 | W-15 | New York State Standards/Guidance Values | MCLs/MCLGs SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | <50 | 11,700 | 12,300 | <50 | 1,590 | 5,250 | 182B | 2,890 | | 50 to 200(S) |
| Antimony | <50 | 101J | 108J | 101 | <50.0J | <5.0J | <5.0J | <50.0J | 3(G) | 6/6(G) |
| Arsenic | <5.0 | 10.7SR | 10.9SR | <5.0 | <5.0R | <5.0R | <5.0R | <5.0 | 25 | 50 |
| Barium | 33.5B | 155B | 171B | <30.0 | 44.9B | 320 | 47.3B | 52.1B | 1,000 | 2,000/2,000 (G) |
| Beryllium | <10.0 | <5.0 | <5.0 | <10.0 | <5.0 | <5.0 | <5.0 | <5.0 | 3(G) | 4/4(G) |
| Cadmium | <0.30R | <1.0 | <1.0 | <0.30R | <1.0 | <1.0 | <1.0 | 1.2B | 10 | 5/5 (G) |
| Calcium | 81,800J | 385,000EJ | 385,000EJ | 334,000J | 202,000EJ | 102,000EJ | 119,000EJ | 142,000 | | |
| Chromium | <1.0J | 22BS | 210S | <1.0J | 4.6BJ | 7.5B | 1.6B | 4.1BR | 50 | 100 |
| Cobalt | <40.0 | <20.0 | <20.0 | <40.0 | <20.0 | <20.0 | <20.0 | <20.0 | | |
| Copper | <10.0 | 45.6 | 57.5 | 24.5B | 14.2B | 67.0 | <10.0 | 26.1 | 200 | 1,000(S) |
| Iron | <60.0 | 35,500 | 35,900 | 6,180 | 3,020 | 1,650 | 351 | 4,520 | 300 | 300(S) |
| Lead | <3.0R | 18.0 | 20.0 | 3.0R | 10.0 | 11.0 | 7.0 | 4.0 | 25 | 15 |
| Magnesium | 12,900 | 32,500 | 35,100 | 19,000 | 25,400 | 13,100 | 16,100 | 35,200 | 35,000(G) | |
| Manganese | 160 | 1,300 | 1,350 | 896 | 902 | 918 | 7.1B | 414J | 500* 300 | 50(S) |
| Mercury | NA | <0.20 | <0.20 | NA | <0.20 | 0.39 | <0.20 | <0.20 | 2 | 2/2 (G) |
| Nickel | <40.0 | 57.2 | 47.7 | 60.9B | 23.2B | 29.6B | <20.0 | <20.0 | | 100/100(G) |
| Potassium | <10,000 | <5,000 | <5,000 | <10,000 | <5,000 | <5,000 | <5,000 | <5,000 | | |
| Selenium | <5.0 | <5.0R | <5.0R | <5.0 | <5.0R | <5.0R | <5.0R | <5.0J | 10 | 50/2 (G) |
| Silver | <10.0R | <10.0 | <10.0 | <10.0R | <10.0 | <10.0 | <10.0 | <10.0 | 50 | 100 (S) |
| Sodium | 26,500 | 31,200J | 30,400J | 32,700 | 19,800J | 30,500J | 38,500J | 28,500 | 20,000 | |
| Thallium | <7.0 | <7.0J | <7.0J | <7.0 | <7.0J | <7.0J | <7.0J | <5.0J | 4(G) | 2/0.5(G) |
| Vanadium | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | <30.0 | | |
| Zinc | <20.0 | 97.6 | 159J | <20.0 | 23 | 70.4 | 17.7B | 37.4 | 300 | 5,000(S) |
| Cyanide | NA | <10.0 | <10.0 | NA | <10.0 | <10.0 | <10.0 | <10.0 | 100 | 200/200(G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
INORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-16 | W-17 | Filtered W-17 | W-18 | W-18 Dup. | Filtered W-18 | W-19 | Filtered W-19 | New York State Standards/Guidance Values | MCLs/MCLGs SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 368 | 61,000 | 347 | 121,000 | 89,300 | <50.0 | 32,400 | 114B | | 50 to 200(S) |
| Antimony | <50.0J | 102J | <50.0 | 181J | 177J | <50.0 | 117J | 132 | 3(G) | 6/6(G) |
| Arsenic | <5.0 | 11.4 | <5.0 | 31.6S | 32.1S | <5.0 | 29.0J | <5.0 | 25 | 50 |
| Barium | 57.5B | 476 | 44.6B | 931 | 803 | 75.1B | 252 | <30.0 | 1,000 | 2,000/2,000 (G) |
| Beryllium | <5.0 | <5.0 | <10.0 | <5.0 | <5.0 | <10.0 | <5.0 | <10.0 | 3(G) | 4/4(G) |
| Cadmium | <0.20 | 1.2B | <0.30R | 1.5B | 1.3B | <0.03R | 0.50B | 0.40BR | 10 | 5/5 (G) |
| Calcium | 122,000 | 455,000 | 131,000J | 814,000 | 763,000 | 143,000J | 504,000 | 367,000J | | |
| Chromium | 13.1BR | 75.0BR | <1.0J | 220BSR | 170BR | <1.0J | 90.0BR | <1.0J | 50 | 100 |
| Cobalt | <20.0 | 41.8B | <40.0 | 76.0 | 63.1 | <40.0 | 25.4B | <40.0 | | |
| Copper | 30.2 | 154 | <10.0 | 258 | 199J | 11.5B | 83.4 | 24.6B | 200 | 1,000(S) |
| Iron | 560 | 114,000 | 652 | 191,000 | 144,000 | <60.0 | 66,700 | 303 | 300 | 300(S) |
| Lead | 3.0 | 93.5S | 3.0R | 90.0 | 170SJ | <3.0R | 32.0 | <3.0R | 25 | 15 |
| Magnesium | 22,400 | 125,000 | 18,200 | 268,000 | 230,000 | 20,100 | 69,300 | 26,400 | 35,000(G) | |
| Manganese | 66.0J | 2,600J | 60.1 | 6,500J | 5,980J | 787 | 3,810J | 2,650 | 500* 300 | 50(S) |
| Mercury | <0.20 | <0.20 | NA | <0.20 | <0.20 | NA | <0.20 | NA | 2 | 2/2 (G) |
| Nickel | <20.0 | 143 | <40.0 | 263 | 207 | <40.0 | 114 | <40.0 | | 100/100(G) |
| Potassium | <5,000 | 9,540 | <10,000 | 18,900 | 13,800 | <10,000 | 5,340 | <10,000 | | |
| Selenium | <5.0J | <5.0J | <5.0 | <50.0J | <50.0J | <5.0 | <5.0J | <5.0 | 10 | 50/50 (G) |
| Silver | <10.0 | <10.0 | <10.0R | <10.0 | <10.0 | <10.0R | <10.0 | <10.0R | 50 | 100 (S) |
| Sodium | 22,300 | 29,700 | 30,100 | 134,000 | 133,000 | 130,000 | 23,500 | 24,900 | 20,000 | |
| Thallium | <5.0J | <5.0J | <7.0 | <5.0J | <5.0J | <7.0 | <5.0J | <7.0 | 4(G) | 2/0.5(G) |
| Vanadium | <30.0 | 88.5 | <30.0 | 170 | 125 | <30.0 | 48.6B | <30.0 | | |
| Zinc | 37.8 | 834 | 36.2B | 748 | 587 | <20.0 | 225 | <20.0 | 300 | 5,000(S) |
| Cyanide | <10.0 | <10.0 | NA | <10.0 | <10.0 | NA | <10.0 | NA | 100 | 200/200(G) |

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TABLE 4 (Cont.)
GROUND-WATER ANALYTICAL RESULTS - EVENT 2
INORGANICS
FEBRUARY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | W-20 | Filtered W-20 | W-21 | Filtered W-21 | W-22 | Filtered W-22 | New York State Standards/Guidance Values | MCLs/MCLGs SMCLs |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 11,500 | <50.0 | 16,000 | 1,460 | 98,600 | <50.0 | | 50 to 200(S) |
| Antimony | 61.5J | <50.0 | <5.0 | <5.0 | 77.3J | <50.0 | 3(G) | 6/6(G) |
| Arsenic | 6.0B | <5.0 | 14.0 | <5.0 | 19.8S | <5.0 | 25 | 50 |
| Barium | 89.2B | 40.6B | 193B | 113B | 683 | 61.7B | 1,000 | 2,000/2,000 (G) |
| Beryllium | <5.0 | <10.0 | <5.0 | <5.0 | <5.0 | <10.0 | 3(G) | 4/4(G) |
| Cadmium | 0.20B | <0.30R | <5.0 | <5.0 | 1.2B | <0.30R | 10 | 5/5 (G) |
| Calcium | 177,000 | 154,000J | 111,000 | 121,000 | 265,000 | 83,600J | | |
| Chromium | 24.0BR | <1.0J | 170B | 69.0B | 250BR | <1.0J | 50 | 100 |
| Cobalt | <20.0 | <40.0 | 23.3B | <20.0 | 115 | <40.0 | | |
| Copper | 42.0 | 19.6B | 222 | 109 | 284 | <10.0 | 200 | 1,000(S) |
| Iron | 23,400 | <60.0 | 41,300 | 6,420 | 226,000 | <60.0 | 300 | 300(S) |
| Lead | 11.0 | <3.0R | 47.0 | 10.0 | 110 | 4.0R | 25 | 15 |
| Magnesium | 47,000 | 40,700 | 28,100 | 25,000 | 108,000 | 14,400 | 35,000(G) | |
| Manganese | 1,140J | 777 | 1,020 | 772 | 5,210J | 80.1 | 500* 300 | 50(S) |
| Mercury | <0.20 | NA | <0.20 | <0.20 | <0.20 | NA | 2 | 2/2 (G) |
| Nickel | 65.4 | <40.0 | 127 | 51.0 | 287 | <40.0 | | 100/100(G) |
| Potassium | 5,590 | <10,000 | 22,600 | 23,300 | 7,980 | <10,000 | | |
| Selenium | <5.0J | <5.0 | <5.0 | <5.0 | <50.0J | <5.0 | 10 | 50/50 (G) |
| Silver | <10.0 | 13.5R | <10.0 | <10.0 | <10.0 | <10.0R | 50 | 100 (S) |
| Sodium | 72,500 | 73,200 | 227,000 | 242,000 | 56,600 | 54,200 | 20,000 | |
| Thallium | <5.0J | <7.0 | <7.0 | <7.0 | <5.0J | <7.0 | 4(G) | 2/0.5(G) |
| Vanadium | <30.0 | <30.0 | 25.8B | 20.0B | 152 | <30.0 | | |
| Zinc | 79.3 | <20.0 | 206 | 91.0 | 705 | <20.0 | 300 | 5,000(S) |
| Cyanide | <10.0 | NA | <10.0 | <10.0 | <10.0 | NA | 100 | 200/200(G) |

Notes:
All concentrations, detection levels, standard values, guidance values, and MCLs/MCLGs/SMCLs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
E - Indicates a value estimated or not reported due to the presence of interference.
R - Indicates the associated value is unusable.
S - Indicates value determined by Method of Standard Addition.
J - Indicates an estimated value.
NA - did not analyze for this parameter.
* - Applies to the sum of iron (maximum 300 ug/L) and manganese.
Bold indicates NYSDEC standards or guidance value exceeded; shading indicates federal MCLs/MCLGs/SMCLs exceeded.

References:
Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels], MCLGs [Maximum contaminant Level Goals, designated by (G)] and SMCLs [Secondary Maximum Contaminant Levels, designated by (S)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

TABLE 4
GROUND-WATER ANALYTICAL RESULTS - EVENT 3
VOLATILE ORGANICS
JULY 1992

ROSEN SITE
CORTLAND, NEW YORK

| Compound | TW-1 | TW-2 | TW-2 (DL) | TW-3 | W-21 | W-22 | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| Chloromethane | 2 | 0.9J | <10 | 3 | 0.4J | <1 | 5 | |
| Bromomethane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| Vinyl Chloride | <1 | 14 | 14D | <1 | <1 | <1 | 2 | 2/0 (G) |
| Chloroethane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| Methylene Chloride | <1 | <1 | <10 | <1 | <1 | <1 | 5 | 5/0.0(G) |
| Acetone | <5 | <5 | <50 | <5 | <5 | <5 | 50 (G) | |
| Carbon Disulfide | <1 | <1 | <10 | <1 | 0.3J | <1 | | |
| 1,1-Dichloroethene | <1 | 3 | 3DJ | <1 | <1 | <1 | 5 | 7/7 (G) |
| 1,1-Dichloroethane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| cis-1,2-Dichloroethene | 0.2J | 110E | 79D | <1 | <1 | <1 | 5 | 70/70 (G) |
| trans-1,2-Dichloroethene | <1 | 14 | 11D | <1 | <1 | <1 | 5 | 100/100 (G) |
| Chloroform | <1 | <1 | <10 | <1 | <1 | <1 | 7 | 100[a]/100 (G) |
| 1,2-Dichloroethane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | 5/0 (G) |
| 2-Butanone | <5 | <5 | <50 | <5 | <5 | <5 | 50 (G) | 200/200 (G) |
| 1,1,1-Trichloroethane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | 5/0 (G) |
| Carbon Tetrachloride | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| Vinyl Acetate | <2 | <2 | <20 | <2 | <2 | <2 | | |
| Bromodichloromethane | <1 | <1 | <10 | <1 | <1 | <1 | 50(G) | 100[a]/0 (G) |
| 1,2-Dichloropropane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | 5/0 (G) |
| cis-1,3-Dichloropropene | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| Trichloroethene | 0.3J | 220E | 180D | <1 | <1 | 3 | 5 | 5/0 (G) |
| Dibromochloromethane | 0.2J | <1 | <10 | <1 | <1 | <1 | 50(G) | |
| 1,1,2-Trichloroethane | <1 | 0.2J | <10 | <1 | <1 | <1 | 5 | 5/3(G) |
| Benzene | <1 | 0.2J | <10 | <1 | <1 | <1 | 0.7 | 5/0 (G) |
| trans-1,3-Dichloropropene | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| Bromoform | <1 | <1 | <10 | <1 | <1 | <1 | 50(G) | 100[a]/0 (G) |
| 4-Methyl-2-Pentanone | <5 | <5 | <50 | <5 | <5 | <5 | | |
| 2-Hexanone | <5 | <5 | <50 | <5 | <5 | <5 | 50(G) | |
| Tetrachloroethene | <1 | <1 | <10 | <1 | 0.07J | <1 | 5 | 5/0 (G) |
| 1,1,2,2-Tetrachloroethane | <1 | <1 | <10 | <1 | <1 | <1 | 5 | |
| Toluene | 0.1J | 0.2J | <10 | 0.09J | <1 | <1 | 5 | 1,000/1,000 (G) |
| Chlorobenzene | 0.1J | <1 | <10 | <1 | <1 | <1 | 5 | 100/100 (G) |
| Ethylbenzene | 0.2J | 0.1J | <10 | 0.2J | <1 | <1 | 5 | 700/700 (G) |
| Styrene | <1 | <1 | <10 | <1 | <1 | <1 | 5 | 100/100 (G) |
| Total Xylenes | 2 | 0.9J | <10 | 1 | 0.6J | <1 | 5[b] | 10,000/10,000 (G) |
| Total TIC | | | | | | | | |

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TABLE 4 (Cont'd)
GROUND-WATER ANALYTICAL RESULTS - EVENT 3
VOLATILE ORGANICS
JULY 1992

ROSEN SITE
CORTLAND, NEW YORK

**Notes:**

All concentrations and detection levels are reported as ug/L equivalent to parts per billion (ppb).
DL - indicates dilution.
J - indicates an estimated value.
D - identifies all compounds identified in an analysis at a secondary dilution factor.
E - identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
The < sign indicates the compound was analyzed for but not detected.
TIC - indicates Tentatively Identified Compounds.
[a] - Applies to the total of trihalomethanes.
[b] - The standard value of 5 ug/L applies to each isomer individually.
Bold indicates NYSDEC standards exceeded; shading indicates federal MCLs exceeded.

**References:**

Standard and guidance values are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels] and MCLGs [Maximum contaminant Level Goals, designated by (G)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

# TABLE 4
## GROUND-WATER ANALYTICAL RESULTS - EVENT 3
## INORGANICS
## JULY 1992

## ROSEN SITE
## CORTLAND, NEW YORK

| Element | TW-1 Unfiltered | TW-1 Filtered | TW-2 Unfiltered | TW-2 Filtered | TW-3 Unfiltered | TW-3 Filtered | W-21 Unfiltered | W-21 Filtered | W-22 Unfiltered | W-22 Filtered | New York State Standards/ Guidance Values | MCLs/ MCLGs/SMCLs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 29,900J | 166B | 7,340J | <50.0 | 1,090J | <50.0 | 7,510J | <50.0 | 73,300J | <50.0 | | 50 to 200(S) |
| Antimony | <5.0 | <5.0 | <5.0 | <5.0 | 5B | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 3(G) | 6/6(G) |
| Arsenic | 25 | <5.0 | 6B | <5.0 | <5.0 | <5.0 | 6B | <5.0 | 18 | <5.0 | 25 | 50 |
| Barium | 285 | 74.1B | 244 | 61.7B | 112B | 113B | 63.8B | 45B | 1,110 | 110B | 1,000 | 2,000/2,000(G) |
| Beryllium | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 3(G) | 4/4(G) |
| Cadmium | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 10 | 5/5(G) |
| Calcium | 229,000 | 150,000 | 229,000 | 229,000 | 158,000 | 161,000 | 66,800 | 54,000 | 321,000 | 121,000 | | |
| Chromium | 60B | <1.0 | 17BS | <1.0 | 2B | <1.0 | 85B | <1.0 | 900B | <1.0 | 50 | 100 |
| Cobalt | 36.6BJ | <20.0J | <20.0J | <20.0J | <20.0J | <20.0J | <20.0J | <20.0J | 108J | <20.0J | | |
| Copper | 65.2 | <5.0 | 74 | <5.0 | 5.6B | <5.0 | 61.8 | <5.0 | 186 | <5.0 | 200 | 1,000(S) |
| Iron | 64,500 | 310 | 15,700 | <30.0 | 1,330 | <30.0 | 16,100 | <30.0 | 164,000 | <30.0 | 300 | 300(S) |
| Lead | 128S | 4 | 48B | 5 | 31 | 3 | 45S | 5 | 180 | 5 | 25 | 15 |
| Magnesium | 46,000 | 22,800 | 49,700 | 43,400 | 39,000 | 35,600 | 19,000 | 13,600 | 115,000 | 20,100 | 35,000(G) | |
| Manganese | 2,880 | 439 | 2,480 | 1,520 | 250 | 227 | 509 | 208 | 5,080 | 69.4 | 500* 300 | 50(S) |
| Mercury | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | 0.25 | <0.20 | 2 | 2/2(G) |
| Nickel | 96.3J | <20.0J | 39.9BJ | 38.8BJ | <20.0J | <20.0J | 33.3BJ | <20.0J | 524J | 59.6J | | 100/100(G) |
| Potassium | 11,100 | 7,790 | 6,410 | 6,270 | 5,690 | 6,100 | 18,800 | 18,600 | 8,820 | 1,700B | | |
| Selenium | <50.0J | <5.0 | <5.0J | <5.0 | <5.0J | <5.0 | <5.0J | <5.0 | <50.0J | <5.0 | 10 | 50/50(G) |
| Silver | <10.0R | <10.0J | <10.0R | <10.0J | <10.0R | <10.0J | <10.0R | <10.0J | <10.0R | <10.0J | 50 | 100(S) |
| Sodium | 28,800 | 26,000 | 62,600 | 66,100 | 45,700 | 42,200 | 168,000 | 177,000 | 98,900 | 97,300 | 20,000 | |
| Thallium | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 4(G) | 2/0.5(G) |
| Vanadium | 50.9 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | 111 | <20.0 | | |
| Zinc | 253 | 17.9B | 122 | 16.4B | 35.1 | 19.7B | 76.5 | 209 | 522. | 51.6 | 300 | 5,000(S) |

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## TABLE 4 (Cont.)
## GROUND-WATER ANALYTICAL RESULTS - EVENT 3
## INORGANICS
## JULY 1992

## ROSEN SITE
## CORTLAND, NEW YORK

**Notes:**

All concentrations, detection levels, standard values, guidance values, and MCLs/MCLGs/SMCLs are reported as ug/L equivalent to parts per billion (ppb).
Dup. - Indicates field duplicate.
The < sign indicates the compound was analyzed for but not detected.
B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
E - Indicates a value estimated or not reported due to the presence of interference.
S - Indicates value determined by Method of Standard Addition.
J - Indicates an estimated value.
Bold indicates NYSDEC standards or guidance value exceeded; shading indicates federal MCLs/SMCLs exceeded.
R - Indicates the associated value is unusable.
* - Applies to the sum of iron (maximum 300 ug/L) and manganese.

**References:**

Standard and guidance valves are according to New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels], MCLGs [Maximum Contaminant Level Goals, designated by (G)], and SMCLs [Secondary Maximum Contaminant Levels, designated by (S)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December of 1993.

TABLE 4

GROUND-WATER ANALYTICAL RESULTS - EVENTS 4 and 5
VOLATILE ORGANICS
DECEMBER 1992 AND JUNE 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | December 1992 | | | June 1993 | | | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| | W-23 | W-24 | W-24(DL) | W-23 | W-24 | W-24(DL) | | |
| Chloromethane | <1 | <1 | <4 | 1 | 1 | <10 | 5 | |
| Bromomethane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | |
| Vinyl Chloride | <1 | 31 | 27D | <1 | 27D | 27D | 2 | 2/0 (G) |
| Chloroethane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | |
| Methylene Chloride | <1 | <1 | <4 | <2 | <2 | <20 | 5 | |
| Acetone | <5 | <5 | <20 | <5 | <5 | 8DJ | 5 | 5/0.0(G) |
| Carbon Disulfide | <1 | <1 | <4 | <1 | <1 | <10 | 50 (G) | |
| 1,1-Dichloroethene | <1 | 3 | 3DJ | <1 | 4 | 2DJ | 5 | 7/7 (G) |
| 1,1-Dichloroethane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | |
| cis-1,2-Dichloroethene | ** | ** | ** | <1 | 79D | 79D | 5 | 70/70 (G) |
| trans-1,2-Dichloroethene | ** | ** | ** | <1 | 10 | 8DJ | 5 | 100/100 (G) |
| 1,2-Dichloroethene (total) | <1 | 77E | 68D | ** | ** | ** | See above | |
| Chloroform | <1 | <1 | <4 | <1 | <1 | <10 | 7 | 100[a]/100 (G) |
| 1,2-Dichloroethane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 5/0 (G) |
| 2-Butanone | <5 | <5 | <20 | <5 | <5 | <50 | 50 (G) | |
| 1,1,1-Trichloroethane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 200/200 (G) |
| 1,3-Dichlorobenzene | NA | NA | NA | <1 | <1 | <10 | | 600/600 (G) |
| 1,4-Dichlorobenzene | NA | NA | NA | <1 | <1 | <10 | | 75/75 (G) |
| 1,2-Dibromo-3-Chloropropane | NA | NA | NA | <1 | <1 | <10 | 5 | 0.2/0 (G) |
| Carbon Tetrachloride | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 5/0 (G) |
| Vinyl Acetate | NA | NA | NA | NA | NA | NA | | 100 |
| Bromodichloromethane | <1 | <1 | <4 | <1 | <1 | <10 | 50(G) | 100[a]/0 (G) |
| 1,2-Dichloropropane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 5/0 (G) |

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TABLE 4

GROUND-WATER ANALYTICAL RESULTS – EVENTS 4 and 5
VOLATILE ORGANICS
DECEMBER 1992 AND JUNE 1993

ROSEN SITE
CORTLAND, NEW YORK

| Compound | December 1992 | | | June 1993 | | | New York State Standards/ Guidance Values | MCLs/MCLGs |
|---|---|---|---|---|---|---|---|---|
| | W-23 | W-24 | W-24(DL) | W-23 | W-24 | W-24 W-24(DL) | | |
| cis-1,3-Dichloropropene | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 5 |
| Trichloroethene | <1 | 76E | 70DJ* | <1 | 200D | 200D | 5 | 5/0 (G) |
| Dibromochloromethane | <1 | <1 | <4 | <1 | <1 | <10 | 50(G) | |
| 1,1,2-Trichloroethane | <1 | <1 | <4 | <1 | 0.2J | <10 | 5 | 5/3(G) |
| Benzene | <1 | 0.1J | <4 | <1 | 0.1J | <10 | 0.7 | 5/0 (G) |
| trans-1,3-Dichloropropene | <1 | <1 | <4 | <1 J | <1 J | <10 | 5 | |
| Bromoform | <1 | <1 | <4 | <1 | <1 | <10 | 50(G) | 100[a]/0 (G) |
| 4-Methyl-2-Pentanone | <5 | <5 | <20 | <5 | <5 | <50 | | |
| 2-Hexanone | <5 | <5 | <20 | <5 | <5 | <50 | 50(G) | |
| Tetrachloroethene | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 5/0 (G) |
| 1,1,2,2-Tetrachloroethane | <1 | <1 | <4 | <1 | <1 | <10 | 5 | |
| 1,2-Dibromoethane | NA | NA | NA | <1 | <1 | <10 | | |
| Bromochloromethane | NA | NA | NA | <1 | <1 | <10 | 5 | |
| 1,2-Dichlorobenzene | NA | NA | NA | <1 | <1 | <10 | 4.7 | 600/600 (G) |
| Toluene | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 1,000/1,000 (G) |
| Chlorobenzene | <1 | <1 | <4 | <1 | 0.04J | <10 | 5 | 100/100 (G) |
| Ethylbenzene | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 700/700 (G) |
| Styrene | <1 | <1 | <4 | <1 | <1 | <10 | 5 | 100/100 (G) |
| Total Xylenes | <1 | <1 | <4 | <1 | <1 | <10 | 5[b] | 10,000/10,000 (G) |
| Total TIC | 0 | 0 | 0 | 0 | 0 | 0 | | |

Notes on Page 3 of 3.

TABLE 4

GROUND-WATER ANALYTICAL RESULTS - EVENTS 4 and 5
VOLATILE ORGANICS
DECEMBER 1992 AND JUNE 1993

ROSEN SITE
CORTLAND, NEW YORK

Notes:

All concentrations and detection levels are reported as ug/L equivalent to parts per billion (ppb).
The < sign indicates the compound was analyzed for but not detected.
DL – Indicates dilution.
J – Indicates an estimated value.
D – Identifies all compounds identified in an analysis at a secondary dilution factor.
E – Identifies compounds whose concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
TIC – Indicates Tentatively Identified Compounds.
NA – Not analyzed for.
** – The laboratory analyzed samples collected in December 1992 from monitoring wells W-23 and W-24 for Total 1,2-Dichloroethene. Samples collected in June 1993 from monitoring wells W-23 and W-24 were analyzed for the cis- and trans- isomers of 1,2-Dichloroethene.
[a] – Applies to the total of trihalomethanes.
[b] – The standard value of 5 ug/L applies to each isomer individually.
[c] – Recovery for trichloroethene (TCE) was above acceptable control limits in both the matrix spike (MS) and matrix spike duplicate (MSD), therefore, the concentration of TCE in sample W-24 should be considered an estimated value. The high recoveries of TCE in both the MS and MSD were most likely due to the relatively high concentration of TCE in the unspiked sample.
Bold indicates NYSDEC standards exceeded; shading indicates federal Maximum Contaminant Levels (MCLs) exceeded.

References:

Standard and Guidance values are according the New York State Department of Environmental Conservation, Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels], MCLGs [Maximum Contaminant Level Goals, designated by (G)], and SMCLs [Secondary Maximum Contaminant Levels, designated by (S)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

TABLE 4

# GROUND-WATER ANALYTICAL RESULTS - EVENT 5
## INORGANICS
## JUNE 1993

## ROSEN SITE
## CORTLAND, NEW YORK

| Element | W-23 Unfiltered | W-23 Filtered | W-24 Unfiltered | W-24 Filtered | New York State Standards/ Guidance Values | MCLs/MCLGs/ SMCLs |
|---|---|---|---|---|---|---|
| Aluminum | 9,220EJ | <100E | 48,000EJ | <100E | | 50 to 200(S) |
| Antimony | <5J | <5 | <5J | <5 | 3(G) | 6/6(G) |
| Arsenic | <4R | <4R | 33R | <4R | 25 | 50 |
| Barium | 433J | 436 | 1,460J | <40 | 1,000 | 2,000/2,000 (G) |
| Beryllium | <5 | <5 | <5 | <5 | 3(G) | 4/4(G) |
| Cadmium | <0.2 | <0.2 | <0.2 | <0.2 | 10 | 5/5 (G) |
| Calcium | 97,900J | 95,700 | 272,000J | 145,000 | | |
| Chromium | <10J | <10 | 189J | <10 | 50 | 100/100 (G) |
| Cobalt | <20 | <20 | 55.1 | <20 | | |
| Copper | <10J | <10 | 208J | <10 | 200 | 1,000(S) |
| Iron | 576J | 69.6B | 164,000J | <50 | 300 | 300(S) |
| Lead | <3J | <3J | 132SJ | <3J | 25 | 15 |
| Magnesium | 24,700J | 22,900 | 84,200J | 30,000 | 35,000(G) | |
| Manganese | 410E | 174E | 8,100E | 1,010E | 500[a] 300 | 50(S) |
| Mercury | <0.2 | <0.2 | <0.2 | <0.2 | 2 | 2/2 (G) |
| Nickel | <30J | <30 | 145J | 30.5B | | 100/100(G) |
| Potassium | 1,390B | 1,260B | 13,200 | 2,710B | | |
| Selenium | <4 | <4 | <4 | <4 | 10 | 50/50 (G) |
| Silver | <0.3J | <0.3J | <0.3J | <0.3J | 50 | 100 (S) |
| Sodium | 48,600 | 48,700 | 70,600 | 61,000 | 20,000 | |
| Thallium | <5 | <5 | <5 | <5 | 4(G) | 2/0.5(G) |
| Vanadium | <20J | <20 | 116J | <20 | | |
| Zinc | <10 | 19BJ | 763 | <10 | 300 | 5,000(S) |

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TABLE 4

GROUND-WATER ANALYTICAL RESULTS – EVENT 5
INORGANICS
JUNE 1993

ROSEN SITE
CORTLAND, NEW YORK

Notes:

All concentrations, detection levels, standard values, guidance values, and MCLs/MCLGs/SMCLs are reported as ug/L equivalent to parts per billion (ppb).
The < sign indicates the compound was analyzed for but not detected.
B – Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
E – Indicates a value estimated or not reported due to the presence of interference.
S – Indicates value determined by Method of Standard Addition.
J – Indicates an estimated value.
R – Indicates the associated value is unusable.
[a] – Applies to the sum of iron (maximum 300 ug/L) and manganese.
Bold indicates NYSDEC standards or guidance value exceeded; shading indicates federal MCLs/SMCLs exceeded.

References:

Standard and Guidance values are according the New York State Department of Environmental Conservation, Division of Water Technical and Operation Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values [designated by (G)], October 1993.

MCLs [Maximum Contaminant Levels], MCLGs [Maximum Contaminant Level Goals, designated by (G)], and SMCLs [Secondary Maximum Contaminant Levels, designated by (S)] according to the Code of Federal Regulations, Protection of Environment 40, Part 141, July 1, 1991, and the Drinking Water Regulations and Health Advisories, Office of Water, U.S. Environmental Protection Agency, December 1993.

Table 5

## Summary of Analytical Data (Detects only) for TCA Concentration in Groundwater
## Rosen Site
## Cortland, New York

| Sampling Date | Onsite Wells | | Downgradient Wells | | | | | Offsite Wells | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | W-05 | W-06 | W-01 | W-02 | W-03 | W-10 | W-11 | W-16 | W-17 | W-18 | W-19 |
| 5/91 | (4) | 3400 D | 19 | 120 D | (4) | 73 | 270 D | NA | NA | NA | NA |
| 2/92 | 7 | 1100 D | 40 D | 190 D | 8 | 190 D | 390 D | 36 | 16 J | 28 | 260 D |
| 12/93 | NA | 100 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/95 | 24 DJ | 110 DJ | 41 DJ | 120 J | ND | 110 D | 160 J | 23 | (4) | 68 DJ | 210 D |
| 8/95 | (2) | 15 | 68 | 26 | (0.78 J) | 100 D | 84 D | 38 D | 11 | 38 | 140 |
| 12/95 | NA | 5000 D | (3.7) | 16 | 9.4 | 46 | 65 | 23 | (2.3) | (3.6) | 54 |
| 3/96 | NA | 1000 D | 7.4 | 22 D | 8.5 | 88 | 45 D | 22 | 5.2 | 25 | 62 |
| 8/96 | NA | 240 | NA | 30 D | NA | NA | 41 | NA | NA | 30 D | 83 |

Notes:
Concentrations reported in ug/L (equivalent to ppb).
( ) Concentration detected, but not above state or federal standards.
J Indicates estimated value.
D Indicates sample dilution occurred during analysis.
NA Not analyzed.
ND Not detected above method detection limit.

TABLE 6

CHEMICALS OF INTEREST IN ON-SITE GROUND WATER
UPPER OUTWASH

ROSEN SITE
CORTLAND, NEW YORK

| Chemical (a) | Frequency of Detection (b) | Range of Sample Concentrations | | Arithmetic Mean Concentration (b) | Standard Deviation | 95% Upper Bound Concentration (c) | RME Concentration (d) |
|---|---|---|---|---|---|---|---|
| **Organics** | | | | | | | |
| 1,1-DICHLOROETHANE | 22 / 28 | ND - | 0.425 | 4.30E-02 | 1.01E-01 | 7.80E-02 | 7.80E-02 |
| 1,1-DICHLOROETHENE | 14 / 28 | ND - | 0.013 | 2.27E-03 | 3.42E-03 | 3.00E-03 | 3.00E-03 |
| 1,1,1-TRICHLOROETHANE | 26 / 28 | ND - | 3.1 | 2.00E-01 | 5.99E-01 | 4.08E-01 | 4.08E-01 |
| 1,2-DICHLOROETHANE | 5 / 28 | ND - | 0.029 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| 1,2-DICHLOROETHENE (total) | 5 / 28 | ND - | 0.056 | 4.60E-03 | 1.40E-02 | 1.00E-02 | 1.00E-02 |
| ACETONE | 2 / 28 | ND - | 0.017 | 2.00E-02 | 2.90E-02 | 2.80E-02 | 1.70E-02 |
| AROCLOR 1254 | 2 / 24 | ND - | 0.011 | 1.28E-03 | 2.27E-03 | 2.20E-02 | 1.10E-02 |
| BROMOFORM | 2 / 28 | ND - | 0.0002 | 2.47E-03 | 9.00E-03 | 6.00E-03 | 2.00E-04 |
| CHLOROMETHANE | 4 / 28 | ND - | 0.014 | 4.00E-03 | 9.00E-03 | 7.00E-03 | 7.00E-03 |
| CHLOROETHANE | 3 / 28 | ND - | 0.023 | 2.40E-03 | 4.00E-03 | 4.00E-03 | 4.00E-03 |
| CHLOROFORM | 2 / 28 | ND - | 0.0003 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 3.00E-04 |
| ETHYLBENZENE | 4 / 28 | ND - | 0.071 | 3.30E-03 | 1.26E-02 | 8.00E-03 | 8.00E-03 |
| METHYLENE CHLORIDE | 4 / 28 | ND - | 0.096 | 7.00E-03 | 1.90E-02 | 1.50E-02 | 1.50E-02 |
| TETRACHLOROETHENE | 8 / 28 | ND - | 0.079 | 5.10E-03 | 1.63E-02 | 1.00E-02 | 1.00E-02 |
| TOLUENE | 4 / 28 | ND - | 1.5 | 5.10E-02 | 2.69E-01 | 1.51E-01 | 1.51E-01 |
| TRICHLOROETHENE | 22 / 28 | ND - | 0.15 | 8.00E-03 | 2.77E-02 | 1.80E-02 | 1.80E-02 |
| XYLENES | 5 / 28 | ND - | 0.71 | 2.50E-02 | 1.27E-01 | 7.20E-02 | 7.20E-02 |
| **Inorganics** | | | | | | | |
| ALUMINUM | 24 / 24 | 0.0511 - | 67 | 1.87E+01 | 2.20E+01 | 2.80E+01 | 2.80E+01 |
| ANTIMONY | 4 / 24 | ND - | 0.1045 | 1.80E-02 | 2.70E-02 | 2.90E-02 | 2.90E-02 |
| ARSENIC | 5 / 11 | ND - | 0.116 | 1.80E-02 | 3.20E-02 | 3.70E-02 | 3.70E-02 |
| BARIUM | 23 / 24 | ND - | 0.614 | 2.20E-01 | 1.81E-01 | 3.00E-01 | 3.00E-01 |
| CADMIUM | 11 / 24 | ND - | 0.0898 | 1.60E-02 | 2.30E-02 | 2.50E-02 | 2.50E-02 |
| CHROMIUM | 21 / 24 | ND - | 0.2 | 5.02E-02 | 6.30E-02 | 8.00E-02 | 8.00E-02 |
| COBALT | 7 / 24 | 0.01 - | 0.102 | 2.03E-02 | 2.10E-02 | 3.00E-02 | 3.00E-02 |
| COPPER | 21 / 24 | 0.0025 - | 0.571 | 1.04E-01 | 1.40E-01 | 1.70E-01 | 1.70E-01 |
| LEAD | 22 / 22 | 0.0015 - | 2.7 | 1.67E-01 | 5.40E-01 | 4.10E-01 | 4.10E-01 |
| MANGANESE | 24 / 24 | 0.0025 - | 7.58 | 2.20E+00 | 2.00E+00 | 3.00E+00 | 3.00E+00 |
| MERCURY | 8 / 24 | 0.0001 - | 0.0023 | 3.00E-04 | 5.20E-04 | 5.50E-04 | 5.50E-04 |
| NICKEL | 17 / 24 | 0.01 - | 0.23 | 7.50E-02 | 7.40E-02 | 1.06E-01 | 1.06E-01 |
| VANADIUM | 9 / 24 | 0.015 - | 0.278 | 4.80E-02 | 6.20E-02 | 7.40E-02 | 7.40E-02 |
| ZINC | 24 / 24 | 0.0104 - | 1.13 | 2.80E-01 | 3.30E-01 | 4.20E-01 | 4.20E-01 |

**Notes:**

(a) All concentrations reported in mg/L. Concentrations reflect analytical results of unfiltered samples from all on-site monitoirng wells screened in the upper outwash. A sample size less than 24 for inorganics indicates rejection of sample results by QA/QC review. Data shown here are for MW - 1 through MW-3, MW-5 through MW-8, and MW-10 through MW-14.
(b) One-half the detection limit is used as aproxy concentration for non-detects per USEPA guidance.
(c) Based on student's T-distribution with n-1 degrees of freedom, alpha=0.025 in each tail.
(d) The lesser of the 95% upper bound concentration and the maximum detected concentration.

TABLE 6

# CHEMICALS OF INTEREST IN ON-SITE GROUND WATER
# LOWER SAND AND GRAVEL

## ROSEN SITE
## CORTLAND, NEW YORK

| Chemical (a) | Frequency of Detection | Range of Sample Concentrations | | Arithmetic Mean Concentration (b) | Standard Deviation | 95% Upper Bound Concentration (c) | RME Concentration(d) |
|---|---|---|---|---|---|---|---|
| **Organics** | | | | | | | |
| BROMOFORM | 1 / 3 | ND - | 0.0001 | 0.00037 | 0.00023 | 0.00079 | 0.0001 |
| **Inorganics** | | | | | | | |
| BARIUM | 3 / 3 | 0.0521 - | 0.364 | 0.252 | 0.174 | 0.57 | 0.364 |
| CADMIUM | 1 / 3 | ND - | 0.0012 | 0.0014 | 0.0010 | 0.003 | 0.0012 |
| COPPER | 2 / 3 | ND - | 0.0261 | 0.012 | 0.012 | 0.034 | 0.0261 |
| MERCURY | 1 / 3 | ND - | 0.00028 | 0.00016 | 0.00010 | 0.00035 | 0.00028 |

**Notes:**

(a) All concentrations reported in mg/L. Concentrations reflect analytical results of unfiltered samples from all on-site monitoring wells screened in the lower outwash. (MW-9 AND MW-15).
(b) One-half the detection limit is used as a proxy concentration for non-detects per USEPA guidance.
(c) Based on students T-ditribution with n-1 degrees of freedom, alpha = 0.025 in each tail.
(d) The lesser of the 95% upper bound concentration and the maximum deteted concentration.

TABLE 6

## CHEMICALS OF INTEREST IN OFF-SITE DOWNGRADIENT GROUND WATER
UPPER OUTWASH

ROSEN SITE
CORTLAND, NEW YORK

| Chemical (a) | Frequency of Detection | Range of Sample Concentrations | | Arithmetic Mean Concentration (b) | Standard Deviation | 95% Upper Bound Concentration (c) | RME Concentration (d) |
|---|---|---|---|---|---|---|---|
| **Organics** | | | | | | | |
| 1,1-DICHLOROETHANE | 4 / 4 | 0.0015 - | 0.093 | 0.031 | 0.043 | 0.10 | 0.093 |
| 1,1-DICHLOROETHENE | 2 / 4 | ND - | 0.011 | 0.0033 | 0.0052 | 0.011 | 0.011 |
| 1,1,1-TRICHLOROETHANE | 4 / 4 | 0.016 - | 0.3 | 0.095 | 0.14 | 0.31 | 0.3 |
| 1,2-DICHLOROETHANE | 1 / 4 | ND - | 0.0008 | 0.00058 | 0.00015 | 0.0008 | 0.0008 |
| 1,2-DICHLOROETHENE (total) | 3 / 4 | ND - | 0.029 | 0.0077 | 0.014 | 0.030 | 0.029 |
| TETRACHLOROETHENE | 2 / 4 | ND - | 0.002 | 0.00088 | 0.00075 | 0.0021 | 0.002 |
| TRICHLOROETHENE | 4 / 4 | ND - | 0.019 | 0.010 | 0.010 | 0.026 | 0.019 |
| **Inorganics** | | | | | | | |
| ALUMINUM | 4 / 4 | 0.368 - | 105.15 | 49.7 | 44.5 | 120.5 | 105.15 |
| ANTIMONY | 3 / 4 | ND - | 0.179 | 0.11 | 0.063 | 0.21 | 0.18 |
| ARSENIC | 3 / 4 | ND - | 0.03185 | 0.019 | 0.014 | 0.04 | 0.032 |
| BARIUM | 4 / 4 | 0.0575 - | 0.867 | 0.41 | 0.35 | 0.97 | 0.87 |
| CADMIUM | 3 / 4 | ND - | 0.0014 | 0.00080 | 0.00061 | 0.0018 | 0.0014 |
| COBALT | 3 / 4 | ND - | 0.06955 | 0.037 | 0.025 | 0.077 | 0.07 |
| COPPER | 4 / 4 | 0.0302 - | 0.2285 | 0.12 | 0.086 | 0.26 | 0.23 |
| LEAD | 4 / 4 | 0.003 - | 0.130 | 0.28 | 0.44 | 0.98 | 0.130 |
| MANGANESE | 4 / 4 | 0.066 - | 6.24 | 3.4 | 3.0 | 8.17 | 6.2 |
| NICKEL | 3 / 4 | ND - | 0.235 | 0.13 | 0.093 | 0.27 | 0.23 |
| VANADIUM | 3 / 4 | ND - | 0.1475 | 0.057 | 0.063 | 0.16 | 0.15 |
| ZINC | 4 / 4 | 0.0378 - | 0.834 | 0.44 | 0.37 | 1.03 | 0.83 |

**Notes:**

(a) All concentrations reported in mg/L. Concentrations reflect analytical results of unfiltered samples from all off-site downgradient monitoring wells screened in the upper outwash. Data shown here are for MW - 16 through MW-19.
(b) One-half the detection limit is used as a proxy concentration for non-detects per USEPA guidance.
(c) Based on student's T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.
(d) The lesser of the 95% upper bound concentration and the maximum detected concentration.

## TABLE 6

### CHEMICALS OF INTEREST FOR SURFACE SOIL/FILL

### ROSEN SITE
### CORTLAND, NEW YORK

| CHEMICAL(a) | Frequency of Detection | Range of Sample Concentrations | Arithmetic Mean Concentration (b) | Standard Deviation | 95 % Upper Bound Concentration (c) | RME Concentration (d) |
|---|---|---|---|---|---|---|
| **Organics** | | | | | | |
| 1,1-DICHLOROETHENE | 1/ 3 | ND – 0.00335 | 0.0031 | 0.0002 | 0.004 | 0.0034 |
| 1,1,1-TRICHOLORETHANE | 3/ 3 | 0.0075 – 0.024 | 0.016 | 0.006 | 0.036 | 0.02 |
| 2-METHYLNAPHTHALENE | 27/ 35 | ND – 4.6 | 0.55 | 1.02 | 0.90 | 0.90 |
| 4-CHLORO-3-METHYLPHENOL | 2 35 | ND – 0.13 | 0.67 | 1.13 | 1.26 | 0.13 |
| ACETONE | 2/ 3 | ND – 0.029 | 0.02 | 0.012 | 0.046 | 0.03 |
| ACENAPHTHENE | 25/ 35 | ND – 6.85 | 0.86 | 1.57 | 1.40 | 1.4 |
| ACENAPHTHALENE | 12/ 35 | ND – 4.2 | 0.65 | 0.91 | 0.96 | 0.96 |
| ANTHRACENE | 31/ 35 | ND – 7.1 | 1.25 | 2.01 | 1.94 | 1.9 |
| AROCLOR 1242 | 1/ 6 | ND – 0.55 | 0.2 | 0.2 | 0.7 | 0.55 |
| AROCLOR 1248 | 4/ 7 | ND – 1 | 0.3 | 0.3 | 1.3 | 1.0 |
| AROCLOR 1254 | 5/ 6 | ND – 7.6 | 1.6 | 2.5 | 9.6 | 7.6 |
| BENZENE | 2/ 3 | ND – 0.0015 | 0.0018 | 0.001 | 0.005 | 0.0015 |
| BENZO(a)ANTHRACENE | 34/ 35 | ND – 21 | 3.24 | 4.74 | 4.87 | 4.9 |
| BENZO(a)PYRENE | 34/ 35 | ND – 14 | 2.56 | 3.39 | 3.72 | 3.7 |
| BENZO(b)FLUORANTHENE | 34/ 35 | ND – 17 | 3.03 | 4.02 | 4.41 | 4.4 |
| BENZO(g,h,i)PERYLENE | 34/ 35 | ND – 11.23 | 1.69 | 2.36 | 2.70 | 2.7 |
| BENZO(k)FLUORANTHENE | 34/ 35 | ND – 11 | 2.39 | 2.82 | 3.36 | 3.4 |
| BIS(2-ETHYLHEXYL)PHTHLATE | 17/ 34 | ND – 42 | 2.48 | 7.12 | 4.96 | 5.0 |
| BUTYLBENZYLPHTHLATE | 28/ 34 | ND – 15 | 1.77 | 2.94 | 2.79 | 2.8 |
| CARBAZOLE | 27/ 31 | ND – 4.6 | 0.75 | 1.29 | 1.22 | 1.2 |
| CHRYSENE | 34/ 35 | ND – 18 | 3.26 | 4.31 | 4.74 | 4.7 |
| DIBENZOFURAN | 26/ 35 | ND – 7.4 | 0.77 | 1.46 | 1.27 | 1.3 |
| DIBENZO(a,h)ANTHRACENE | 2/ 30 | ND – 0.21 | 0.91 | 1.23 | 1.36 | 0.21 |
| DIMETHYL PHTHLATE | 2/ 35 | ND – 0.089 | 0.83 | 1.12 | 1.21 | 0.09 |
| DI-N-BUTYLPHTHLATE | 26/ 34 | ND – 6.3 | 0.72 | 1.26 | 1.16 | 1.2 |
| DI-N-OCTYL PHTHLATE | 4/ 30 | ND – 0.2 | 0.87 | 1.20 | 1.32 | 0.20 |
| FLUORANTHENE | 34/ 35 | ND – 40 | 5.79 | 9.97 | 9.21 | 9.2 |
| FLUORENE | 28/ 35 | ND – 12.5 | 1.19 | 2.73 | 2.13 | 2.1 |
| INDENO(1,2,3-CD)PYRENE | 34/ 35 | ND – 7.8 | 1.87 | 2.04 | 2.57 | 2.6 |
| METHYLENE CHLORIDE | 3/ 3 | 0.009 – 0.02 | 0.016 | 0.006 | 0.031 | 0.02 |
| NAPHTHALENE | 25/ 35 | ND – 0.42 | 0.62 | 1.19 | 1.03 | 0.42 |
| N-NITROSODIPHENYLAMINE | 5/ 34 | ND – 0.16 | 0.82 | 1.15 | 1.22 | 0.16 |
| PHENANTHRENE | 34/ 35 | ND – 32 | 5.44 | 8.91 | 8.50 | 8.5 |
| PYRENE | 34/ 35 | ND – 31 | 6.20 | 7.97 | 8.94 | 8.9 |
| TETRACHLOROETHENE | 1/ 3 | ND – 0.002 | 0.0027 | 0.0006 | 0.004 | 0.002 |
| TOLUENE | 2/ 3 | ND – 0.007 | 0.0042 | 0.0025 | 0.010 | 0.01 |
| TRICHLOROETHENE | 2/ 3 | ND – 0.003 | 0.003 | 0.0009 | 0.005 | 0.003 |
| **Inorganics** | | | | | | |
| ALUMINUM | 37/ 37 | 161 – 11100 | 6182.7 | 2255.9 | 6935.6 | 6936 |
| ANTIMONY | 12/ 37 | ND – 22.4 | 9.2 | 5.2 | 10.9 | 11 |
| ARSENIC | 7/ 7 | ND – 57.5 | 19.5 | 17.5 | 34.5 | 34 |
| BARIUM | 37/ 37 | 23.6 – 4890 | 374.3 | 789.3 | 637.7 | 638 |
| CADMIUM | 18/ 20 | ND – 11.1 | 5.3 | 3.7 | 7.02 | 7.0 |
| CHROMIUM | 7/ 7 | 15.8 – 282 | 110.9 | 93.5 | 192.4 | 192 |
| COBALT | 36/ 37 | ND – 40.6 | 11.7 | 6.5 | 13.9 | 14 |
| COPPER | 37/ 37 | 14.9 – 4290 | 519.1 | 844.5 | 800.9 | 801 |
| LEAD | 20/ 20 | 84.4 – 2940 | 749.2 | 674.5 | 1063.3 | 1063 |
| MANGANESE | 37/ 37 | 40 – 19100 | 3470.0 | 4271.5 | 4895.5 | 4896 |
| MERCURY | 34/ 37 | ND – 136 | 4.6 | 22.3 | 12.0 | 12 |
| NICKEL | 36/ 37 | ND – 219 | 79.1 | 50.1 | 95.9 | 96 |
| SELENIUM | 4/ 37 | ND – 1.5 | 0.7 | 0.9 | 1.0 | 0.97 |
| THALLIUM | 2/ 34 | ND 0.76 | 0.4 | 0.1 | 0.5 | 0.46 |
| VANADIUM | 30/ 37 | ND – 266 | 45.8 | 56.2 | 64.9 | 65 |
| ZINC | 37/ 37 | 54.2 – 36200 | 3439.6 | 6001.1 | 5442.5 | 5443 |
| CYANIDE | 5/ 37 | ND – 28.4 | 1.7 | 4.6 | 3.2 | 3.2 |

**Notes:**

All concentrations reported in mg/kg.

(a) A sample size of other than 3 for VOCs or 35 for SVOCs, or other than 6 for Aroclors,indicates rejection of sample results by QA/QC review. A sample size of less than 37 for Inorganics indicates rejection of samples results by QA/QC review.
Due to matrix interference, not all samples were used to develop RME concentrations. Based upon QA/QC review by a qualified analytical chemist, the Samples used here to develop RME concentrations for organic compounds (taken from tables 6 and 17 of the RI Report) include T-4, T-5, T-9, SS-1, SS-1(dup), SS-2, SS-2(dup), SS-3, SS-4(DL), SS-5(DL), SS-6(DL), SS-7(RE), SS-8(RE), SS-9(RE), SS-10(DL), SS-11(RE), SS-12, SS-12(dup,DL), SS-13, SS-14 (DL RE), SS-15, SS-16, SS-17, SS-18, SS-19, SS-20, SS-21, SS-22(DL), SS-23, SS-24 (RE), SS-25, SS-26(DL), SS-27, SS-28, SS-29, SS-30(DL), SS-31(dup), SS-32, SS-33(DL), and SS-34.
RME concentrations for inorganic compounds are based on all samples shown in Table 19 of the RI Report.

(b) One-half the detection limit is used as a proxy concentration for non-detects per USEPA guidance.

(c) Based on Student's T-distribution with n-1 degrees of feedom, alpha=0.025 in each tail.

(d) The lesser of the 95% upper bound concentration and the maximum detected concentration.

TABLE - 6

CHEMICALS OF INTEREST IN SUBSURFACE SOIL/FILL

ROSEN SITE
CORTLAND, NEW YORK

| Chemical (a) | Frequency of Detection | Range of Sample Concentrations | Arithmetic Mean Concentration (b) | Standard Deviation | 95% Upper Bound Concentration (c) | RME Concentration (d) |
|---|---|---|---|---|---|---|
| **Organics** | | | | | | |
| 1,1-DICHLOROETHANE | 5/ 18 | ND - 0.559 | 0.054 | 0.14 | 0.12 | 0.12 |
| 1,1-DICHLOROETHENE | 1/ 18 | ND - 0.01 | 0.027 | 0.066 | 0.06 | 0.01 |
| 1,1,1-TRICHLOROETHANE | 10/ 18 | ND - 44 | 2.6 | 10.4 | 7.7 | 7.7 |
| 1,4-DICHLOROBENZENE | 1/ 19 | ND - 0.0515 | 0.96 | 2.4 | 2.1 | 0.00515 |
| 2-BUTANONE | 3/ 17 | ND - 0.083 | 0.053 | 0.13 | 0.12 | 0.083 |
| 2-METHYLNAPHTHALENE | 2/ 19 | ND - 32 | 2.6 | 7.5 | 6.3 | 6.3 |
| 2-METHYLPHENOL | 1/ 18 | ND - 0.305 | 0.96 | 2.4 | 2.1 | 0.305 |
| 2-NITROPHENOL | 1/ 19 | ND - 0.071 | 0.97 | 2.4 | 2.1 | 0.071 |
| 4,4'-DDE | 1/ 19 | ND - 0.016 | 0.025 | 0.025 | 0.036 | 0.016 |
| ACENAPHTHENE | 1/ 19 | ND - 20.7 | 2 | 5.1 | 4.5 | 4.5 |
| ACENAPHTHALENE | 1/ 19 | ND - 3.23 | 1.1 | 2.5 | 2.3 | 2.3 |
| ACETONE | 11/ 18 | ND - 0.253 | 0.072 | 0.13 | 0.14 | 0.14 |
| ANTHRACENE | 1/ 19 | ND - 16 | 1.8 | 4.2 | 3.8 | 3.8 |
| AROCLOR 1254 | 3/ 19 | ND - 5.8 | 0.49 | 1.3 | 1.1 | 1.1 |
| AROCLOR 1260 | 1/ 19 | ND - 0.61 | 0.28 | 0.27 | 0.41 | 0.41 |
| BENZENE | 2/ 18 | ND - 0.003 | 0.02 | 0.06 | 0.05 | 0.003 |
| BENZOIC ACID | 3/ 19 | ND - 0.1 | 1.8 | 2.5 | 3.0 | 0.1 |
| BENZO(a)ANTHRACENE | 3/ 19 | ND - 17.3 | 1.9 | 4.5 | 4.1 | 4.1 |
| BENZO(a)PYRENE | 4/ 18 | ND - 9.7 | 1.5 | 3.2 | 3.1 | 3.1 |
| BENZO(b)FLUORANTHENE | 6/ 18 | ND - 9.1 | 1.5 | 3.2 | 3.1 | 3.1 |
| BENZO(g,h,i)PERYLENE | 1/ 18 | ND - 3.1 | 1.1 | 2.5 | 2.4 | 2.4 |
| BENZO(k)FLUORANTHENE | 5/ 18 | ND - 7.1 | 1.3 | 2.9 | 2.8 | 2.8 |
| BIS(2-ETHYLHEXYL)PHTHALATE | 11/ 19 | ND - 16.7 | 2.4 | 4.8 | 4.7 | 4.7 |
| BUTYLBENZYLPHTHALATE | 6/ 19 | ND - 14 | 1.8 | 3.8 | 3.7 | 3.7 |
| CHRYSENE | 8/ 19 | ND - 14.7 | 1.8 | 4.0 | 3.8 | 3.8 |
| DIBENZOFURAN | 1/ 19 | ND - 20 | 2 | 5 | 4.4 | 4.4 |
| DIBENZO(a,h)ANTHRACENE | 1/ 18 | ND - 0.55 | 1 | 2.5 | 2.2 | 0.55 |
| DI-n-BUTYLPHTHALATE | 6/ 19 | ND - 24.7 | 2.2 | 6.0 | 5.1 | 5.1 |
| ETHYLBENZENE | 3/ 18 | ND - 1.90 | 0.14 | 0.44 | 0.36 | 0.36 |
| FLUORANTHENE | 6/ 19 | ND - 43 | 3.2 | 9.9 | 8.0 | 8.0 |
| FLUORENE | 2/ 19 | ND - 24 | 2.2 | 5.8 | 5.0 | 5.0 |
| INDENO(1,2,3-c,d)PYRENE | 2/ 18 | ND - 1.2 | 1.0 | 2.5 | 2.3 | 1.2 |
| METHOXYCHLOR | 1/ 19 | ND - 0.066 | 0.13 | 0.13 | 0.19 | 0.066 |
| METHYLENE CHLORIDE | 2/ 18 | ND - 0.008 | 0.021 | 0.062 | 0.052 | 0.008 |
| NAPHTHALENE | 2/ 19 | ND - 110 | 6.7 | 25.1 | 18.8 | 18.8 |
| N-NITROSODIPHENYLAMINE | 1/ 19 | ND - 0.585 | 0.99 | 2.4 | 2.2 | 0.585 |
| PHENANTHRENE | 5/ 19 | ND - 97 | 6.2 | 22.1 | 16.9 | 16.9 |
| PHENOL | 1/ 19 | ND - 0.14 | 0.97 | 2.4 | 2.1 | 0.14 |
| PYRENE | 7/ 19 | ND - 41.7 | 3.3 | 9.6 | 8.0 | 8.0 |
| TETRACHLOROETHENE | 2/ 18 | ND - 1.69 | 0.11 | 0.40 | 0.31 | 0.31 |
| TOLUENE | 6/ 18 | ND - 27 | 1.8 | 6.4 | 5.0 | 5.0 |
| TRICHLOROETHENE | 7/ 18 | ND - 0.012 | 0.02 | 0.06 | 0.05 | 0.012 |
| XYLENES | 4/ 18 | ND - 33 | 2.2 | 7.8 | 6.0 | 6.0 |
| **Inorganics** | | | | | | |
| ALUMINUM | 19/ 19 | 4070 - 18900 | 10009.2 | 4220.9 | 12043.7 | 12043.7 |
| ANTIMONY | 6/ 19 | ND - 15.2 | 1.5 | 3.5 | 3.2 | 3.2 |
| ARSENIC | 18/ 18 | 1.9 - 51.4 | 10.2 | 11.5 | 15.9 | 15.9 |
| BARIUM | 19/ 19 | 19.4 - 291 | 101.5 | 76.6 | 138.4 | 138.4 |
| BERYLLIUM | 3/ 19 | ND - 1.1 | 0.44 | 0.23 | 0.55 | 0.55 |
| CADMIUM | 6/ 19 | ND - 10.6 | 1.5 | 2.6 | 2.7 | 2.7 |
| CHROMIUM | 19/ 19 | 6.5 - 169 | 40.3 | 45.9 | 62.5 | 62.5 |
| COBALT | 18/ 19 | ND - 15.7 | 9.5 | 3.4 | 11.1 | 11.1 |
| COPPER | 18/ 18 | 10.6 - 272 | 51.6 | 64.0 | 83.3 | 83.3 |
| LEAD | 19/ 19 | 8.4 - 1150 | 103.8 | 260.4 | 229.3 | 229.3 |
| MANGANESE | 19/ 19 | 53.1 - 8020 | 1552.6 | 1888.8 | 2463.0 | 2463.0 |
| MERCURY | 7/ 19 | ND - 0.35 | 0.10 | 0.11 | 0.15 | 0.15 |
| NICKEL | 19/ 19 | 6.5 - 361 | 59.0 | 78.1 | 96.6 | 96.6 |
| SILVER | 1/ 19 | ND - 1.10 | 0.4 | 0.21 | 0.50 | 0.50 |
| VANADIUM | 18/ 18 | 9 - 318 | 52.4 | 91.3 | 97.6 | 97.6 |
| ZINC | 19/ 19 | 32.2 - 1920 | 374.0 | 594.2 | 660.5 | 660.5 |
| CYANIDE | 5/ 19 | ND - 2.1 | 0.79 | 0.40 | 0.98 | 0.98 |

Notes:

(a) All concentrations reported in mg/kg.
A sample size less than 19 indicates rejection of sample results by QA/QC review.
(b) One-half the detection limit is used as a proxy concentration for non-detects per USEPA guidance.
(c) Based on Student's T-distribution with n-1 degrees of freedom, alpha=0.025 in each tail.
(d) The lesser of the 95% upper bound concentration and the maximum detected concentration.

TABLE 7

## POTENTIAL EXPOSURE PATHWAYS

## ROSEN SITE
## CORTLAND, NEW YORK

| Potentially Exposed Population | Exposure Medium | Exposure Route | Exposure Point | Pathway Selected for Evaluation? | Reason for Selection or Exclusion |
|---|---|---|---|---|---|
| Hypothetical Future Off–Site Residents | Ground Water | Ingestion; dermal contact; inhalation of volatiles | Off–Site Wells | Yes | Downgradient most nearby residents are supplied with public water. However, constituents of interest have been detected in off–site groundwater. |
| | Air | Inhalation of dusts and vapors | Off–Site Residence | Yes | Low concentrations of VOCs have been observed during air monitoring; and dusts may be transported offsite by prevailing winds. |
| Hypothetical Future On–Site Residents | Ground Water | Ingestion; dermal contact, inhalation of volatiles | On–Site Wells | Yes | Potential future use of the site may be residential. |
| | Surface Soil | Dermal contact; incidental ingestion | On Site | Yes | Potential future use of the site may be residential. |
| | Air | Inhalation of dusts and vapors | On Site | Yes | Low concentrations of VOCs have been observed in air monitoring, and the site may not be completely covered in the future. Hence, continued volatilization and generation of dusts, especially during dry conditions, may potentially occur. |
| | Surface Water/ Sediment | Dermal contact | Perlicity Creek and Tributary | No | Exposure is possible, but as shown for trespassers, risks are negligible, and hence not calculated. |
| Hypothetical Future Commercial/Industrial Worker | Ground Water | Dermal contact Ingestion | On–Site Wells | Yes | Potential future use of the site may be industrial/commercial. |
| | Surface Soil | Dermal contact; incidental ingestion | On Site | Yes | Potential future use of the site may be industrial/commercial. |
| | Air | Inhalation of dusts and vapors | On Site | Yes | VOCs have been observed in air monitoring, and the site may not be completely covered in the future. Hence, continued volatilization and generation of dusts, especially during dry conditions, may potentially occur. |
| | Surface Water/ Sediment | Dermal contact | Perlicity Creek and Tributary | No | Workers are unlikely to wade in the Creek. |

Table 8

**Available Toxicity Criteria for Non-Carcinogenic Health Effects of the Chemicals of Interest (a)**

**Rosen Site**
**Cortland, New York**

| CHEMICAL | ORAL RfD (mg/kg-day) | Effect of Concern | Source | INHALATION RfC (mg/m$^3$) | Effect of Concern | Source |
|---|---|---|---|---|---|---|
| 1,1-DICHLOROETHANE | 1.0E-01 | NONE | | 5E-01 | kidney damage | b |
| 1,1-DICHLOROETHENE | 9.0E-03 | liver lesions | b | UR | | |
| 1,2 - DICHLOROETHANE | ND | | | ND | | |
| 1,1,1-TRICHLOROETHANE | ND | | | ND | | |
| 1,2-DICHLOROETHENE (cis-) | 1.0E-02 | decreased hematocrit and hemoglobin | b | ND | | |
| 1,2-DICHLOROETHENE (trans-) | 2.0E-02 | increased alkaline phosphatase | | ND | | |
| 1,4-DICHLOROBENZENE | ND | | | 8E-1 | liver, kidney effects | b |
| 2-BUTANONE | 6.0E-01 | NONE | | 1.0 | decreased birth weight | b |
| 2-METHYLPHENOL | 5.0E-02 | decreased body weight; neurotoxicity | | NV | | |
| 2-METHYLNAPHTHALENE | ND | | | ND | | |
| 2-NITROPHENOL | ND | | | ND | | |
| 4-CHLORO-3-METHYL PHENOL | ND | ND | | ND | ND | |
| ACENAPTHENE | 6.0E-02 | hepatotoxicity | | ND | | |
| ACENAPHTHALENE | ND | | | ND | | |
| ACETONE | 1.0E-01 | increased liver weight; nephrotoxicity | | ND | | |
| ALUMINUM | ND | | | ND | | |
| ANTHRACENE | 3.0E-01 | NONE | | ND | | |
| ANTIMONY | 4.0E-04 | increased mortality, altered blood chemistry | | ND | | |
| ARSENIC | 3.0E-04 | keratosis; hyperpigmentation | | ND | | |
| BARIUM | 7.0E-02 | increased blood pressure | | 5E-04 | fetotoxicity | b |
| BENZOIC ACID | 4.0 | NONE | | ND | | |
| BERYLLIUM | 5.0E-03 | NONE | | ND | | |
| BIS)2-ETHYLHEXYL)PHTHALATE | 2.0E-02 | increased relative liver weight | | ND | | |
| BROMOFORM | 2.0E-02 | liver effects | | ND | | |
| BUTYLBENZYLPHTHALATE | 2.0E-01 | altered liver weight | | ND | | |
| CADMIUM | 5.0E-04 Water | renal damage | | UR | | |
| | 1.0E-03 Food | renal damage | | | | |
| CHLOROETHANE | ND | | | 10 | delayed fetal ossification | |
| CHLOROFORM | 1.0E-02 | liver/fatty cysts | | UR | | |
| CHROMIUM (III) | 1.0 | NONE | | UR | | |
| CHROMIUM (IV) | 5.0E-03 | NONE | | UR | | |
| COBA;T | UR | | | ND | | |
| CYANIDE (free) | 2.0E-02 | decreased body weight; thyroid effects; myelin degeneration | | ND | | |
| COPPER | ND | | | ND | | |
| DIBENZOFURAN | ND | | | ND | | |
| DIMETHYLPHTHALATE | 10 | liver, kidney, and testes effects | b | ND | | |
| DI-n-BUTYLPHTHALATE | 1.0E-01 | increased mortality | | NV | | |
| DI-n-OCTYLPHTHALATE | 0.02 | liver, kidney, and testes effects | b | ND | | |
| ETHYLBENZENE | 1.0E-01 | hepatotoxicity; nephrotoxicity | | 1.0 | developmental toxicity | b |
| FLUORANTHENE | 4.0E-02 | hematological changes; nephropathy; increased liver weight | | ND | | |
| FLUORENE | 4.0E-02 | decreased erythrocytes | | ND | | |
| LEAD | ND | | | ND | | |
| MANGANESE (food) | 1.0E-01 | CNS effects | | 5E-05 | respiratory effects; | b |
| MANGANESE (water) | 5E-03 | | | 5E-05 | psychomotor disturbances | b |

See notes on Page 2.

Table 8-16

**Available Toxicity Criteria for Non-Carcinogenic Health Effects of the Chemicals of Interest (a)**

**Rosen Site**
**Cortland, New York**

| CHEMICAL | ORAL RfD (mg/kg-day) | Effect of Concern | Source | INHALATION RfC ($mg/m^3$) | Effect of Concern | Source |
|---|---|---|---|---|---|---|
| MERCURY | 3.0E-04 | kidney effects | b | 3E-04 | neurotoxicity | b |
| METHOXYCHLOR | 5.0E-03 | excessive loss of litters | | NV | | |
| METHYLENE CHLORIDE | 6.0E-02 | liver toxicity | | 3.0 | hepatotoxicity | b |
| NAPHTHALENE | ND | | | ND | | |
| NICKEL | 2.0E-02 | decreased weight (body; major organs) | | UR | | |
| PHENANTHRENE | ND | | | ND | | |
| PHENOL | 6.0E-01 | decreased fetal weight | | NV | | b |
| PYRENE | 3.0E-02 | kidney effects | | ND | | |
| SELENIUM | 5.0E-03 | clinical selenosis | | ND | | |
| SILVER | 5.0E-03 | argyria | | ND | | |
| TETRACHLOROETHENE | 1.0E-02 | hepatotoxicity | | ND | | |
| TRICHLOROETHENE | ND | | | ND | | |
| THALLIUM | 8E-05 | increased SCOT and LDH | | ND | | |
| TOLUENE | 2.0E-01 | altered weight (liver, kidneys) | | 4E-01 | CNS effects; eye irritation | |
| VANADIUM | 7.0E-03 | NONE | b | ND | | |
| XYLENES | 2.0 | decreased body weight | | ND | | |
| ZINC | 3.0E-01 | anemia | b | ND | | |

Notes:

ND = No Data.
NV = Not Verifiable.
UR = Under Review.
RfD = Reference Dose.
RfC = Reference Concentration.
CNS = Central Nervous System.

Sources:

(a) IRIS, 1994, unless otherwise noted.
(b) USEPA 1994a HEAST.

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## Table 9

**Available Toxicity Criteria for Carcinogenic Health Effects of the Chemicals of Interest (a)**

**Rosen Site**
**Cortland, New York**

| CHEMICAL | ORAL SF 1/(mg/kg-day) | HHEG CLASS | Tumor Type | Source | INHALATION URF 1/(ug/m3) | HHEG CLASS | Tumor Type | Source |
|---|---|---|---|---|---|---|---|---|
| 1,1-DICHLOROETHENE | 6.0E-01 | C | adrenal tumors | b | 5.0E-05 | C | kidney: adenocarcinoma | b |
| 1,1-DICHLOROETHANE | ND | C | | | ND | | | |
| 1,2-DICHLOROETHANE | 9.1E-02 | B2 | | | 2.6E-05 | | | |
| 1,4-DICHLOROBENZENE | 2.4E-02 | B2 | liver tumors | b | ND | | | |
| 2-METHYLPHENOL | ND | C | skin papillomas | | ND | | | |
| ARSENIC | 1.75 | A | skin cancer | | 4.3E-03 | A | respiratory system tumors | |
| BENZENE | 2.9E-02 | A | leukemia | | 8.3E-06 | A | leukemia | |
| BENZO(a)PYRENE | 7.3E+00 | B2 | forestomach tumors | | ND | | | |
| BENZO(b)FLUORANTHENE | 7.3E-01 | B2 | | c | ND | B2 | | |
| BENZO(k)FLUORANTHENE | 7.3E-02 | B2 | | c | ND | B2 | | |
| BENZO(a)ANTHRACENE | 7.3E-01 | B2 | | c | ND | B2 | | |
| BERYLLIUM | 4.3 | B2 | total tumors | | 2.4E-03 | B2 | lung tumors | |
| BIS(2-ETHYLEHXYL)PHTHALATE | 1.4E-02 | B2 | liver tumors | | ND | B2 | | |
| BROMOFORM | 7.9E-03 | B2 | large intestine: adenomatous polyps; adenocarcinoma | | 1.1E-06 | | large intestine: adenamatous polyps; adenocarcinoma | |
| CADMIUM | ND | ND | | | 1.8E-03 | B1 | respiratory system tumors | |
| CARBAZOLE | 2.0E-02 | B2 | liver tumors | | ND | | | |
| CHLOROFORM | 6.1E-03 | B2 | kidney tumors | | 2.3E-05 | B2 | liver carcinomas | |
| CHLOROMETHANE | 1.3E-02 | C | liver toxicity | | 1.8E-06 | | | |
| CHROMIUM (VI) | ND | ND | | | 1.2E-02 | A | lung tumors | |
| CHRYSENE | 7.3E-03 | B2 | | c | ND | B2 | | |
| 4,4-DDE | 3.4E-01 | B2 | liver and thyroid tumors | | ND | | | |
| DIBENZ(a,h)ANTHRACENE | 7.3 | B2 | | c | ND | B2 | | |
| INDENO(1,2,3-cd)PYRENE | 0.73 | B2 | | c | | B2 | | |
| METHYLENE CHLORIDE (e) | 7.5E-03 | B2 | liver tumors | | 4.7E-07 ** | B2 | lung; liver tumors | |
| NICKEL (REFINERY DUST) | ND | ND | | | 2.4E-04 | A | respiratory system tumors | |
| N-NITROSODIPHENYLAMINE | 4.9E-03 | B2 | bladder tumors | | ND | | | |
| POLYCHLORINATED BIPHENYLS (PCBs) | 7.7 | B2 | liver tumors | | ND | | | |
| TETRACHLOROETHENE | 5.2E-02 | C-B2 | liver tumors | d | 5.8E-07 | C-B2 | lung tumors | d |
| TRICHLOROETHENE | 1.1E-02 | C-B2 | liver tumors | d | 1.7E-06 | C-B2 | lung tumors | d |

**Notes:**

ND = No Data.
SF = Slope Factor.
HHEG Class – Human Health Evaluation Group Classification.
A – Known human carcinogen.
B1, B2 – Probable human carcinogen.
C – Limited evidence of human carcinogenicity.
D – Not classified.
E – Negative evidence of human carcinogenicity.
URF = Unit Risk Factor.
** URF is derived from a metabolized dose: conversion to SF is inappropriate.

**Sources:**

(a) IRIS, 1994, unless otherwise noted.
(b) USEPA, 1994a HEAST.
(c) Toxicity values relative to benzo(a)pyrene per USEPA, 1993b. Relative potencies recommended by USEPA (1993b) include: 1.0 for benzo(a)pyrene and dibenz (a,h) anthracene, 0.1 for benzo(a)anthracene benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 0.01 for benzo (k) fluoranthene, and 0.001 for Chrysene.
(d) ECAO, 1992

TABLE. 10

SUMMARY OF HAZARD INDICES (HIs)

ROSEN SITE
CORTLAND, NEW YORK

| Exposure Pathway | CURRENT RECEPTORS | | HYPOTHETICAL FUTURE RECEPTORS | | | |
|---|---|---|---|---|---|---|
| | TRESPASSERS | WORKERS | EXCAVATION WORKERS | ON-SITE RESIDENTS | OFF-SITE RESIDENTS | COMMERCIAL/ INDUSTRIAL WORKERS |
| Surface Soil | | | | | | |
| Incidental Ingestion | 0.07 | 0.008 | (a) NE | 1 | NE | 0.2 |
| Dermal Contact | 5E-04 | 1E-04 | NE | 0.004 | NE | 1E-04 |
| Inhalation (c) | 0.6 | 0.1 | NE | 3 | 3 | 2 |
| Subsurface Soil | | | | | | |
| Incidental Ingestion | NE | NE | 0.01 | NE | NE | NE |
| Dermal Contact | NE | NE | 2E-04 | NE | NE | NE |
| Inhalation | NE | NE | 0.004 | NE | NE | NE |
| Ground Water – Upper Outwash | | | | | | |
| Ingestion | NE | NE | NE | 31 | 66 | 9 |
| Dermal Contact | NE | NE | NE | 0.02 | 0.02 | 0.005 |
| Inhalation | NE | NE | NE | 1 | 0.4 | NE |
| Ground Water – Lower Sand and Gravel | | | | | | |
| Ingestion | NE | NE | NE | 0.3 | NE | 0.08 |
| Dermal Contact | NE | NE | NE | 1E-05 | NE | 1E-06 |
| Inhalation | NE | NE | NE | NQ | NE | NE |
| Surface Water | | | | | | |
| Dermal Contact | 6E-09 | NE | NE | NE | NE | NE |
| Sediments | | | | | | |
| Dermal Contact | NQ (b) | NE | NE | NE | NE | NE |
| Total Site HI | 0.7 | 0.1 | 0.01 | 36 (d) | 69 | 12 |

Notes:
(a) NE = Exposure pathway not evaluated for this receptor.
(b) NQ = Not quantifiable.
(c) Based on predicted maximum annual fenceline concentrations.
(d) Assumes ingestion of upper outwash ground water. A HI of 4 can be derived assuming ingestion of lower sand and gravel ground water.

TABLE 11

SUMMARY OF CANCER RISKS

ROSEN SITE
CORTLAND, NEW YORK

| Exposure Pathway | CURRENT RECEPTORS | | HYPOTHETICAL FUTURE RECEPTORS | | | |
|---|---|---|---|---|---|---|
| | TRESPASSERS | WORKERS | EXCAVATION WORKERS | ON-SITE RESIDENTS | OFF-SITE RESIDENTS | COMMERCIAL/ INDUSTRIAL WORKERS |
| **Surface Soil** | | | | | | |
| Incidental Ingestion | 2E-05 | 1E-06 | (a) NE | 3E-04 | NE | 3E-05 |
| Dermal Contact | 1E-05 | 2E-06 | NE | 1E-04 | NE | 5E-05 |
| Inhalation (c) | 6E-06 | 1E-06 | NE | 4E-05 | 4E-05 | 2E-05 |
| **Subsurface Soil** | | | | | | |
| Incidental Ingestion | NE | NE | 3E-07 | NE | NE | NE |
| Dermal Contact | NE | NE | 2E-07 | NE | NE | NE |
| Inhalation | NE | NE | 2E-07 | NE | NE | NE |
| **Ground Water – Upper Outwash** | | | | | | |
| Ingestion | NE | NE | NE | 2E-03 | 9E-04 | 5E-04 |
| Dermal Contact | NE | NE | NE | 2E-03 | 1E-05 | 3E-04 |
| Inhalation | NE | NE | NE | 2E-04 | 6E-04 | NE |
| **Ground Water – Lower Sand and Gravel** | | | | | | |
| Ingestion | NE | NE | NE | 1E-08 | NE | 3E-09 |
| Dermal Contact | NE | NE | NE | 7E-10 | NE | 5E-11 |
| Inhalation | NE | NE | NE | 7E-08 | NE | NE |
| **Surface Water** | | | | | | |
| Dermal Contact | NQ(b) | NE | NE | NE | NE | NE |
| **Sediments** | | | | | | |
| Dermal contact | 2E-07 | NE | NE | NE | NE | NE |
| Total | 4E-05 | 3E-06 | 7E-07 | 5E-03 | 2E-03 | 9E-04 |

Notes:
(a) NE = Exposure Pathway not evaluated for this receptor.
(b) NQ = Not Quantifiable
(c) Based on maximum predicted annual fenceline concentrations.

# Drinking Water Standards and Health Advisories



| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | |
| **ORGANICS** | | | | | | | | | | | | | |
| Acenaphthene | - | - | - | - | - | - | - | - | 0.06 | - | - | - | - |
| Acifluorfen | T | zero | - | F | 2 | 2 | 0.1 | 0.4 | 0.013 | 0.4 | - | 0.1 | B2 |
| Acrylamide | F | zero | TT | F | 1.5 | 0.3 | 0.02 | 0.07 | 0.0002 | 0.007 | - | 0.001 | B2 |
| Acrylonitrile | T | zero | - | D | - | - | - | - | - | - | - | 0.006 | B1* |
| Adipate (diethylhexyl) | F | 0.4 | 0.4 | - | 20 | 20 | 20 | 60 | 0.6 | 20 | 0.4 | 3 | C |
| Alachlor | F | zero | 0.002 | F | 0.1 | 0.1 | - | - | 0.01 | 0.4 | - | 0.04 | B2 |
| Aldicarb** | D | 0.007 | 0.007 | D | - | - | - | - | 0.001 | 0.035 | 0.007 | - | D |
| Aldicarb sulfone** | D | 0.007 | 0.007 | D | - | - | - | - | 0.001 | 0.035 | 0.007 | - | D |
| Aldicarb sulfoxide** | D | 0.007 | 0.007 | D | - | - | - | - | 0.001 | 0.035 | 0.007 | - | D |
| Aldrin | - | - | - | D | 0.0003 | 0.0003 | 0.0003 | 0.0003 | 0.00003 | 0.001 | - | 0.0002 | B2 |
| Ametryn | - | - | - | F | 9 | 9 | 0.9 | 3 | 0.009 | 0.3 | 0.06 | - | D |
| Ammonium sulfamate | - | - | - | F | 20 | 20 | 20 | 80 | 0.28 | 8 | 2 | - | D |
| Anthracene (PAH)*** | - | - | - | - | - | - | - | - | 0.3 | - | - | - | D |
| Atrazine | F | 0.003 | 0.003 | F | 0.1 | 0.1 | 0.05 | 0.2 | 0.035 | 0.2* | 0.003* | - | C |
| Baygon | - | - | - | F | 0.04 | 0.04 | 0.04 | 0.1 | 0.004 | 0.1 | 0.003 | - | C |
| Bentazon | T | - | - | F | 0.3 | 0.3 | 0.3 | ***1.0*** | ***0.032*** | ***1.0*** | ***0.2*** ++ | - | D |
| Benz(a)anthracene (PAH) | - | - | - | - | - | - | - | - | - | - | - | - | B2 |
| Benzene | F | zero | 0.005 | F | 0.2 | 0.2 | - | - | - | - | - | 0.1 | A |
| Benzo(a)pyrene (PAH) | F | zero | 0.0002 | - | - | - | - | - | - | - | - | 0.0002+ | B2* |
| Benzo(b)fluoranthene (PAH) | - | - | - | - | - | - | - | - | - | - | - | -+ | B2 |
| Benzo(g,h,i)perylene (PAH) | - | - | - | - | - | - | - | - | - | - | - | - | D |
| Benzo(k)fluoranthene (PAH) | - | - | - | - | - | - | - | - | - | - | - | -+ | B2 |
| bis-2-Chloroisopropyl ether | - | - | - | F | 4 | 4 | 4 | 13 | 0.04 | 1 | 0.3 | - | D |
| Bromacil | L | - | - | F | 5 | 5 | 3 | 9 | 0.13 | 5 | 0.09 | - | C |
| Bromobenzene | L | - | - | D | - | - | - | - | - | - | - | - | - |

* Under review.

**NOTE: The HA value or the MCLG/MCL value for any two or more of these three chemicals should remain at 0.007 mg/L because of similar mode of action.

***PAH = Polyaromatic hydrocarbon

+See 40CFR Parts 141 and 142

++ ***Revised value based on change in RfD***

NOTE: Anthracene and Benzo(g,h,i)perylene — not proposed in Phase V.

NOTE: Changes from the last version are noted in Italic and Bold Face print.

TABLE 12

# Drinking Water Standards and Health Advisories



| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | |
| Bromochloroacetonitrile | T | - | - | D | - | - | - | - | - | - | - | - | - |
| Bromochloromethane | - | - | - | F | 0.1 | 1 | 0.1 | 0.5 | 0.013 | 0.05 | 0.01 | - | - |
| Bromodichloromethane (THM) | P | zero | 0.1*/0.08* | D | 6 | 6 | 4 | 13 | 0.02 | 0.7 | - | 0.06 | B2 |
| Bromoform (THM) | P | zero | 0.1*/0.08* | D | 5 | 2 | 2 | 6 | 0.02 | 0.7 | - | 0.4 | B2 |
| Bromomethane | T | - | - | D | 0.1 | 0.1 | 0.1 | 0.5 | 0.001 | *0.05* | 0.01 | - | D |
| Butyl benzyl phthalate (PAE)*** | - | - | - | - | - | - | - | - | 0.2 | 7 | - | - | C |
| Butylate | - | - | - | F | 2 | 2 | 1 | 4 | 0.05 | 2 | 0.35 | - | D |
| Butylbenzene n- | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Butylbenzene sec- | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Butylbenzene tert- | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Carbaryl | - | - | - | F | 1 | 1 | 1 | 1 | 0.1 | 4 | 0.7 | - | D |
| Carbofuran | F | 0.04 | 0.04 | F | 0.05 | 0.05 | 0.05 | 0.2 | 0.005 | 0.2 | 0.04 | - | E |
| Carbon tetrachloride | F | zero | 0.005 | F | 4 | 0.2 | 0.07 | 0.3 | 0.0007 | 0.03 | - | 0.03 | B2 |
| Carboxin | - | - | - | F | 1 | 1 | 1 | 4 | 0.1 | 4 | 0.7 | - | D |
| Chloral hydrate | P | 0.04 | 0.06** | D | 7 | 0.2 | 0.2 | 0.6 | 0.0002 | 0.06 | 0.06 | - | C |
| Chloramben | - | - | - | F | 3 | 3 | 0.2 | 0.5 | 0.015 | 0.5 | 0.1 | - | D |
| Chlordane | F | zero | 0.002 | F | 0.06 | 0.06 | - | - | 0.00006 | 0.002 | - | 0.003 | B2 |
| Chlorodibromomethane (THM) | P | 0.06 | 0.1*/0.08* | D | 6 | 6 | 2 | 8 | 0.02 | 0.7 | 0.06 | - | C |
| Chloroethane | L | - | - | D | - | - | - | - | - | - | - | - | B |
| Chloroform (THM) | P | zero | 0.1*/0.08* | D | 4 | 4 | 0.1 | 0.4 | 0.01 | 0.4 | - | 0.6 | B2 |
| Chloromethane | L | - | - | F | 9 | 0.4 | 0.4 | 1 | 0.004 | 0.1 | 0.003 | - | C |
| Chlorophenol (2-) | - | - | - | D | 0.5 | 0.5 | 0.5 | 2.0 | 0.005 | 0.2 | 0.04 | - | D |
| p-Chlorophenyl methyl sulfide/sulfone/sulfoxide | - | - | - | ** | - | - | - | - | - | - | - | - | D |
| Chloropicrin | L | - | - | - | - | - | - | - | - | - | - | - | - |
| Chlorothalonil | - | - | - | F | 0.2 | 0.2 | 0.2 | 0.5 | 0.015 | 0.5 | - | 0.15 | B2 |
| Chlorotoluene o- | L | - | - | F | 2 | 2 | 2 | 7 | 0.02 | 0.7 | 0.1 | - | D |
| Chlorotoluene p- | L | - | - | F | 2 | 2 | 2 | 7 | 0.02 | 0.7 | 0.1 | - | D |
| Chlorpyrifos | - | - | - | F | 0.03 | 0.03 | 0.03 | 0.1 | 0.003 | 0.1 | 0.02 | - | D |
| Chrysene (PAH) | - | - | - | - | - | - | - | - | - | - | - | -*** | B2 |
| Cyanazine**** | T | 0.001 | - | D | 0.1 | 0.1 | 0.02 | 0.07 | 0.002 | 0.07 | 0.001**** | - | C |

* Current MCL ~A HA will not be developed due to insufficient data; a "Database Deficiency Report has been published.

* 1994 Proposed rule for Disinfectants and Disinfection By-products : Total for all THMs combined cannot exceed the 0.08 level.

**Total for all haloacetic acids cannot exceed 0.06 level. ***PAE = phthalate acid ester ****Draft HA updated for the Phase VIB regulation, which has been postponed. It includes the change of the cancer classification from D to C, thus justifying the use of an additional 10-fold safety factor for the lifetime HA.

| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | |
| Cyanogen chloride | T | - | - | - | - | - | - | - | - | - | - | - | - |
| Cymene p- | - | - | - | D | - | - | - | - | - | - | - | - | - |
| 2,4-D | F | 0.07 | 0.07 | F | 1 | 0.3 | 0.1 | 0.4 | 0.01 | 0.4 | 0.07 | - | D |
| DCPA (Dacthal) | L | - | - | F | 80 | 80 | 5 | 20 | 0.01 | - | - | - | D |
| Dalapon | F | 0.2 | 0.2 | F | 3 | 3 | 0.3 | 0.9 | 0.026 | 0.9 | 0.2 | - | D |
| Di[2-ethylhexyl]adipate | F | 0.4 | 0.4 | - | 20 | 20 | 20 | 60 | 0.6 | 20 | 0.4 | 3 | C |
| Diazinon | - | - | - | F | 0.02 | 0.02 | 0.005 | 0.02 | 0.00009 | 0.003 | 0.0006 | - | E |
| Dibromoacetonitrile | L | - | - | D | 2 | 2 | 2 | 8 | 0.02 | 0.8 | 0.02 | - | C |
| Dibromochloropropane (DBCP) | F | zero | 0.0002 | F | 0.2 | 0.05 | - | - | - | - | - | 0.003 | B2 |
| Dibromomethane | L | - | - | - | - | - | - | - | - | - | - | - | D |
| Dibutyl phthalate (PAE) | - | - | - | - | - | - | - | - | 0.1 | 4 | - | - | D |
| Dicamba | L | - | - | F | 0.3 | 0.3 | 0.3 | 1 | 0.03 | 1 | 0.2 | - | D |
| Dichloroacetaldehyde | L | - | - | D | - | - | - | - | - | - | - | - | - |
| Dichloroacetic acid | P | zero | 0.06++ | D | 1 | 1 | 1 | 4 | 0.004 | 0.1 | - | ** | B2 |
| Dichloroacetonitrile | L | - | - | D | 1 | 1 | 0.8 | 3 | 0.008 | 0.3 | 0.006 | - | C |
| Dichlorobenzene o- | F | 0.6 | 0.6 | F | 9 | 9 | 9 | 30 | 0.09 | 3 | 0.6 | - | D |
| Dichlorobenzene m- * | - | - | - | F | 9 | 9 | 9 | 30 | 0.09 | 3 | 0.6 | - | D |
| Dichlorobenzene p- | F | 0.075 | 0.075 | F | 10 | 10 | 10 | 40 | 0.1 | 4 | 0.075 | - | C |
| Dichlorodifluoromethane | L | - | - | F | 40 | 40 | 9 | 30 | 0.2 | 5 | 1 | - | D |
| Dichloroethane (1,2-) | F | zero | 0.005 | F | 0.7 | 0.7 | 0.7 | 2.6 | - | - | - | 0.04 | B2 |
| Dichloroethylene (1,1-) | F | 0.007 | 0.007 | F | 2 | 1 | 1 | 4 | 0.009 | 0.4 | 0.007 | - | C |
| Dichloroethylene (cis-1,2-) | F | 0.07 | 0.07 | F | 4 | 3 | 3 | 11 | 0.01 | 0.4 | 0.07 | - | D |
| Dichloroethylene (trans-1,2-) | F | 0.1 | 0.1 | F | 20 | 2 | 2 | 6 | 0.02 | 0.6 | 0.1 | - | D |
| Dichloromethane | F | zero | 0.005 | F | 10 | 2 | - | - | 0.06 | 2 | - | 0.5 | B2 |
| Dichlorophenol (2,4-) | - | - | - | D | 0.03 | 0.03 | 0.03 | 0.1 | 0.003 | 0.1 | 0.02 | - | D |
| Dichloropropane (1,1-) | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Dichloropropane (1,2-) | F | zero | 0.005 | F | - | 0.09 | - | - | - | - | - | 0.06 | B2 |
| Dichloropropane (1,3-) | L | - | - | D | - | - | - | - | - | - | - | - | - |

* The values for m-dichlorobenzene are based on data for o-dichlorobenzene.
** A quantitative risk estimate has not been determined.
++ Total for all haloacetic acids cannot exceed 0.06 level.

# Drinking Water Standards and Health Advisories



| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | |
| Dichloropropane (2,2-) | L | - | - | D | - | - | - | - | - | - | - | - | - |
| Dichloropropene (1,1-) | L | - | - | D | - | - | - | - | - | - | - | - | - |
| Dichloropropene (1,3-) | T | zero | - | F | 0.03 | 0.03 | 0.03 | 0.09 | 0.0003 | 0.01 | - | 0.02 | B2 |
| Dieldrin | - | - | - | F | 0.0005 | 0.0005 | 0.0005 | 0.002 | 0.00005 | 0.002 | - | 0.0002 | B2 |
| Diethyl phthalate (PAE) | - | - | - | D | - | - | - | - | 0.8 | 30 | 5 | - | D |
| Diethylene glycol dinitrate | - | - | - | * | - | - | - | - | - | - | - | - | - |
| Di(2-ethylhexyl)phthalate (PAE) | F | zero | 0.006 | D | - | - | - | - | 0.02 | 0.7 | - | 0.3 | B2 |
| Diisopropyl methylphosphonate | - | - | - | F | 8 | 8 | 8 | 30 | 0.08 | 3 | 0.6 | - | D |
| Dimethrin | - | - | - | F | 10 | 10 | 10 | 40 | 0.3 | 10 | 2 | - | D |
| Dimethyl methylphosphonate | - | - | - | F | 2 | 2 | 2 | 6 | 0.2 | 7 | 0.1 | 0.7 | C |
| Dimethyl phthalate (PAE) | - | - | - | - | - | - | - | - | - | - | - | - | D |
| 1,3-Dinitrobenzene | - | - | - | F | 0.04 | 0.04 | 0.04 | 0.14 | 0.0001 | 0.005 | 0.001 | - | D |
| Dinitrotoluene (2,4-) | L | - | - | F | 0.50 | 0.50 | 0.30 | 1 | 0.002 | 0.1 | - | 0.005 | B2 |
| Dinitrotoluene (2,6-) | L | - | - | F | 0.40 | 0.40 | 0.40 | 1 | 0.001 | 0.04 | - | 0.005 | B2 |
| tg 2,6 & 2,4 dinitrotoluene ** | - | - | - | - | - | - | - | - | - | - | - | 0.005 | B2 |
| Dinoseb | F | 0.007 | 0.007 | F | 0.3 | 0.3 | 0.01 | 0.04 | 0.001 | 0.04 | 0.007 | - | D |
| Dioxane p- | - | - | - | F | 4 | 0.4 | - | - | - | - | - | 0.7 | B2 |
| Diphenamid | - | - | - | F | 0.3 | 0.3 | 0.3 | 1 | 0.03 | 1 | 0.2 | - | D |
| Diphenylamine | - | - | - | F | 1 | 1 | 0.3 | 1 | 0.03 | 1 | 0.2 | - | D |
| Diquat | F | 0.02 | 0.02 | - | - | - | - | - | 0.0022 | 0.08 | 0.02 | - | D |
| Disulfoton | - | - | - | F | 0.01 | 0.01 | 0.003 | 0.009 | 0.00004 | 0.001 | 0.0003 | - | E |
| Dithiane (1,4-) | - | - | - | F | 0.4 | 0.4 | 0.4 | 1 | 0.01 | 0.4 | 0.08 | - | D |
| Diuron | - | - | - | F | 1 | 1 | 0.3 | 0.9 | 0.002 | 0.07 | 0.01 | - | D |
| Endothall | F | 0.1 | 0.1 | F | 0.8 | 0.8 | 0.2 | 0.2 | 0.02 | 0.7 | 0.1 | - | D |
| Endrin | F | 0.002 | 0.002 | F | 0.02 | 0.02 | 0.003 | 0.01 | 0.0003 | 0.01 | 0.002 | - | D |
| Epichlorohydrin | F | zero | TT | F | 0.1 | 0.1 | 0.07 | 0.07 | 0.002 | 0.07 | - | 0.4 | B2 |
| Ethylbenzene | F | 0.7 | 0.7 | F | 30 | 3 | 1 | 3 | 0.1 | 3 | 0.7 | - | D |
| Ethylene dibromide (EDB) | F | zero | 0.00005 | F | 0.008 | 0.008 | - | - | - | - | - | 0.00004 | B2 |
| Ethylene glycol | - | - | - | F | 20 | 6 | 6 | 20 | 2 | 40 | 7 | - | D |
| ETU | L | - | - | F | 0.3 | 0.3 | 0.1 | 0.4 | 0.00008 | 0.003 | - | 0.03 | B2 |
| Fenamiphos | - | - | - | F | 0.009 | 0.009 | 0.005 | 0.02 | 0.00025 | 0.009 | 0.002 | - | D |

* An HA will not be developed due to insufficient data; a "Database Deficiency Report" has been published.
** tg = technical grade

# Drinking Water Standards and Health Advisories



| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | |
| Fluometron | - | - | - | F | 2 | 2 | 2 | 5 | 0.013 | 0.4 | 0.09 | | D |
| Fluorene (PAH) | - | - | - | - | - | - | - | - | 0.04 | - | - | - | D |
| Fluorotrichloromethane | L | - | - | F | 7 | 7 | 3 | 10 | 0.3 | 10 | 2 | - | D |
| Fog Oil | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Fonofos | - | - | - | F | 0.02 | 0.02 | 0.02 | 0.07 | 0.002 | 0.07 | 0.01 | - | D |
| Formaldehyde | D | - | - | D | 10 | 5 | 5 | 20 | 0.15 | 5 | 1 | - | B1** |
| Gasoline, unleaded (benzene) | - | - | - | D | - | - | - | - | - | - | 0.005 | - | - |
| Glyphosate | F | 0.7 | 0.7 | F | 20 | 20 | 1 | 1 | 0.1 | 4 | 0.7 | - | E |
| Heptachlor | F | zero | 0.0004 | F | 0.01 | 0.01 | 0.005 | 0.005 | 0.0005 | 0.02 | - | 0.0008 | B2 |
| Heptachlor epoxide | F | zero | 0.0002 | F | 0.01 | - | 0.0001 | 0.0001 | 1E-5 | 0.0004 | - | 0.0004 | B2 |
| Hexachlorobenzene | F | zero | 0.001 | F | 0.05 | 0.05 | 0.05 | 0.2 | 0.0008 | 0.03 | - | 0.002 | B2 |
| Hexachlorobutadiene | T | 0.001 | - | F | 0.3 | 0.3 | 0.1 | 0.4 | 0.002 | 0.07 | 0.001 | - | C |
| Hexachlorocyclopentadiene | F | 0.05 | 0.05 | - | - | - | - | - | 0.007 | 0.2 | - | - | D |
| Hexachloroethane | L | - | - | F | 5 | 5 | 0.1 | 0.5 | 0.001 | 0.04 | 0.001 | - | C |
| Hexane (n-) | - | - | - | F | 10 | 4 | 4 | 10 | - | - | - | - | D |
| Hexazinone | - | - | - | F | 3 | 3 | 3 | 9 | 0.033* | 1* | 0.2* | - | D |
| HMX | - | - | - | F | 5 | 5 | 5 | 20 | 0.05 | 2 | 0.4 | - | D |
| Indeno(1,2,3,-c,d)pyrene (PAH) | - | - | - | D | - | - | - | - | - | - | - | -*** | B2 |
| Isophorone | L | - | - | F | 15 | 15 | 15 | 15 | 0.2 | 7 | 0.1 | 4 | C |
| Isopropyl methylphosphonate | - | - | - | D | 30 | 30 | 30 | 100 | 0.1 | 4.0 | 0.7 | - | D |
| Isopropylbenzene | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Lindane | F | 0.0002 | 0.0002 | F | 1 | 1 | 0.03 | 0.1 | 0.0003 | 0.01 | 0.0002 | - | C |
| Malathion | - | - | - | F | 0.2 | 0.2 | 0.2 | 0.8 | 0.02 | 0.8 | 0.2 | - | D |
| Maleic hydrazide | - | - | - | F | 10 | 10 | 5 | 20 | 0.5 | 20 | 4 | - | D |
| MCPA | - | - | - | F | 0.1 | 0.1 | 0.1 | 0.4 | 0.0015 | 0.05 | 0.01 | - | E |
| Methomyl | L | - | - | F | 0.3 | 0.3 | 0.3 | 0.3 | 0.025 | 0.9 | 0.2 | - | D |
| Methoxychlor | F | 0.04 | 0.04 | F | 0.05 | 0.05 | 0.05 | 0.2 | 0.005 | 0.2 | 0.04 | - | D |
| Methyl ethyl ketone* | - | - | - | F | - | - | - | - | - | - | - | - | D |
| Methyl parathion | - | - | - | F | 0.3 | 0.3 | 0.03 | 0.1 | 0.00025 | 0.009 | 0.002 | - | D |

* Under review.

** Carcinogenicity based on inhalation exposure.

***See 40CFR Parts 141 and 142

# Drinking Water Standards and Health Advisories



| Chemicals | Standards: Status Reg. | Standards: MCLG (mg/l) | Standards: MCL (mg/l) | Status HA | Health Advisories, 10-kg Child: One-day (mg/l) | 10-kg Child: Ten-day (mg/l) | 10-kg Child: Longer-term (mg/l) | 70-kg Adult: Longer-term (mg/l) | 70-kg Adult: RfD (mg/kg/day) | 70-kg Adult: DWEL (mg/l) | 70-kg Adult: Lifetime (mg/l) | 70-kg Adult: mg/l at $10^{-4}$ Cancer Risk | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert butyl ether | L | - | - | D | 24 | 24 | 3 | 12 | 0.03 | 1.0 | 0.02-0.2⁺ | | C*** |
| Metolachlor | L | - | - | F | 2 | 2 | 2 | 5.0 | 0.1 | 3.5 | 0.07 | - | C |
| Metribuzin | L | - | - | F | 5 | 5 | 0.3 | 0.5 | 0.013** | 0.5 | 0.1 | - | D |
| Monochloroacetic acid | L | - | - | D | - | - | - | - | - | - | - | - | - |
| Monochlorobenzene | F | 0.1 | 0.1 | F | 2 | 2 | 2 | 7 | 0.02 | 0.7 | 0.1 | - | D |
| Naphthalene | - | - | - | F | 0.5 | 0.5 | 0.4 | 1 | 0.004 | 0.1 | 0.02 | - | D |
| Nitrocellulose (non-toxic) | - | - | - | F | - | - | - | - | - | - | - | - | - |
| Nitroguanidine | - | - | - | F | 10 | 10 | 10 | 40 | 0.1 | 4 | 0.7 | - | D |
| Nitrophenol p- | - | - | - | F | 0.8 | 0.8 | 0.8 | 3 | 0.008 | 0.3 | 0.06 | - | D |
| Oxamyl (Vydate) | F | 0.2 | 0.2 | F | 0.2 | 0.2 | 0.2 | 0.9 | 0.025 | 0.9 | 0.2 | - | E |
| Paraquat | - | - | - | F | 0.1 | 0.1 | 0.05 | 0.2 | 0.0045 | 0.2 | 0.03 | - | E |
| Pentachloroethane | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Pentachlorophenol | F | zero | 0.001 | F | 1 | 0.3 | 0.3 | 1 | 0.03 | 1 | - | 0.03 | B2 |
| Phenanthrene (PAH) | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Phenol | - | - | - | D | 6 | 6 | 6 | 20 | 0.6 | 20 | 4 | - | D |
| Picloram | F | 0.5 | 0.5 | F | 20 | 20 | 0.7 | 2 | 0.07 | 2 | 0.5 | - | D |
| Polychlorinated biphenyls (PCBs) | F | zero | 0.0005 | P | - | - | - | - | - | - | - | 0.0005 | B2 |
| Prometon | L | - | - | F | 0.2 | 0.2 | 0.2 | 0.5 | 0.015* | 0.5* | 0.1* | - | D |
| Pronamide | - | - | - | F | 0.8 | 0.8 | 0.8 | 3 | 0.075 | 3 | 0.05 | - | C |
| Propachlor | - | - | - | F | 0.5 | 0.5 | 0.1 | 0.5 | 0.013 | 0.5 | 0.09 | - | D |
| Propazine | - | - | - | F | 1 | 1 | 0.5 | 2 | 0.02 | 0.7 | 0.01 | - | C |
| Propham | - | - | - | F | 5 | 5 | 5 | 20 | 0.02 | 0.6 | 0.1 | - | D |
| Propylbenzene n- | - | - | - | D | - | - | - | - | - | - | - | - | - |
| Pyrene (PAH) | - | - | - | - | - | - | - | - | 0.03 | - | - | - | D |
| RDX | - | - | - | F | 0.1 | 0.1 | 0.1 | 0.4 | 0.003 | 0.1 | 0.002 | 0.03 | C |
| Simazine | F | 0.004 | 0.004 | F | 0.07 | 0.07 | 0.07 | 0.07 | 0.005 | 0.2 | 0.004 | - | C |
| Styrene | F | 0.1 | 0.1 | F | 20 | 2 | 2 | 7 | 0.2 | 7 | 0.1 | - | C |
| 2,4,5-T | L | - | - | F | 0.8 | 0.8 | 0.8 | 1 | 0.01 | 0.35 | 0.07 | - | D |
| 2,3,7,8-TCDD (Dioxin) | F | zero | 3E-08 | F | 1E-06 | 1E-07 | 1E-08 | 4E-08 | 1E-09 | 4E-08 | - | 2E-08 | B2 |

* Under review. NOTE: Phenanthrene — not proposed.

** The RfD for metribuzin was revised Dec. 1994 to 0.013 mg/kg/day. Based on this revised RfD the Lifetime HA would be 0.1 mg/l assuming a 20% relative source contribution for drinking water. This information has not been incorporated in the Health Advisory document.

*** Tentative.

⁺ If the cancer classification C is accepted, the Lifetime HA is ***0.02***; otherwise it is 0.200 mg/l.

| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | | |
| Tebuthiuron | - | - | - | F | 3 | 3 | 0.7 | 2 | 0.07 | 2 | 0.5 | - | | D |
| Terbacil | - | - | - | F | 0.3 | 0.3 | 0.3 | 0.9 | 0.013 | 0.4 | 0.09 | - | | E |
| Terbufos | - | - | - | F | 0.005 | 0.005 | 0.001 | 0.005 | 0.0001 3 | 0.005 | 0.0009 | - | | D |
| Tetrachloroethane (1,1,1,2-) | L | - | - | F | 2 | 2 | 0.9 | 3 | 0.03 | 1 | 0.07 | 0.1 | | C |
| Tetrachloroethane (1,1,2,2-) | L | - | - | D | - | - | - | - | - | - | - | - | | - |
| Tetrachloroethylene | F | zero | 0.005 | F | 2 | 2 | 1 | 5 | 0.01 | 0.5 | - | 0.07 | | - |
| Tetranitromethane | - | - | - | ** | - | - | - | - | - | - | - | - | | - |
| Toluene | F | 1 | 1 | F | 20 | 2 | 2 | 7 | 0.2 | 7 | 1 | - | | D |
| Toxaphene | F | zero | 0.003 | F | - | - | - | - | 0.1* | - | - | 0.003 | | B2 |
| 2,4,5-TP | F | 0.05 | 0.05 | F | 0.2 | 0.2 | 0.07 | 0.3 | 0.0075 | 0.3 | 0.05 | - | | D |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | - | - | - | - | - | - | - | - | - | - | - | - | | - |
| Trichloroacetic acid | P | 0.3 | 0.06++ | D | 4 | 4 | 4 | 13 | 0.1 | 4.0 | 0.3 | - | | C |
| Trichloroacetonitrile | L | - | - | D | 0.05 | 0.05 | - | - | - | - | - | - | | - |
| Trichlorobenzene (1,2,4-) | F | 0.07 | 0.07 | F | 0.1 | 0.1 | 0.1 | 0.5 | 0.01 | 0.04 | 0.07 | - | | D |
| Trichlorobenzene (1,3,5-) | - | - | - | F | 0.6 | 0.6 | 0.6 | 2 | 0.006 | 0.2 | 0.04 | - | | D |
| Trichloroethane (1,1,1-) | F | 0.2 | 0.2 | F | 100 | 40 | 40 | 100 | 0.035 | 1 | 0.2 | - | | D |
| Trichloroethane (1,1,2-) | F | 0.003 | 0.005 | F | 0.6 | 0.4 | 0.4 | 1 | 0.004 | 0.1 | 0.003 | - | | C |
| Trichloroethanol (2,2,2-) | L | - | - | - | - | - | - | - | - | - | - | - | | - |
| Trichloroethylene | F | zero | 0.005 | F | - | - | - | - | - | 0.3 | - | 0.3 | | B2 |
| Trichlorophenol (2,4,6-) | L | - | - | D | - | - | - | - | - | - | - | 0.3 | | B2 |
| Trichloropropane (1,1,1-) | - | - | - | D | - | - | - | - | - | - | - | - | | - |
| Trichloropropane (1,2,3-) | L | - | - | F | 0.6 | 0.6 | 0.6 | 2 | 0.006 | 0.2 | 0.04 | 0.5 | | B2 |
| Trifluralin | L | - | - | F | 0.08 | 0.08 | 0.08 | 0.3 | 0.0075 | 0.3 | 0.005 | 0.5 | | C |
| Trimethylbenzene (1,2,4-) | - | - | - | D | - | - | - | - | - | - | - | - | | - |
| Trimethylbenzene (1,3,5-) | - | - | - | D | - | - | - | - | - | - | - | - | | - |
| Trinitroglycerol | - | - | - | F | 0.005 | 0.005 | 0.005 | 0.005 | - | - | 0.005 | - | | - |
| Trinitrotoluene | - | - | - | F | 0.02 | 0.02 | 0.02 | 0.02 | 0.0005 | 0.02 | 0.002 | 0.1 | | C |
| Vinyl chloride | F | zero | 0.002 | F | 3 | 3 | 0.01 | 0.05 | - | - | - | 0.0015 | | A |
| Xylenes | F | 10 | 10 | F | 40 | 40 | 40 | 100 | 2 | 60 | 10 | - | | D |

* Under review.

** A HA will not be developed due to insufficient data; a "Database Deficiency Report" has been published.

++ Total for all haloacetic acids cannot exceed 0.06 mg/l level.

TABLE 12

# Drinking Water Standards and Health Advisories



| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | |
| INORGANICS | | | | | | | | | | | | | |
| Aluminum | L | - | - | D | - | - | - | - | - | - | - | - | - |
| Ammonia | - | - | - | D | - | - | - | - | - | - | 30 | - | D |
| Antimony | F | 0.006 | 0.006 | F | 0.01 | 0.01 | 0.01 | 0.015 | 0.0004 | 0.01 | 0.003 | - | D |
| Arsenic | * | - | 0.05 | D | - | - | - | - | - | - | - | 0.002 | A |
| Asbestos (fibers/l >10μm length) | F | 7 MFL | 7 MFL | - | - | - | - | - | - | - | - | 700 MFL | A |
| Barium | F | 2 | 2 | F | - | - | - | - | 0.07 | 2 | 2 | - | D |
| Beryllium | F | 0.004 | 0.004 | D | 30 | 30 | 4 | 20 | 0.005 | 0.2 | - | 0.0008 | B2 |
| Boron | L | - | - | D | 4 | 0.9 | 0.9 | 3 | 0.09 | 3 | 0.6 | - | D |
| Bromate | L | zero | 0.01 | - | - | - | - | - | - | - | - | - | - |
| Cadmium | F | 0.005 | 0.005 | F | 0.04 | 0.04 | 0.005 | 0.02 | 0.0005 | 0.02 | 0.005 | - | D |
| Chloramine | P | 4*** | 4 | D | 1 | 1 | 1 | 1 | 0.1 | 3.3 | 3/4*** | - | - |
| Chlorate | L | - | - | D | - | - | - | - | - | - | - | - | - |
| Chlorine | P | 4 | 4 | D | - | - | - | - | 0.1 | - | - | - | D |
| Chlorine dioxide | T | 0.3 | 0.8 | D | - | - | - | - | 0.01 | 0.35 | 0.3 | - | D |
| Chlorite | L | 0.08 | 1 | D | - | - | - | - | 0.003 | 0.1 | 0.08 | - | D |
| Chromium (total) | F | 0.1 | 0.1 | F | 1 | 1 | 0.2 | 0.8 | 0.005 | 0.2 | 0.1 | - | D |
| Copper (at tap) | F | 1.3 | TT** | - | - | - | - | - | - | - | - | - | D |
| Cyanide | F | 0.2 | 0.2 | F | 0.2 | 0.2 | 0.2 | 0.8 | 0.022 | 0.8 | 0.2 | - | D |
| Fluoride* | F | 4 | 4 | - | - | - | - | - | 0.12 | - | - | - | - |
| Hypochlorite | P | 4[1] | - | - | - | - | - | - | - | - | - | - | - |
| Hypochlorous acid | P | 4[1] | - | - | - | - | - | - | - | - | - | - | - |
| Lead (at tap) | F | zero | TT** | - | - | - | - | - | - | - | - | - | B2 |
| Manganese | L | - | - | - | - | - | - | - | 0.14[2] | - | - | - | - |
| Mercury (inorganic) | F | 0.002 | 0.002 | F | - | - | - | 0.002 | 0.0003 | 0.01 | 0.002 | - | D |
| Molybdenum | L | - | - | D | *0.02* | *0.02* | *0.01* | 0.05 | 0.005 | 0.2 | 0.04 | - | D |
| Nickel | F | 0.1[3] | 0.1[3] | F | 1 | 1 | 0.5 | 1.7 | 0.02 | 0.6 | 0.1 | - | D |
| Nitrate (as N) | F | 10 | 10 | F | - | 10* | - | - | 1.6 | - | - | - | * |

* Under review.
** Copper — action level 1.3 mg/L, Lead — action level 0.015 mg/L
*** Measured as free chlorine.
[1] Regulated as chlorine.
[2] In food.
[3] In water.

# Drinking Water Standards and Health Advisories



| Chemicals | Standards | | | Status HA | Health Advisories | | | | | | | | | Cancer Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10-kg Child | | | 70-kg Adult | | | | | | |
| | Status Reg. | MCLG (mg/l) | MCL (mg/l) | | One-day (mg/l) | Ten-day (mg/l) | Longer-term (mg/l) | Longer-term (mg/l) | RfD (mg/kg/day) | DWEL (mg/l) | Lifetime (mg/l) | mg/l at $10^{-4}$ Cancer Risk | | |
| Nitrite (as N) | F | 1 | 1 | F | - | 1* | - | - | 0.16* | - | - | - | | - |
| Nitrate + Nitrite (both as N) | F | 10 | 10 | F | - | - | - | - | - | - | - | - | | - |
| Selenium | F | 0.05 | 0.05 | - | - | - | - | - | 0.005 | - | - | - | | - |
| Silver | - | - | - | D | 0.2 | 0.2 | 0.2 | 0.2 | 0.005 | 0.2 | 0.1 | - | | D |
| Sodium | - | - | - | D | - | - | - | - | - | 20** | - | - | | - |
| Strontium | L | - | - | D | 25 | 25 | 25 | 90 | 0.6 | 90 | 17 | - | | D |
| Sulfate | P | 500 | 500 | D | - | - | - | - | - | - | - | - | | - |
| Thallium | F | 0.0005 | 0.002 | F | 0.007 | 0.007 | 0.007 | 0.02 | 0.00007 | 0.0023 | 0.0005 | - | | - |
| Vanadium | *T* | - | - | D | - | - | - | - | - | - | - | - | | D |
| White phosphorous | - | - | - | F | - | - | - | - | 0.00002 | 0.0005 | 0.0001 | | | D |
| Zinc | L | - | - | *D* | 6 | 6 | 3 | 10 | 0.3 | 10 | 2 | - | | D |
| Zinc chloride (measured as Zinc) | L | - | - | F | 6 | 6 | 3 | 10 | 0.3 | 10 | 2 | - | | D |
| **RADIONUCLIDES** | | | | | | | | | | | | | | |
| Beta particle and photon activity (formerly man-made radionuclides) | *F* | ++ | 4 mrem | - | - | - | - | - | - | - | - | 4 mrem/y | | A |
| Gross alpha particle activity | *F* | ++ | 15 pCi/L | - | - | - | - | - | - | - | - | 15 pCi/L | | A |
| ***Combined Radium 226 & 228*** | *F* | ++ | 5 pCi/L | - | - | - | - | - | - | - | - | 20 pCi/L | | A |
| Radon+ | P | zero | 300 pCi/L | - | - | - | - | - | - | - | - | 150 pCi/L | | A |
| Uranium+ | P | zero | 20 µg/L | - | - | - | - | - | 0.003 | - | - | - | | A |

* Under review. ** Guidance.
\+ 1991 Proposed National Primary Drinking Water Rule for Radionuclides
*++No final MCLG, but zero proposed in 1991.*

Table 13
NEW YORK STATE MAXIMUM CONTAMINANT LEVELS
(Chapter I of the NYS Sanitary Code, Part 5, Subpart 5-1)
ORGANIC
(as of February 1992)
All units are milligrams per liter (mg/l)

GENERAL ORGANIC CHEMICALS

| Principal Organic Contaminant (POC)[18] | MCL |
|---|---|
| Benzene | 0.005 |
| Bromobenzene | 0.005 |
| Bromochloromethane | 0.005 |
| Bromomethane | 0.005 |
| n-butylbenzene | 0.005 |
| sec-butylbenzene | 0.005 |
| tert-butylbenzene | 0.005 |
| Carbon tetrachloride | 0.005 |
| Chloroethane | 0.005 |
| 2-chlorotoluene | 0.005 |
| 4-chlorotoluene | 0.005 |
| Dibromomethane | 0.005 |
| o-Dichlorobenzene (1,2) | 0.005 |
| m-Dichlorobenzene (1,3) | 0.005 |
| p-Dichlorobenzene (1,4) | 0.005 |
| Dichlorodifluoromethane | 0.005 |
| 1,1-Dichloroethane | 0.005 |
| 1,2-Dichloroethane | 0.005 |
| 1,1-Dichloroethylene | 0.005 |
| cis-1,2-Dichloroethylene | 0.005 |
| trans-1,2-Dichloroethylene | 0.005 |
| Dichloromethane (Methylene chloride) | 0.005 |
| 1,2-Dichloropropane | 0.005 |
| 1,3-Dichloropropane | 0.005 |
| 2,2-Dichloropropane | 0.005 |
| 1,1-Dichloropropene | 0.005 |
| cis-1,3-Dichloropropene | 0.005 |
| trans-1,3-Dichloropropene | 0.005 |
| Ethylbenzene | 0.005 |
| Hexachlorobutadiene | 0.005 |
| Isopropylbenzene | 0.005 |

| Principal Organic Contaminant (POC)[18] | MCL |
|---|---|
| p-Isopropyltoluene | 0.005 |
| Monochlorobenzene | 0.005 |
| n-Propylbenzene | 0.005 |
| Styrene | 0.005 |
| 1,1,1,2-Tetrachloroethane | 0.005 |
| 1,1,2,2-Tetrachloroethane | 0.005 |
| Tetrachloroethylene | 0.005 |
| Toluene | 0.005 |
| 1,2,3-Trichlorobenzene | 0.005 |
| 1,2,4-Trichlorobenzene | 0.005 |
| 1,1,1-Trichloroethane | 0.005 |
| 1,1,2 Trichloroethane | 0.005 |
| Trichloroethylene (TCE) | 0.005 |
| Trichlorofluoromethane | 0.005 |
| 1,2,3-Trichloropropane | 0.005 |
| 1,2,4-Trimethylbenzene | 0.005 |
| 1,3,5-Trimethylbenzene | 0.005 |
| Xylenes (total) | 0.005 |

| Unspecified organic contaminant (UOC)[19] | MCL |
|---|---|
| " " | 0.05 |

| Total POCs[18] and UOCs[19] | MCL |
|---|---|
| " " | 0.1 |

| Vinyl chloride | MCL |
|---|---|
| " " | 0.002 |

Table 13 (Continued)

PESTICIDES/HERBICIDES

| Contaminant | MCL |
| --- | --- |
| Endrin | 0.0002 |
| Ethylene dibromide | 0.005 |
| Lindane | 0.004 |
| Methoxychlor | 0.050 |
| Toxaphene | 0.005 |
| 2,4-D | 0.050 |
| 2,4,5-TP (Silvex) | 0.010 |

TRIHALOMETHANES

| Contaminant | MCL |
| --- | --- |
| Total Trihalomethanes | 0.10 |

## TABLE 13-INORGANIC CHEMICALS AND PHYSICAL CHARACTERISTICS MAXIMUM CONTAMINANT LEVEL DETERMINATION

| Contaminants | MCL (mg/l) | Determination of MCL violation |
|---|---|---|
| Asbestos | 7.0 Million fibers/liter (MFL) (Longer than 10 microns) | If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect one more sample from the same sampling point within 2 weeks or as soon as practical. An MCL violation occurs when the average[1] of the two results exceeds the MCL. |
| Arsenic | 0.05 | |
| Barium | 2.00 | |
| Cadmium | 0.005 | |
| Chromium | 0.10 | |
| Mercury | 0.002 | |
| Selenium | 0.01 | |
| Silver | 0.05 | |
| Fluoride | 2.2 | |
| Chloride | 250.0 | |
| Iron | 0.3[2] | |
| Manganese | 0.3[2] | |
| Sodium | No designated limits[3] | |
| Sulfate | 250.0 | |
| Zinc | 5.0 | |
| Color | 15 Units | |
| Odor | 3 Units | |

[1]Rounded to the same number of significant figures as the MCL for the contaminant in question.

[2]If iron and manganese are present, the total concentration of both should not exceed 0.5 mg/l. Higher levels may be allowed by the State when justified by the supplier of water.

TABLE 14

Recommended soil cleanup objectives (mg/kg or ppm)
Volatile Organic Contaminants

| Contaminant | Partition coefficient Koc | Groundwater Standards/ Criteria Cw ug/l or ppb. | a Allowable Soil conc. ppm. Cs | b ** Soil Cleanup objectives to Protect GW Quality (ppm) | USEPA Health Based (ppm) Carcinogens | USEPA Health Based (ppm) Systemic Toxicants | CROL (ppb) | *** Rec.soil Clnup Objct (ppm) |
|---|---|---|---|---|---|---|---|---|
| Acetone | 2.2 | 50 | 0.0011 | 0.11 | N/A | 8,000 | 10 | 0.2 |
| Benzene | 83 | 0.7 | 0.0006 | 0.06 | 24 | N/A | 5 | 0.06 |
| Benzoic Acid | 54* | 50 | 0.027 | 2.7 | N/A | 300,000 | 5 | 2.7 |
| 2-Butanone | 4.5* | 50 | 0.003 | 0.3 | N/A | 4,000 | 10 | 0.3 |
| Carbon Disulfide | 54* | 50 | 0.027 | 2.7 | N/A | 8,000 | 5 | 2.7 |
| Carbon Tetrachloride | 110* | 5 | 0.006 | 0.6 | 5.4 | 60 | 5 | 0.6 |
| Chlorobenzene | 330 | 5 | 0.017 | 1.7 | N/A | 2,000 | 5 | 1.7 |
| Chloroethane | 37* | 50 | 0.019 | 1.9 | N/A | N/A | 10 | 1.9 |
| Chloroform | 31 | 7 | 0.003 | 0.30 | 114 | 800 | 5 | 0.3 |
| Dibromochloromethane | N/A | 50 | N/A | N/A | N/A | N/A | 5 | N/A |
| 1,2-Dichlorobenzene | 1,700 | 4.7 | 0.079 | 7.9 | N/A | N/A | 330 | 7.9 |
| 1,3-Dichlorobenzene | 310 * | 5 | 0.0155 | 1.55 | N/A | N/A | 330 | 1.6 |
| 1,4-Dichlorobenzene | 1,700 | 5 | 0.085 | 8.5 | N/A | N/A | 330 | 8.5 |
| 1,1-Dichloroethane | 30 | 5 | 0.002 | 0.2 | N/A | N/A | 5 | 0.2 |
| 1,2-Dichloroethane | 14 | 5 | 0.001 | 0.1 | 7.7 | N/A | 5 | 0.1 |
| 1,1-Dichloroethene | 65 | 5 | 0.004 | 0.4 | 12 | 700 | 5 | 0.4 |
| 1,2-Dichloroethene(trans) | 59 | 5 | 0.003 | 0.3 | N/A | 2,000 | 5 | 0.3 |
| 1,3-dichloropropane | 51 | 5 | 0.003 | 0.3 | N/A | N/A | 5 | 0.3 |
| Ethylbenzene | 1,100 | 5 | 0.055 | 5.5 | N/A | 8,000 | 5 | 5.5 |
| 113 Freon(1,1,2 Trichloro-1,2,2 Trifluoroethane) | 1,230* | 5 | 0.060 | 6.0 | N/A | 200,000 | 5 | 6.0 |
| Methylene chloride | 21 | 5 | 0.001 | 0.1 | 93 | 5,000 | 5 | 0.1 |
| 4-Methyl-2-Pentanone | 19* | 50 | 0.01 | 1.0 | N/A | N/A | 10 | 1.0 |
| Tetrachloroethene | 277 | 5 | 0.014 | 1.4 | 14 | 800 | 5 | 1.4 |
| 1,1,1-Trichloroethane | 152 | 5 | 0.0076 | 0.76 | N/A | 7,000 | 5 | 0.8 |
| 1,1,2,2-Tetrachloroethane | 118 | 5 | 0.006 | 0.6 | 35 | N/A | 5 | 0.6 |
| 1,2,3-trichloropropane | 68 | 5 | 0.0034 | 0.34 | N/A | 80 | 5 | 0.4 |
| 1,2,4-Trichlorobenzene | 670 * | 5 | 0.034 | 3.4 | N/A | N/A | 330 | 3.4 |
| Toluene | 300 | 5 | 0.015 | 1.5 | N/A | 20,000 | 5 | 1.5 |
| Trichloroethene | 126 | 5 | 0.007 | 0.70 | 64 | N/A | 5 | 0.7 |
| Vinyl chloride | 57 | 2 | 0.0012 | 0.12 | N/A | N/A | 10 | 0.2 |
| Xylenes | 240 | 5 | 0.012 | 1.2 | N/A | 200,000 | — | 1.2 |

a. Allowable Soil Concentration Cs = f x Cw x Koc

b. Soil cleanup objective = Cs x Correction Factor (CF)

N/A is not available

* Partition coefficient is calculated by using the following equation: log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm. All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% , and should be adjusted for the actual soil organic carbon content if it is known.

# APPENDIX III

# ADMINISTRATIVE RECORD INDEX

12/97

**ROSEN BROTHERS SCRAP YARD SITE**
**ADMINISTRATIVE RECORD FILE**
**INDEX OF DOCUMENTS**

## 1.0 SITE IDENTIFICATION

### 1.1 Background - RCRA and other Information

P. 100001- 100315 Report: Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigations, Rosen Site, City of Cortland, Cortland County, N.Y., prepared by Wehran Engineering, P.C., prepared for New York State Department of Environmental Conservation (NYSDEC), Division of Solid and Hazardous Waste, April 1987.

P. 100316- 100559 Report: Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigations, Appendix A-D, Rosen Site, City of Cortland, Cortland County, N.Y., prepared by Wehran Engineering, P.C., prepared for NYSDEC, Division of Solid and Hazardous Waste, April 1987.

## 3.0 REMEDIAL INVESTIGATION

### 3.1 Sampling and Analysis Plans

P. 300001- 300065 Plan: Sampling and Analysis Plan, Volume 1, Quality Assurance Project Plan, Remedial Investigation/Feasibility Study, Rosen Site, Cortland, N.Y., Participating Potentially Responsible Parties, prepared by Blasland & Bouck Engineers, P.C., Final Revision December 1990.

P. 300066- 300305 Plan: Sampling and Analysis Plan, Volume 2, Field Sampling Plan, Remedial Investigation /Feasibility Study, Rosen Site, Cortland, N.Y., Participating Potentially Responsible Parties, prepared by Blasland & Bouck Engineers, P.C., Final Revision December 1990.

### 3.2 Sampling and Analysis Data/ Chain of Custody Forms

P. 300306- 300306 Rosen Data Summary, Soil Split Sample Results and Rinsate, undated.

P. 300307- 300343 Inorganic Chemical Constituents and Physical Characteristics Sampling, undated.

P. 300344- 300725 Bromofluorobenzene and Decafluorotriphenylphosphine data package, December 10, 1987. (Attachment: Analytical Report, Incineration Disposal (Sample FOC01), prepared by ETC-Findlay Laboratory, prepared for U.S. EPA, Region II, December 8, 1987.)

P. 300726- 300737 Data Summary Table for Rosen Scrap Yard Remedial Investigation, prepared by Versar, Inc., prepared for U.S. Environmental Protection Agency, Headquarters, Office of Waste Programs Enforcement, December 11, 1992.

P. 300738- 300739 Sampling Data for trial run of treatment of Pump Test effluent with DEC discharge standards, prepared by Buck Environmental Laboratories, Inc., prepared for Blasland, Bouck & Lee, Inc., January 18, 1995.

**3.3 Work Plans**

P. 300740- 300832 Plan: Work Plan for Remedial Investigation/Feasibility Study, Rosen Site, Cortland, N.Y., Participating Potentially Responsible Parties, prepared by Blasland & Bouck Engineers, P.C., December 1990.

P. 300833- 300841 January 1992 Addendum to the Work Plan, Remedial Investigation/Feasibility Study, Rosen Site, Cortland, N.Y., Final Revision December 1990.

**3.4 Remedial Investigation Reports**

P. 300842- 300849 Chapter 7, "Redox Reactions" from Environmental Chemistry of Soils, written by Mr. Murray B. McBride, undated.

P. 300850- 300865 Chapter (w/ attachments) from the U.S. Geological Survey Professional Paper #820, United States Mineral Resources, Manganese, prepared by Mr. John Van N. Dorr, II, Mr. Max D. Crittenden, Jr., and Mr. Ronald G. Worl, undated. (Attachment: Study and Interpretation of the Chemical Characteristics of Natural Water, Third Edition, prepared by the U.S. Geological Survey, Water-Supply Paper 2254, undated.)

| | | |
|---|---|---|
| P. | 300866-300938 | Report: U.S. Geological Survey, Water-Resources Investigations 78-3, Open-File Report, Quality and Movement of Ground Water in Otter Creek - Dry Creek Basin, Cortland County, N.Y., prepared in cooperation with Cortland County, N.Y., undated. |
| P. | 300939-300989 | Report: U.S. Geological Survey, Water-Resources Investigations, Report 85-4090, Hydrogeology of the Surficial Outwash Aquifer at Cortland, Cortland County, N.Y., prepared in cooperation with Susquehanna River Basin Commission, undated. |
| P. | 300990-301026 | Report: U.S. Geological Survey, Water Resources Investigations 78-71, Open File Report, Digital-Model Simulation of the Glacial-Outwash Aquifer, Otter Creek-Dry Creek Basin, Cortland County, N.Y., prepared in cooperation with Cortland County, N.Y., undated. |
| P. | 301027-301249 | Report: Summary Report, Final Summary Report for Soil and Drum Sampling, Rosen Brothers Scrap Yard Site, Cortland, N.Y., prepared by Versar, prepared for the Office of Waste Programs Enforcement, U.S. EPA, Headquarters, June 6, 1991. |
| P. | 301250-301581 | Report: Remedial Investigation Report, Rosen Site, Cortland, N.Y., Volume 1 of 3, Contributing Potentially Responsible Parties, prepared by Blasland, Bouck & Lee, Inc., Revised May 1994. |
| P. | 301582-301897 | Report: Remedial Investigation Report, Rosen Site, Cortland, N.Y., Volume 2 of 3, Contributing Potentially Responsible Parties, prepared by Blasland, Bouck & Lee, Inc., Revised May 1994. |
| P. | 301898-302543 | Report: Remedial Investigation Report, Rosen Site, Cortland, N.Y., Volume 3 of 3, Contributing Potentially Responsible Parties, prepared by Blasland, Bouck & Lee, Inc., Revised May 1994. |
| P. | 302544-302739 | Report: Baseline Risk Assessment, Rosen Site, Cortland, N.Y., Contributing Potentially Responsible Parties, prepared by Blasland, Bouck & Lee, Inc., January 1995. |
| P. | 302740-302755 | Report: Report of Off-Site Soil Gas Modeling for the Remedial Investigation/Feasibility Study Oversight at the Rosen Brothers Scrap Yard Site, Cortland, Cortland County, N.Y., prepared by ICF Kaiser Environment & Energy Group, prepared for U.S. EPA, Region II, August 1995. (Attachments: |

(1) Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Claudine Jones Rafferty, Public Health Specialist II (Environment), Bureau of Environmental Exposure Investigation, New York State Department of Health (NYSDOH), re: Rosen Brothers Site, Report of Off-Site Soil Gas Monitoring, Cortland, Cortland County, January 3, 1996, and (2) Letter to Mr. Mark Granger, Work Assignment Manager, U.S. EPA, Region II, from Mr. Curtis A. Kraemer, Site Manager, ICF Technology, Inc., re: Rosen Brothers Scrap Yard Site RI/FS Oversight, Response to Comments on Off-Site Soil Gas Modeling, March 21, 1996.)

**3.5 Correspondence**

P. 302756-302758 Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Manager, Geology, Blasland & Bouck Engineers, P.C., re: November 1992 Addendum, Rosen Site, November 20, 1992. (Attachment: November 1992 Addendum to the Work Plan, Remedial Investigation/Feasibility Study, Final Revision December 1990, Rosen Site, Cortland N.Y., November 20, 1992.)

P. 302759-302785 Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland & Bouck Engineers, P.C., re: October 1993 Addendum, Rosen Site, October 18, 1993. (Attachment: October 1993 Addendum to the Work Plan, Remedial Investigation/Feasibility Study, Final Revision December 1990, Rosen Site, Cortland, N.Y., October 18, 1993.)

P. 302786-302797 Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland, Bouck & Lee, Inc., re: Rosen Site, Aquifer Performance Test, February 24, 1994. (Attachments: (1) Table 1 - Ground-Water Analytical Results, Rosen Site Aquifer Test Program, Cortland, N.Y., January 19, 1995, (2) Table 2 - Summary of Transmissivity and Hydraulic Conductivity Pumping Test at Well W-25, Rosen Site, Cortland, N.Y., January 19, 1995, (3) Aquifer Test Program, Draft, Well No. W-25, prepared by Blasland, Bouck & Lee, Inc., February 27, 1995, and (4) Aquifer Test Program, Draft, Well No. W-26, prepared by Blasland, Bouck & Lee, Inc., February 27, 1995.)

| | | |
|---|---|---|
| P. | 302798-302817 | Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland, Bouck & Lee, Inc., re: October 1994 Addendum, Rosen Site, November 7, 1994 (Attachment: Addendum to the Work Plan, Remedial Investigation/Feasibility Study, Rosen Site, Cortland, N.Y., prepared by Blasland, Bouck & Lee, Inc., October 1994.) |
| P. | 302818-302819 | Memorandum to Mr. Augus Eaton, Division of Water, NYSDEC, from Mr. David Camp, Division of Hazardous Waste Remediation (DHWR), NYSDEC, re: Request for permission to discharge groundwater generated from a pump test at the Rosen Site, January 5, 1995. (Attachment: Table listing constituents and concentrations detected in the groundwater, May 1991.) |
| P. | 302820-302821 | Memorandum to Mr. David Camp, DHWR, NYSDEC, from Mr. Shayne Mitchell, BWFD, NYSDEC, re: Rosen Site, Proposed Short Term Wastewater Discharge, January 11, 1995. (Attachment: Effluent Limitations and Monitoring Requirements, Rosen Site, Cortland, Cortland County, January 11, 1995.) |
| P. | 302822 302824 | Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland, Bouck & Lee, Inc., re: Aquifer Performance Test, Rosen Site, Cortland, N.Y., January 18, 1995. (Attachment: Attachment 1 - Effluent Limitations and Monitoring Requirements, Rosen Site, Cortland, Cortland County, January 11, 1995.) |
| P. | 302825-302835 | Letter to the Director of various divisions and regions, from Mr. Elliott P. Laws, Assistant Administrator, U.S. EPA, Headquarters, re: Land Use in the CERCLA Remedy Selection Process, May 25, 1995. |
| P. | 302836-302872 | Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Mr. David W. Hale, P.E., Associate, Blasland, Bouck & Lee, Inc., re: Additional Preliminary Engineering Cost Estimates, Rosen Site - Cortland, N.Y., June 21, 1995. (Attachment: Additional Preliminary Engineering Cost Estimates, Rosen Site - Cortland, N.Y., June 21, 1995.) |

P. 302873- 302908 Letter (w/ attachments) to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland, Bouck & Lee, Inc., re: Rosen Site, August 1995 Ground-Water Sampling and Analysis Event, December 5, 1995.

P. 302909- 302951 Letter (w/ attachments) Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland, Bouck & Lee, Inc., re: Rosen Site, December 1995 Ground-Water Sampling and Analysis Event, March 8, 1996.

P. 302952- 302953 Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Mr. David A. Camp, P.E., Project Engineer, NYSDEC, re: Rosen Site, Cortland County, N.Y., April 4, 1996.

P. 302954- 302956 Letter to Mr. Mark E. Granger, Remedial Project Manager, U.S. EPA, Region II, from Ms. Nancy E. Gensky, Associate, Blasland, Bouck & Lee, Inc., re: Schedule for Geophysical Investigation Program, Rosen Site - Cortland, N.Y., April 15, 1996. (Attachment: Figure 1 - Proposed Geophysical Survey Area Location Map, Rosen Site, Cortland, N.Y., prepared by Blasland, Bouck & Lee, Inc., undated.)

## 4.0 FEASIBILITY STUDY

### 4.6 Correspondence

P. 400001- 400090 Letter to Mr. Mark E. Granger, Remedial Project Manager, U.S. EPA, Region II, from Mr. David W. Hale, P.E., Associate, Blasland, Bouck & Lee, Inc., re: Rosen Site - Cortland, N.Y., Transmittal of the Sanitary Code, City of Cortland, March 4, 1997. (Attachment: The Sanitary Code of the Cortland County Health District, with amendments, prepared by the Cortland County Board of Health, undated.)

## 7.0 ENFORCEMENT

### 7.3 Administrative Orders

P. 700001- 700013 U.S. EPA, Region II, Administrative Order, Index No., II-CERCLA-80215, In the Matter of Dallas Corporation, Keystone Consolidated Industries, Inc., Monarch Machine Tool Company, Respondents, September 15, 1988.

P. 700014-700026 U.S. EPA, Region II, Administrative Order, Index No., II-CERCLA-90210, In the Matter of Niagara Mohawk Power Corporation, Respondent, April 4, 1989.

P. 700027-700051 U.S. EPA, Region II, Administrative Order on Consent, Index No. II-CERCLA-00204, In the Matter of Dallas Corporation, Monarch Machine Tool Company, Niagara Mohawk Power Corporation, Respondents, December 28, 1989.

P. 700052-700069 U.S. EPA, Region II, Administrative Order, Index No., II-CERCLA-00205, In the Matter of Agway, Inc., Cooper Industries, Inc., Keystone Consolidated Industries, Inc., Potter Paint Company, Inc., Harvey M. Rosen, Smith Corona Corporation, Respondents, February 7, 1990.

**7.5 Affidavits**

P. 700070-700231 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., et al., Plaintiffs, vs. Agway, Inc., et al., Defendants, Deposition of Mr. R. Michael Scott, Volumes 1-4, prepared by Precision Reporters, Inc., October 12, 1992. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

P. 700232-700446 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., et al., Plaintiffs, vs. Agway, Inc., et al., Defendants, Deposition of Mr. Carl Edward Kimbrough, Volumes 1-2, prepared by Precision Reporters, Inc., October 21, 1992. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

P. 700447-700514 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., et al., Plaintiffs, vs. Agway, Inc., et al., Defendants, Deposition of Mr. Dennis M. Hollenbeck, Volumes 1-2, prepared by Precision Reporters, Inc., November 17, 1992. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

P. 700515-701202 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., et al., Plaintiffs, vs. Agway, Inc., et al., Defendants, Deposition of Mr. Derl Ross, Volumes 1-3, prepared by Precision Reporters, Inc., March 23, 1993. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

P. 701203-701234 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., Plaintiffs, vs. Agway, Inc., Defendants, Deposition of Mr. William E. Bondarenko, prepared by Precision Reporters, Inc., May 5, 1994. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

P. 701235-701494 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., et al., Plaintiffs, vs. Agway, Inc., et al., Defendants, Deposition of Mr. Philip Rosen, Volumes 1-5, prepared by Precision Reporters, Inc., May 23, 1994. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

P. 701495-701546 U.S. District Court, Northern District of N.Y., Cooper Industries, Inc., et al., Plaintiffs, vs. Agway, Inc., et al., Defendants, Deposition of Mr. Glenn E. Matoon, prepared by Precision Reporters, Inc., December 12, 1994. (Note: This document is **CONFIDENTIAL**. It is located at the U.S. EPA Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866).

## 9.0 NATURAL RESOURCE TRUSTEES

### 9.4 Correspondence

P. 900001-900002 Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Mr. Todd S.Miller, U.S. Department of the Interior, re: Request for Information regarding the extent of the glaciolacustrine confining layer in the Cortland aquifer at the Rosen Superfund site, January 13, 1994. (Attachment: Figure 2 - Site Map, Rosen Site, Cortland, N.Y., prepared by Blasland & Bouck Engineers, P.C., undated.)

| | | |
|---|---|---|
| P. | 900003- 900044 | Letter to Mr. Mark Granger, Remedial Project Manager, U.S. EPA, Region II, from Mr. Todd S.Miller, U.S. Department of the Interior, re: Results of a particle-tracking analyses for the Rosen Superfund site, February 24, 1994. (Attachment: Groundwater Path Lines from the Rosen Superfund Site, Cortland, N.Y., prepared by Mr. Todd S. Miller, undated.) |

## 10.0 PUBLIC PARTICIPATION

### 10.2 Community Relations Plans

| | | |
|---|---|---|
| P. | 1000001- 1000038 | Plan: Revised Community Relations Plan, Rosen Brothers Site, Cortland, N.Y., prepared by Booz, Allen & Hamilton, prepared for the Office of Waste Programs Enforcement, U.S. EPA, Headquarters, May 24, 1991. |

### 10.6 Facts Sheets and Press Releases

| | | |
|---|---|---|
| P. | 1000039- 1000053 | Quick Reference Fact Sheet: Presumptive Remedy for CERCLA Municipal Landfill Sites, prepared by U.S. EPA, Region II, September 1993. |

# APPENDIX IV

# STATE LETTER OF CONCURRENCE

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**
**50 Wolf Road, Albany, New York 12233-7010**

John P. Cahill
Commissioner

FEB 11 1998

Mr. Richard Caspe
Director
Emergency & Remedial Response Div.
U.S. Environmental Protection Agency
Region II
290 Broadway - 19th Floor
New York, New York 10007

Dear Mr. Caspe:

**Re: Rosen Site, Cortland County, N.Y.,**
**Site No. 7-12-004**

The New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) have reviewed the Record of Decision (ROD) dated January 1998 for the above-referenced site. The selected remedy consists of the excavation of soils contaminated with elevated levels of PCBs, the excavation of soils contaminated with elevated levels of Trichloroethane (TCA), capping of the cooling pond disposal area consistent with the requirements of 6 NYCCR Part 360, a surface cover over the remainder of the site, and natural attenuation of the groundwater contamination. The excavated soil with PCB concentrations above 50 ppm will be disposed of off site. Those soils with PCBs below 50 ppm will be consolidated into the cooling pond area. All excavated TCA-contaminated soils will be disposed of off site or treated and disposed of on site. The remedy also includes a long-term groundwater monitoring program.

The NYSDEC and NYSDOH concur with the selected remedy listed in the ROD. If you have any questions, please contact Robert W. Schick, of my staff, at (518) 457-4343.

Sincerely,

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

cc: J. Singerman, USEPA
M. Granger, USEPA
A. Carlson, NYSDOH

# APPENDIX V

# RESPONSIVENESS SUMMARY

**RESPONSIVENESS SUMMARY**
**FOR THE**
**ROSEN BROTHERS SUPERFUND SITE**
**CITY OF CORTLAND, CORTLAND COUNTY, NEW YORK**

## INTRODUCTION

This Responsiveness Summary provides a summary of citizens' comments and concerns received during the public comment period related to the remedial investigation and feasibility study (RI/FS) and Proposed Plan for the Rosen Brothers Site (the "Site") and the U.S. Environmental Protection Agency's (EPA's) and the New York State Department of Environmental Conservation's (NYSDEC's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA's and NYSDEC's final decision in the selection of a remedial alternative to address the contamination at the Site.

## SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The RI/FS, which describes the nature and extent of the contamination at and emanating from the Site and evaluates remedial alternatives to address this contamination, and the Proposed Plan, which identified EPA's and NYSDEC's preferred remedy and the basis for that preference, were made available to the public in both the Administrative Record and information repositories maintained at the EPA Docket Room in the Region II New York City office and at the City of Cortland Free Library located at 32 Church Street, Cortland, New York. Notices of availability of these documents were published in the *Cortland Standard* on November 17, 1997. A public comment period was held from November 17, 1997 through January 16, 1998[1] to provide interested parties with the opportunity to comment on the RI/FS and Proposed Plan. A public meeting was held on December 9, 1997 at the New York State Grange Building in Cortland, New York to inform local officials and interested citizens about the Superfund process, to review planned remedial activities at the Site, to discuss and receive comments on the Proposed Plan, and to respond to questions from area residents and other interested parties. Approximately 25 people, consisting of local businessmen, residents, representatives of the media, and state and local government officials, attended the public meeting.

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1 The public comment period originally ran from November 17, 1997 through December 17, 1997. In response to a request for an extension of the comment period, it was extended thirty days to January 16, 1998.

## OVERVIEW

The public, generally, supports the preferred remedy, which includes the excavation, treatment, and disposal of the contaminated soils in four hot-spot areas of the Site, installation of a cap on the former cooling pond, installation of a site-wide surface cover, and natural attenuation of residual groundwater contamination.

The public's concerns, which relate to the groundwater contamination, treatment alternatives, community acceptance, flexibility of the remedy, nature of the site-wide surface cover, groundwater monitoring program, and institutional controls, are summarized below.

## SUMMARY OF WRITTEN AND ORAL COMMENTS AND RESPONSES CONCERNING THE ROSEN BROTHERS SUPERFUND SITE

The following summarizes the oral and written comments received by EPA during the public comment period and EPA's responses.

***Groundwater Contamination***

**Comment #1:** A commenter asked whether the contamination in the groundwater threatens downgradient private wells. The commenter also asked whether the contaminated groundwater leaves toxic elements behind in its path and what effect the contaminated groundwater has on the downgradient Tioghnioga River.

**Response #1:** No private wells are located downgradient of the Site; all residences within the City of Cortland, including downgradient residences, utilize city water. By the time the groundwater reaches the river, the contaminants have either been diluted, dispersed, or degraded; the contaminated groundwater does not leave substantial toxic residues along its path. Removal of the source of contamination, in combination with continued dilution, dispersion, and degradation of the contaminants, will eventually eliminate the groundwater contamination.

**Comment #2:** A commenter asked if there was any possibility that hazardous chemicals would be carried off-site when there are fluctuations in the groundwater, especially in the vicinity of the former cooling pond.

**Response #2:** A thorough investigation of the former cooling pond itself did not locate any hazardous substances contributing to groundwater contamination (the wastes disposed of in the former cooling pond consist of, primarily, construction debris and, to a lesser extent, municipal wastes). Contaminated groundwater was, however, detected immediately downgradient of the former cooling pond; the source of this groundwater contamination is attributable to a contaminated soil hot spot located outside of the cooling pond. The selected remedy will remove the source of this contaminant hot spot (as well as another one located in a different portion of the site). Once the two contaminant hot spots are removed, they will no longer be a source of groundwater contamination. Further, as is noted in Response #1 above, dilution, dispersion, and degradation of the contaminants will eventually eliminate the groundwater contamination.

**Comment #3:** A commenter asked if EPA would set goals for the reduction of levels of contamination in the groundwater if natural attenuation was part of the selected remedy.

**Response #3:** Whether the contaminated groundwater is extracted and treated or natural attenuation is utilized, the cleanup goals for the groundwater are the same—state and federal groundwater standards. As part of a long-term groundwater monitoring program, sampling will be conducted in order to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment.

**Comment #4:** Experience at other sites has shown that natural attenuation of chlorinated organics can take several decades, even under favorable conditions. If additional source areas remain and/or unfavorable conditions exist in the groundwater, then natural attenuation may be unacceptably slow. To reduce the uncertainty in the long-term effectiveness of the remedy, there must be an ongoing evaluation of the trends in contaminant concentrations and plume geometry from a robust groundwater monitoring network. It is proposed that EPA install additional monitoring wells during the design phase to strengthen the groundwater monitoring network. This will help identify any areas which are not degrading in a timely fashion, and, perhaps, identify any remaining source areas. In addition, during and after the implementation of the hot spot soil removal, EPA should conduct groundwater monitoring at sufficiently frequent intervals.

**Response #4:** The removal of the contaminated soil source areas, extremely high groundwater flow, and the presence of conditions favorable to contaminant degradation, should lead to timely groundwater restoration via natural attenuation in about 10 years. Long-term monitoring of the groundwater will evaluate the remedy's effectiveness. The exact frequency, location, and parameters of the groundwater monitoring will be determined during the remedial design. Monitoring will include a network of groundwater monitoring wells; new monitoring wells will be installed, if necessary. Sampling will be conducted in order to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment.

*Preferred Remedy*

**Comment #5:** A commenter stated that the Proposed Plan lacks specific details related to the nature of the surface cover for the Site and the groundwater monitoring program.

**Response #5:** As potential risks remain even after the excavation of the soil contaminant hot spots, a surface cover (*e.g.*, asphalt, soil, crushed stone, etc.) will be placed over a large portion of the Site to prevent exposure to residual levels of contaminants in site soils. All of the cover materials that are being considered provide the same level of protection. It is our understanding there is local interest in developing the Site and that a decision may be made within the next few months. Deferring the selection of the nature of the cover material until the design phase will ensure that it will be compatible with the future use of the p operty.

Long-term monitoring will be utilized to evaluate the selected remedy's effectiveness. At this time, EPA has developed only a conceptual plan for the groundwater monitoring program. Additional data and information need to be collected during the design phase to optimally identify the frequency and parameters of the groundwater monitoring.

*Surface Cover*

**Comment #6:** A commenter indicated that not all of the possible surface cover materials are equally desirable from the community's point of view. An asphalt cover, for example, might limit many of the possibilities for the property in the future. To facilitate site redevelopment, the site-wide surface cover should not be designed for any specific use. Instead, the design should be flexible enough to accommodate a variety of uses or tenants. A flexible cover approach would allow, for example, paving some areas and utilizing other materials for other areas. If clean fill is used, it should be a minimum of two feet thick (a thicker cover would have greater durability, would be less likely to erode or be accidentally breached, and would better support multiple uses). A geotextile marker layer at the base of the cover appears to be an excellent way to ensure that future users of the Site know when they have reached the base of the cover. Further, a cover maintenance manual should be developed during the design phase. At a minimum, the manual should address cover maintenance and repairs, minimum health and safety measures required of all contractors building on and/or modifying the cover (i.e., foundation work, underground utilities, paving, landscaping, etc.), and disposal options for any excavated soils. Ideally, it should also provide a description of the institutional controls that will be in place to protect the integrity of the cover. The manual should be made available to prospective tenants, local governments, and anyone who plans to do construction work at the Site.

The commenter also expressed a desire that the community be involved in the cover material selection process.

**Response #6:** EPA agrees that the cover configuration needs to remain flexible to ensure it is appropriate and compatible with the redevelopment of the property. A marker layer is envisioned as being a component of every cover configuration. A cover maintenance manual will be formulated during the remedial design phase and will be available to the community through the Site information repository.

The community's concerns are important to EPA. As part of EPA's ongoing community relations program, during the remedial design , when a preferred cover material is identified, EPA will seek input from the community.

***Alternatives Evaluation***

**Comment #7:** Several commenters wanted to know why only four alternatives were evaluated in the Proposed Plan in light of the fact that two of the alternatives—no action and institutional controls—are not viable and the "groundwater extraction and treatment" alternative appears to be unreasonable given its cost.

**Response #7:** The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. While the "institutional controls" alternative does not include any physical remedial measures that address the problem of contamination at the Site and the "groundwater extraction and treatment alternative" is more costly than the alternative that was selected, EPA considered these three "action" alternatives to be viable and appropriate for consideration. Other alternatives were considered in the FS but were eliminated because they were either not effective or their cost was significantly greater than alternatives that could provide the same level of protection for considerably less cost. The selected alternative (contaminated soil hot spot excavation and disposal, installation of a cap on the former cooling pond, a site-wide surface cover, and groundwater natural attenuation) will provide the best balance of trade-offs among the alternatives with respect to the evaluating criteria.

**Comment #8:** A commenter expressed concern about the acceptability of Alternative 3 (soil hot spot excavation, former cooling pond cap, site-wide surface cover, and natural attenuation of residual groundwater contamination) because in order to remove the contaminant hot spots, the excavation areas would have to be secured 24 hours a day to prevent exposure to wildlife and trespassers. The commenter also stated that, for the groundwater monitoring program to be efficient, an annual review of the Site would be more sufficient than every 5 years.

**Response #8:** Under Alternative 3, to prevent exposure of wildlife and trespassers to hazardous substances during the remediation of the Site, security measures will be employed at the Site, as necessary, such as fencing and security guards.

As part of a long-term groundwater monitoring program, samples from upgradient, on-site, and downgradient groundwater monitoring wells will be collected and analyzed semi-annually in order to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment. The effectiveness of the selected remedy will be assessed on an ongoing basis as data are collected. In addition, to comply with the requirements of the Superfund statute and regulations, the remedy for the Site will be formally reviewed at least once every five years to assess whether it is being adequately protective of public health and the environment. If justified by the ongoing assessments or the 5-year reviews, additional remedial actions may be implemented to remove or treat the remaining contaminants.

**Comment #9:** A commenter suggested that it would have been useful to include excavation of the entire residually-contaminated soils as another alternative.

**Response #9:** The excavation of all of the residually-contaminated soils, which would involve excavating to a depth of six feet across 17 acres of the Site, was evaluated in the FS. This alternative was, however, screened out on the basis of cost—a site-wide surface cover would be similarly protective as excavating all of the residually-contaminated soils, but would be significantly less expensive.

***Former Cooling Pond***

**Comment #10:** A commenter asked why the former cooling pond needs to be capped.

**Response #10:** While an investigation of the 3-acre former cooling pond did not locate any hazardous substances, since it was used for the disposal of construction and demolition debris and municipal refuse, it must be closed in accordance with New York State landfill closure requirements.

**Comment #11:** A commenter wanted to know what would be disposed of in the former cooling pond prior to capping.

**Response #11:** Only excavated soils characterized as nonhazardous and nonhazardous debris that is located on the surface of the areas where the Site-wide surface cover will be installed will be consolidated onto the former cooling pond prior to capping.

**Comment #12:** A commenter wanted to know what is the nature of the cap proposed for the former cooling pond.

**Response #12:** The cap over the former cooling pond must meet the requirements of New York State 6 NYCRR Part 360 regulations. Prior to construction of the cap, the consolidated soils, nonhazardous debris, and existing fill materials will be regraded and compacted to provide a stable foundation and to promote runoff. The first layer of the cap will be an impermeable layer, made of high-density polyethylene or clay. A 2-foot soil barrier protection layer will be installed on top of the impermeable layer. Six inches of top soil and vegetation will be installed on top of the barrier protection layer.

***Institutional Controls***

**Comment #13:** A commenter asked whether there would be any mechanisms in place to preclude the drilling of wells at or downgradient of the Site.

**Response #13:** The remedy includes taking steps to secure institutional controls, such as deed restrictions and contractual agreements, as well as local ordinances, laws, or other government action, for the purpose of, among other things, restricting the installation and use of groundwater wells at and downgradient of the Site.

**Comment #14:** A commenter asked at what point in process would the institutional controls be implemented and who would take the lead in implementing the institutional controls.

**Response #14:** Institutional controls are usually put into place following the completion of the construction of the remedy. While it is EPA's responsibility to ensure that institutional controls are put into place, if the potentially responsible parties (PRPs) agree to perform the design and construction of the selected remedy, they, most likely, would take an active role in securing the necessary institutional controls.

**Comment #15:** A commenter asked if Alternative 3 (contaminated soil hot spot excavation and disposal, installation of a cap on the former cooling pond, a site-wide surface cover, and groundwater natural attenuation) is selected, does it preclude the possibility of the excavation of soils underlying the surface cover, as long as they are treated as hazardous substances.

**Response #15:** The institutional controls component of the remedy is designed to restrict, though not necessarily preclude, the excavation of soils underlying the site-wide surface cover. For example, in the event of the construction of structures on-site, any excavated soils would be tested for hazardous substances (or may be simply assumed to be hazardous) and disposed of appropriately. A geotextile marker layer at the base of the cover will ensure that future users of the Site know when they have reached the base of the cover.

**Comment #16:** Because this is a site for which redevelopment is expected, the arrangements that will govern what happens at the Site after the remedy has been implemented are more crucial than at most other Superfund sites. Accordingly, the necessary institutional controls and regulatory arrangements need to be explicitly spelled out at the earliest possible date, and the community should be involved in the process. Experience shows that over the long run, institutional controls are not always honored, therefore, efforts need to be made to preserve the knowledge about the controls. Important areas that need to be addressed include: permit restrictions related to the installation of groundwater wells; deed restrictions for property(ies) above the cover; identification of the various governmental, regulatory, and private entities which will be involved with the Site and their respective roles and responsibilities; development and maintenance of a "cover integrity map" which will identify all the areas in which the site-wide cover has been removed, modified, built over, repaired, etc. and which would serve as a permanent reference for regulators and contractors intending to do work at the Site. The cover maintenance manual should be placed in local libraries, attached to the land title records, and distributed to local governmental agencies.

**Response #16:** Deed restrictions and contractual agreements and/or local ordinances and laws will be employed to restrict the installation and use of groundwater wells at and downgradient of the Site, restrict excavation or other activities which could affect the integrity of the cap/site-wide surface cover, and restrict residential use of the property in order to reduce potential exposure to site-related contaminants. While it is EPA's responsibility to ensure that institutional controls are put into place, if the PRPs agree to perform the design and construction of the selected remedy, they, most likely, will take an active role in securing the necessary institutional controls. Nevertheless, EPA will ensure that the necessary institutional controls are scoped out as early as possible and that the controls that are put into place are properly maintained. EPA will consider the suggestions related to the development and maintenance of a "cover integrity map" and will make sure that the cover maintenance manual is placed into the local repository and is made available to all that need access to it.

### *Potentially Responsible Parties*

**Comment #17:** A commenter wanted to know if the PRPs would be responsible for any additional cleanup costs should additional soil hot spots be identified in the future.

**Response #17:** Yes, the PRPs are responsible for financing or performing all remediation deemed necessary for the Site, even after the Site is deleted from the Superfund National Priorities List.

### *Fencing Around the Site*

**Comment #18:** A commenter asked whether or not the property will be fenced once the remediation is completed.

**Response #18:** The property is currently fenced and will remain fenced until the site-wide cover is in place. In addition, to protect the integrity of the cap, it is anticipated that a fence will be constructed around the former cooling pond.

### *Additional Hot Spots*

**Comment #19:** A commenter asked if EPA was confident that there are no other possible hot spots on the Site.

**Response #19:** As part of the RI, over 60 soil samples were collected and analyzed. Consequently, EPA believes that the Site has been adequately characterized. The possibility of the existence of additional hot spots is unlikely. However, if additional sources of contamination are detected in the future, they will be considered for remediation, as appropriate.

***Perplexity Creek***

**Comment #20:** A commenter asked how the former cooling pond was going to be remediated to ensure that it does not negatively impact the adjacent Perplexity Creek tributary (i.e., erosion).

**Response #20:** Appropriate erosion control measures, such as rip rap, will be used to protect the integrity of the cap on the former cooling pond and minimize impacts to Perplexity Creek.

***Superfund Process***

**Comment #21:** A commenter wanted to know if EPA intends to gather any additional information prior to making a final decision in the ROD.

**Response #21:** Other than the public comments on the RI/FS reports and the Proposed Plan, EPA did not intend to obtain any additional information prior to remedy selection.

**Comment #22:** A commenter expressed concern that the public comment period was being conducted prior to the signing of the ROD, since the public might have post-ROD concerns or comments.

**Response #22:** The purpose of the public comment period prior to the selection of a remedy for this Site is to solicit public comment on the proposed remedy. After considering the public's comments on the RI/FS reports and the Proposed Plan, EPA will select a remedy for the Site. Public participation will not, however, end at this point. Throughout the design and construction of the selected remedy and during long-term monitoring, EPA will continue to keep the public informed about site activities and encourage future comments and inquiries.

APPENDIX V-a

RESPONSIVENESS SUMMARY

**LETTERS SUBMITTED DURING THE PUBLIC COMMENT PERIOD**

# Disposal Safety Incorporated

To: Mark Granger, USEPA RPM
From: Steven Amter

Date: January 15, 1998

**Subject: Comments on USEPA's Proposed Plan**

Jamie Dangler and Larry Ashley of CURB have asked me to forward to you these comments on EPA's Proposed Plan.

**Natural Attenuation of Ground Water**

The proposed remedy relies on excavation of a few identified contaminant source areas followed by natural attenuation of the ground water. This is a long term process that relies upon *in situ* mechanisms of biodegradation, chemical degradation, volatilization, and other natural mechanisms to reduce contaminant concentrations to applicable standards.

Experience at other sites has shown that for chlorinated hydrocarbon contaminants, this process can take several decades even under favorable circumstances. If unaddressed source areas remain after the planned excavation, or unfavorable chemical conditions exist in the ground water, then natural attenuation will be unacceptably slow and the remedy will fail. Although there is a low probability of significant source areas remaining within the shallow soil, given the high density of shallow soil samples, the same confidence is not justified at greater depths where monitoring wells and other data points are widely spaced.

To reduce the uncertainty in the long-term effectiveness of the remedy, there must be an on-going evaluation of the trends in contaminant concentrations and plume geometry from a robust ground-water monitoring network. We suggest the following measures:

- The ground-water monitoring network should be strengthened by additional wells installed during the design phase. This will help identify those areas which are and those which are not degrading in a timely fashion,[1] and better identify possible remaining source areas. At a minimum, there needs to be an additional well cluster along Huntington Street east of the W-18/19/20 cluster.

[1] A review of TCE/DCE and TCA/DCA ratios and available dissolved oxygen data suggest that degradation of chlorinated contaminants (by anaerobic dechlorination) is occurring most efficiently in areas of the plume that are downgradient of the anoxic water sources (e.g., the cooling pond and/or the former city disposal area).

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- During and after implementation of the remedy, there needs to be ground-water monitoring at sufficiently frequent intervals. On page 4-8, the Feasibility Study Report (but not the Proposed Plan) proposed the following schedule, which seems acceptable:

> Sampling , followed by an evaluation to determine the effectiveness of natural attenuation, would be performed on a semi-annual basis for a period of up to ten years. Assuming successful natural attenuation with levels approaching [remedial goals] for the Site, the frequency of monitoring the natural attenuation would be reduced to an annual basis for the next five years, and then every five years from year 16 through year 30.

Of course, if the PRPs perform these evaluations, the results need to be submitted to the EPA.

**Surface Cover**

Since the Proposed Plan does not provide design details, at this time we can only make general comments about the site-wide cover. We reserve the right to make comments on the specific design as details become available. To facilitate site redevelopment, we feel that the following elements are crucial for any final cover design:

- It should not be designed for any specific use or tenant; instead, the design should be flexible enough to accommodate a variety of uses or tenants by subsequent modification.

- A site-wide cover consisting totally of asphalt is unacceptable. However, a flexible cover approach would allow paving over sub-areas.

- With respect to cover design, thicker is better. We believe that a minimum of two feet of clean soil or equivalent is required. Although we understand that a thicker cover may not provide additional reductions in risk *per se* (theoretically, a one-inch soil cover, unbreached, provides the same level of protection as a five-foot cover), on a practical basis a thicker cover has greater durability, is less likely to erode or be accidentally breached, and better supports multiple uses.

- A geotextile marker layer at the base of the cover appears to be an excellent way to ensure that future users of the site know when they have reached the base of the cover.

- A guide for cover modification and maintenance should be written during the design phase with input from the cover designers. The guide should be made available to prospective tenants, local governments, and anyone who plans to do construction work at the site. At a minimum, it should address cover maintenance and repairs, minimum health and safety measures required of all contractors building on and/or modifying the cover (i.e., foundation work, underground utilities, paving over, landscaping, etc.), and disposal options for excavated soils. Ideally, it should also provide a useful description of the institutional requirements that must be navigated by anyone doing work at the site that could compromise the integrity of the cover.

**Institutional Controls and Arrangements**

Because this is a site for which redevelopment is planned, the arrangements that will govern what happens at the site after the remedy has been implemented are more crucial than at many other Superfund sites. Accordingly, the necessary institutional controls and regulatory arrangements need to be explicitly spelled out at the earliest possible date, and the community should be involved in the process. Experience shows that over the long run institutional controls are not always honored, therefore efforts need to be made to preserve the knowledge about the controls. Important areas that need to be addressed include:

- Permit restrictions for ground-water wells in the plume area.

- Deed restrictions for property(ies) above the cover.

- Identification of the various governmental, regulatory, and private entities which will be involved with the site, their respective roles, and the institutional arrangements among them. It will be particularly important to spell out who will maintain the site-wide cover and which regulatory agency will provide the oversight to ensure the continued integrity of the cover, particularly during and after construction or modification by tenants.

- The development and upkeep of a "cover integrity map." This map should be continuously upgraded to identify all the areas in which the site-wide cover has been removed, modified, built over, repaired, etc. It would serve as a permanent reference for regulators and contractors intending to do work at the site.

- A non-technical version of the "Modification and Maintenance Guide" should be placed in local libraries, attached to the land title records, and distributed to local governmental agencies.

**Notice**

This document has been prepared solely for the guidance of CURB Pollution in interpreting information available to them. Other users should satisfy themselves *independently* as to fact and conclusions contained herein. In particular, such users should refer to original sources of information rather than this memo. This document is not intended for use in any real estate or other transactions, nor as a public health recommendation, and should not be used or relied upon for such purposes.

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**BY FACSIMILE AND MAIL**

December 17, 1997

Mark Granger, Project Manager
Central NY Remediation Section
ERRD, 20th Floor
U.S. Environmental Protection Agency
290 Broadway
New York, NY 10007-1866

Re: Rosen Site Proposed Plan

Dear Mark:

At the December 9 public meeting on the Rosen Site's Proposed Plan, members of CURB requested that the public have the opportunity to comment during the Remedial Design phase. They have particular concerns about the nature of the site-wide surface cover and groundwater monitoring program.

The City of Cortland supports CURB's request. The City agrees with EPA that the details of the cover and monitoring should be specified during the Remedial Design phases to maintain flexibility. However, there should be a formal mechanism for public input on these significant issues before EPA makes its decisions. The City urges EPA to make a commitment to solicit and receive public comment during the Remedial Design phase.

Sincerely,

Susan Hajda Brock

Susan Hajda Brock

RCVD: 12/11/97

Dear. Mr. Granger, 12/2/97

My name is Michael Martin and I am a 26 year old life long citizen of Cortland, NY. I am replying on the various alternatives listed in the December 2nd issue of the Cortland Standard, where a December 9th hearing is scheduled for the cleanup at the polluted Rosen Brothers site on Pendelton Street.

According to the newspaper, alternative one, is no-action. How could this issue be compared to one that included a complete Clean-up of the area. Does it mean that if there is no other agreeable alternative, we'll just Keep monitoring the groundwater for no reason at all at $60,000 a year! We also need an alternative that would address any problems of contamination.

Although alternative two describes of restrictions, it is the same idea as the first one.

Alternative three is very risky. In order to remove the contaminated soil, the whole area would have to be secured 24 hours a day for our own safety. Example, animals, curious children, vandals, etc. The cost of this that was never mentioned to the 3 million dollar project makes me believe that the area would not be secured. Also, if the ground water monitoring program was to be efficient, wouldn't an anual check be more sufficient than every 5 years?

Alternative four, which extracts the pollution and then treats it, returning the recycled water back to the Tioughnioga River is absolutely unheard of!! This river has enough recycled, and, so called "pollution free" water, being returned as it is. You tell our community that this treated water is safe and you'll be the town's laughing-stock!! This idea will never fly over our heads.

I may know little of the described alternatives, but I do know that alternative four is not my idea of a proper and safe clean-up.

THANK-YOU FOR YOUR TIME!

APPENDIX V-b

RESPONSIVENESS SUMMARY

**PUBLIC MEETING TRANSCRIPT**

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

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ROSEN BROTHERS SUPERFUND SITE

PUBLIC MEETING

ON

ENVIRONMENTAL PROTECTION AGENCY'S

PROPOSED CLEANUP

- - - - - - - - - - - - - - - - - - - - - - - - - - -

Held at the New York State Grange Building, 100 Grange Place, Cortland, New York, on the 9th day of December, 1997, commencing at 7:00 PM.

PDQ COURT REPORTERS
MICHELE L. RICE
Shorthand Reporter, Notary Public
4815 Barry Hollow Road
Marathon, New York 13803
(607) 849-6884/(800) 528-9013

# A P P E A R A N C E S

ANN RYCHLENSKI; Community Relations Coordinator, US Environmental Protection Agency.

JOEL SINGERMAN; Chief, Central New York Superfund Section, US Environmental Protection Agency.

MARK GRANGER; Project Manager, US Enviromental Protection Agency.

* * * * *

MS. RYCHLENSKI: Good evening. Thanks for coming out tonight. My name is Ann Rychlenski. I'm community -- I'm a Community Relations Coordinator with the US Environmental Protection Agency. And I'm sure, as most of you know, this meeting here tonight is to discuss EPA's Proposed Plan for the cleanup of the Rosen Brothers site here in Cortland.

Before I move onto a couple little matters of business, I just want to introduce my colleagues that are here with me this evening who will be doing the presentations.

All the way over to my left is Joel Singerman (indicating). And Joel's a Chief of the Central New York Superfund branch at EPA. He's going to be talking to you about how the Superfund process works, what it's all about.

And right here to my immediate left is Mark Granger (indicating). I think a lot of you here know Mark. He's been around a long time with this site. Mark's the

Project Manager of the Rosen site. He's going to be talking about what we found in our site investigations, basically what we found, how much of it's there, where it's at and what we propose to do with it.

So, that's basically what the line of business is here tonight.

I want to acknowledge one person who's here tonight from DEC, David Camp. Just say hi. New York State DEC. In case there are any State-related questions that come up, I'm sure Dave would be happy to answer them.

We have a few things that we do here at meetings that deal with Proposed Plans. As you can see we have a stenographer here tonight, and that's not usual at most public meetings. And the reason for the stenographer is because this is, indeed, a legal record that is being taken, because public comment is being taken tonight, and public comment is very, very important in the Superfund process, because, as Mark will talk about a little later on, community acceptance of our Proposed Plan is one of the criteria by which we make a decision on what we're going to do about the site.

So, your comments here tonight are very important. And you will see answers to your questions and comments reflected in the document that we call a Responsiveness Summary that we put out after we're all done with this. After we get all of our written comments in, EPA responds to the public. So, what you say here tonight is important, it goes on the record, it will be responded to in person here, but it will also be part of our Responsiveness Summary.

What I also want to talk about a little bit is the public comment period for written comments too. We're in the middle of a public comment period now. It will end on December 17th. So, if you don't get in everything you want to say or ask about tonight, you want to write it down, send a question or comment on to Mark Granger, his address is in the Proposed Plan that you have, and just make sure that you get it to

Mark by close of business December 17th, so that those comments and questions are also included in the public record for the decision on this site.

I just want to remind you all to sign in, if you haven't already, so that I can put you on the mailing list, keep you there, make sure I have the right address for you.

You all have a copy of the Proposed Plan and you also have copies of the slides that Mark will be showing tonight that you can follow along with them. If you have any questions or things that kind of come into your head, you can jot it right down there, so feel free to just follow along with that.

If you want to really look at the documents involved with this site in depth, over at the Cortland Free Library we have an information respository that has all of the documents pertaining to this site. So, if you want to do any further exploration before the end of the comment period for a written comment, you want to go take a look, everything is over at the Cortland Free

Library.

I'm going ask you to please keep your questions and comments until the end so that our stenographer can get a clear record of what happens here tonight. If you do have a question or comment, please stand, give your name, if you choose to, if you don't want to, that's okay, and speak clearly so that she can get the record down as accurately as possible.

I think that's about it. I'm going to turn it over to Joel, talk about the Superfund process. Thank you.

MR. SINGERMAN: Can you all see that? Can everyone see this or is it too light?

Several well-publicized toxic waste disposal disasters in the late 1970's, among them Love Canal, shocked the nation and highlighted the fact that past waste disposal practices were not effective. In 1980 Congress responded with the creation of the Comprehensive Environmental Response, Compensation & Liability Act, more commonly known as Superfund.

The Superfund law provided Federal funds to be used for the cleanup of uncontrolled and abandoned hazardous waste sites and for responding to emergencies involving hazardous wastes. In addition, EPA was empowered to compel those responsible for these sites to pay for or to conduct the necessary response actions.

The work to remediate a site is very complex and takes place in many stages. Once a site is discovered, an inspection further identifies the hazards and contaminants. A determination is then made whether to include the site on the Superfund National Priorities List, a list of the nation's worst hazardous waste sites. Sites are placed on the National Priorities List primarily on the basis of their scores obtained on the hazard ranking system, which evaluates the risk posed by the site. Only sites in the National Priorities List are eligible for work by Superfund.

The selection of a remedy for a

Superfund site is based upon two studies: A Remedial Investigation and a Feasibility Study. The purpose of the Remedial Investigation is to determine the nature and extent of the contamination at and emanating from the site and the associated risk to public health and the environment. The purpose of the Feasibility Study is to identify and evaluate remedial alternatives to address that contamination.

Public participation is a key feature in a Superfund process. The public is invited to participate in all decisions that will be made at the site. Through the Community Relations Coordinator meetings such as this one are held as necessary to keep the public informed about what is happening at the site and what is planned. The public is also given the opportunity to comment on the results of the investigation and studies conducted at the site and the proposed remedy.

After considering public comments and the proposed remedy, a Record of Decision is signed. A Record of Decision documents why a particular remedy was selected. The site then enters the remedial design phrase, where the plans and specifications associated with the selected remedy are developed. The remedial action, which begins after design work is completed, is the actual hands on-work associated with cleaning up the site.

Following the completion of the remedial action the site is monitored, if necessary. Once the site no longer poses a threat to public health or the environment it can be deleted from the Superfund National Priorities List.

MR. GRANGER: Hi. My name is Mark Granger. I've been EPA's Remedial Project Manager for the Rosen site for the past seven years. Tonight I'll be discussing site background, the Remedial Investigation, Feasibility Study, the risk assessment and presenting EPA's preferred alternative.

The Rosen site is located on Pendleton Street here in the City of

Cortland. From the 1890's through the early '70s the Wickwire Facility operated on forty acres between South Main Street and Pendleton Street, smelting scrap metal and using that smelted metal in the manufacture of nails, wire, wire mesh, screening and wire products. After the plant closed in the early '70s, Philip Rosen was contracted to demolish the western twenty acres and in exchange was granted title to the eastern twenty acres. Rosen operated on the site from 1975 to 1985.

Ann, can we see figure 2?

MS. RYCHLENSKI: Sure.

MR. GRANGER: Here's South Main Street, Pendleton Street to the right, you can see the site outlined, and Philip Rosen was contracted to demolish this twenty acres and in exchange was granted the eastern twenty acres of the site (indicating).

We go to the next slide. Rosen activities at the site included scrap processing and garbage hauling. The site has been unoccupied since Rosen declared bankruptcy in 1985.

A New York State Department of Environmental Conservation investigation of the site in 1986 found significant levels of contamination in groundwater and soil. As a result of this investigation, the site was added to Superfund's National Priority List in March of 1989.

In January of 1990 a group of parties potentially liable for cleanup agreed to conduct the RI/FS for the site, and these parties are known as potentially-responsible parties or PRP's.

Next slide. EPA conducted a removal action at the site from 1987 to 1989, where drums of hazardous materials were removed, along with severely-contaminated soils, transformers filled with PCBs. And, in addition, the site was fenced.

The RI was performed from 1990 to 1995, with additional studies being conducted from 1995 to 1997. I'll be discussing the results of these studies in a little while.

The potentially-responsible parties performed the investigation of the site with EPA oversight, and studies included groundwater sampling, soil sampling, both subsurface and surface soil, sediment, surface water and air sampling, along with test hitting and pump testing of the aquifer.

The results of the Remedial Investigation: There are two groundwater units beneath the site, an upper outwash unit and a lower sand and gravel unit. The groundwater flow direction is to the northeast. The City of Cortland being situated at the confluence of several valleys has massive groundwater flow moving beneath the site, far more that you would find in most other areas of New York State, and probably a lot of other places, as well.

The RI found that groundwater contamination is confined to the upper outwash unit.

The Cortland County -- I'm sorry. The City of Cortland water supply is located far upgrading of the site. Most soil samples were found to contain contaminants above State guidance levels. And the RI further found that surface water, sediment and air have not been significantly impacted by the site.

During the RI, groundwater and soils were sampled for VOCs, SVOCs, PCBs and metals. There were seven full rounds of groundwater sampling. And based on the groundwater and soil sampling efforts, it was concluded that there was an intermittent source of contamination in soils in the area of well 6. I'll show you the figure in a moment.

In addition, the RI concluded that VOC levels in groundwater leaving the site were relatively low and have undergone significant decline over time.

Results of an investigation of the cooling pond area, which I will show you in a moment, concluded that the cooling pond area of the site was not a significant source of contamination to the aquifer.

However, several areas of significant PCB and TCA contamination were found, as well as low to moderate levels of contaminants elsewhere in soils on the site.

Results of a drum investigation concluded that there were no buried drums able to be located at the site.

Can we see figure 2?

MS. RYCHLENSKI: Figure 2, sure.

MR. GRANGER: Groundwater flow is to the northeast. This being north, northeast, groundwater moves this way, northeast and out past Pendleton Street and then moves into an easterly direction as it goes out into the aquifer at large (indicating).

And then figure 1, Ann.

MS. RYCHLENSKI: Mm-hm.

MR. GRANGER: There's valleys coming in from the west and from the north. The City of Cortland is situated at the confluence of these valleys and groundwater tends to move in the vicinity of the site to the northeast, to a westerly direction and then out down the Tioughnioga River Valley (indicating).

And the Cortland water supply, as you can see, the groundwater flow moves in this direction and down Cortland County (indicating). The City of Cortland water supply is in this vicinity, far upgrading of groundwater associated with the Rosen site (indicating).

Okay, Ann, figure 3.

MS. RYCHLENSKI: Mm-hm.

MR. GRANGER: The RI found a significant area of contamination in the well 6 area, as well in the T-02 areas (indicating). Those are areas where there's TCA-contaminated soils and PCB-contaminated soils in the northeastern portion of the site and in the Gantry Crane portion of the site.

The cooling pond, located at the southern portion of the site, comprises about three acres, with the remaining area of the site being about seventeen acres (indicating).

Okay, next slide.

MS. RYCHLENSKI: Mm-hm.

MR. GRANGER: Sampling results from the I -- the RI were compiled and analyzed in the risk assessment. The purpose of the risk assessment is to determine whether the sites poses a threat to the human health and the environment should nothing be done.

EPA's acceptable risk range for non-carcinogenic compounds is a hazard index less than or equal to 1, and for carcinogenic compounds a 10 to the minus 4, to 10 to the minus 6 risk, which basically translates to an increased cancer rate from 1 in 10,000 to 1 in 1,000,000.

Results for groundwater found that risks fell outside EPA's acceptable risk range, with non-carcinogenic risk coming in at -- with a hazard index of 66 and carcinogenic risks 1.5 times 10 to the minus 3.

Results for soil also fell outside EPA's accepted risk range only for non-carcinogenic risks, with a hazard index 64. All other risks were in or below EPA's acceptable risk range.

Next slide.

MS. RYCHLENSKI: Mm-hm.

MR. GRANGER: EPA's evaluated four alternatives in the Proposed Plan to address these risks.

Alternative 1: No action, is required as a baseline in comparison and assumes only monitoring over time, which is the -- $440,000 is the cost associated with monitoring over a ten-year period.

Institutional controls alternative assumes that the only action taken, aside from monitoring, is administrative action in the form of deed restrictions or restrictions on groundwater extraction for potable use, restrictions on excavating soils, et cetera, things of that nature. The cost was carried over, because the administrative actions were assumed to be in addition to monitoring over a ten-year period.

Alternative 3 includes hot spot excavation of the TCA and PCB areas, a cap over the cooling pond, with a cover over the remaining portion of the site and natural attenuation of residual groundwater. The total cost over a ten-year period was collated to be $3.1 Million.

Can we go to figure 3, Ann?

MS. RYCHLENSKI: Mm-hm.

MR. GRANGER: Basically alternative 3 would provide for excavation of the two TCA areas and two PCB areas, with a cap placed over the cooling pond, which we call a cooling pond. It was formerly a cooling pond but was used as a landfill, we call it the cooling pond area. It was a landfill that accepted construction and demolition debris. The most appropriate approach toward final closure of that would be placing a cap over the top of it and a permeable cover placed across the remaining portions of the site. And groundwater would be naturally attenuated over time.

We'll go to --

MS. RYCHLENSKI: Want to go back to the --

MR. GRANGER: Yes.

Alternative 4 includes the same first three components of alternative 3, which is hot spot excavation, cooling pond cap, and a cover over the remaining portion of the site, and in addition provides for groundwater extraction and treatment.

Can we go to the figure?

MS. RYCHLENSKI: Mm-hm.

MR. GRANGER: So, in addition to excavation of the TCA and PCB areas with a cap over the cooling pond portion of the site and a permeable cover placed across the remaining portions of the site, a series of extraction wells would be placed across the northern perimeter of the site that would effectively create a hydraulic barrier or wall, if you will, which would extract groundwater and provide for a line to be constructed out to the Tioughnioga River where it would be discharged. And the total cost for that -- can you go back to the other slide?

MS. RYCHLENSKI: Sure.

MR. GRANGER: -- which was calculated over a five-year period was $19.8 Million.

In evaluating the relative merits of each of the alternatives, EPA weighs each of them against nine evaluation criteria or what we call insure EPA's nine criteria, the threshold criteria being overall protection of human health and the environment and compliance with environmental regulations. Those are the primary criteria we look at, and then we move to the balance: Long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, short-term effectiveness, implementability and cost-modifying criteria, State and community acceptance, which Ann had mentioned earlier.

After careful consideration, EPA's preferred alternative is alternative 3, contaminated soil hot spots excavation and disposal, installation of cap on former cooling pond, site-wide surface cover and natural attenuation of residual groundwater contamination.

EPA's rationale was this alternative provides the best balance among the nine criteria. It's protective of human health and the environment, reduces toxicity, mobility and volume through permanent solution, it involves a simple implementation with simple maintenance and uses known effective technologies and is cost effective.

Thank you for your time. I'll turn the meeting back over to Ann.

MR. SINGERMAN: The preferred remedy that was just described is just that, it's EPA's preferred remedy, and EPA is not going to make a final selection until we've considered all public comments and after the completion of the comment period.

MS. RYCHLENSKI: Okay, thank you, Joel.

Okay. Mark is going to -- you've got the lights. That's what we take EPA's engineers with us for, these guys can do lights.

Okay. All right, we'll take questions. As I asked before, just speak clearly, stand and give your name if you feel comfortable with that, so our stenographer can get a good record.

Any questions or comments?

(Whereupon there was no verbal response)

MS. RYCHLENSKI: No questions or comments?

MS. KATHLEEN HENNESSY: I have a question.

MS. RYCHLENSKI: Okay.

MS. KATHLEEN HENNESSY: My name is Kathleen Hennessy. And I'm just wondering about the groundwater, because even though it doesn't go into the City's water supply, what effect does it have on people with wells who are within the path of the groundwater? I mean, I know you said it goes into the Tioghnioga River, but --

MR. GRANGER: Right. We've done some investigations in terms of when there is any wells and we're unable to find anyone with a well. Basically the plume is confined within the City of Cortland, and it's my understanding that everyone within the confines of the City limits is on City water.

MS. KATHLEEN HENNESSY: Until it goes into the river.

MR. GRANGER: Well, by the time it gets to the river, to tell you the truth, basically it's petered out.

MS. KATHLEEN HENNESSY: And it doesn't -- but doesn't it leave toxic elements behind on the path?

MR. GRANGER: Contaminants can be absorbed to soil, but in general the type of contamination that's leaving the site is basically swept along and disbursed over distance and over time, which is -- that's not something that's exclusive to this site, that's something that basically occurs at all sites. And if you're removing sources, as we are here, you would expect that petering out period to be shorter and shorter.

MS. RYCHLENSKI: Yes, sir?

MR. LARRY ASHLEY: My name is Larry Ashley. I wanted to start with a comment. We've handed to Mark a number of questions that have arisen from a Curb meeting which considered the Proposed Plan as you gave it to us, and we sort of like to present those publicly, sort of get some reaction now and get them on the record.

The first thing that I would like to say is that in terms of Ann's statement that community acceptance of the plan is part of what you aim at, Curb at least finds it difficult to simply accept the plan since some crucial elements of the plan are postponed to the design phase, in particular the nature of the cap that's going to be on the site and details about the groundwater monitoring, both of which are elements for the nine years of the development of this that Curb has been fairly involved in and considers to be fairly crucial from the point of view of the welfare of the community.

So, we just wanted to report to you that we were finding it hard to just sort of selectively say yes, this looks like a good thing for the community and/or no, this looks like something that we would not like in the longrun, because -- because of the absence of specificity for a few details, in particular the cap and the details about groundwater monitoring, both of which are postponed until the design phase is completed.

Is that clear?

MR. GRANGER: Yes, that's perfectly clear.

And let me say that I think that one of the strong points of this Proposed Plan is that it does not specify the cap configuration nor the specifics of the groundwater monitoring plan. EPA is definitely looking for a protective cap and it's definitely looking for a comprehensive monitoring program. If you specify both of those -- but let me just start with the cap. If you specify what the cap is, you're basically closing off the possibilities for what you may want to do with the cap in the future.

So, what our cap -- ultimately what our cap components are going to be could be a number of things, all of which would have an equivalent protection, such as you could have an impermeable, geotextile layer with a foot of soil with grass on top. If we specified that, then it could be difficult to say okay, now we're going to build a road across the cap, which that would be a part of the cap too, but that would be asphalt with gravel. Or if you wanted to put gravel and put something else across the top, or if you wanted to build a building, there's a lot of ways -- there's a lot of directions that this site could go in terms of the future.

At a site where the site was not going to do anything, nothing was going to happen with the site, you could specify, you could say, all right, we're going to put, you know, we're going to asphalt the entire site and that's going to be the end of that.

I think that we're trying to allow the maximum flexibility in terms -- and provide that benefit to the community.

Similarly, with the monitoring program, we could specify now what that monitoring program is, but then you lock it in, and it is possible that EPA would want to require additional monitoring points, would want to go out further into the aquifer or require the installation of monitoring wells, and if we went down on record as saying that this is going to be the monitoring program when we forge a legal agreement with whoever's going to implement the remedy, that's locked in in the Record of Decision, so -- okay, did I answer your question?

MR. LARRY ASHLEY: You did, although it postpones rather than answers some of our difficulties. Because amongst those proposed remedies, they may all be equally protective, but they're not equally desirable from the point of view, in our judgment, of the community and what the community will live with for the term after that. So, that's a crucial item which remains for us crucial, and which we're going to, I guess, continue to be asking or trying to make sure that what eventually is decided is not anything that the community is going to find hard to live with in the longrun. Such, in my judgment, would be an asphalt cover.

Putting an asphalt barrier, right there limiting, I think, a lot of the possibilities for -- for the community in the future. This is a crucial issue for us. That's all I'm saying.

MR. GRANGER: Are you worried about an asphalt cover?

MR. LARRY ASHLEY: Am I worried about it?

MR. GRANGER: Are you worried that's going to be what's going to happen?

MR. LARRY ASHLEY: That's one possibility, yes.

MR. GRANGER: Well, without going

down completely, you know, staking my reputation on it, we're not really looking to place an asphalt cover over the site. I know that's not necessarily reassurance for you.

MR. LARRY ASHLEY: That's a relief, because in the document that you sent to us, in parentheses there was always the soil, gravel, asphalt trilogy, and one of those -- one item in that trilogy is importantly, I think, undesirable for the community, so --

MR. GRANGER: Right.

MR. LARRY ASHLEY: -- if EPA was, you know, still envisioning doing that, then that would be crucial for us.

MR. GRANGER: I think the only asphalt that we would envision on the Rosen site would be a road, in terms of like developing the property for some other purpose.

MR. LARRY ASHLEY: Well, we look forward to that.

MR. SINGERMAN: How about the other items within parentheses, do you object to any of the other ones or just the asphalt?

MR. LARRY ASHLEY: The crushed -- what was it -- crushed gravel or crushed stone or whatever it was, I don't quite know what that amounts to, and I guess I don't remember that that ever arose in your discussion with us as the basic cover, but that covered by soil seems plausible, but crushed stone by itself, I mean, I would want to know what the ramifications are for that remedy too.

MR. GRANGER: Okay.

MS. RYCHLENSKI: I think too -- I just want to interject for a moment -- that as we go into remedial design, we'll continue to work with Curb and with the rest of the community on that design. We don't just come out and spring a remedial design on people and say, hey, here, this is what it is. We come out, we'll talk about it, we'll have a meeting similar to this one, maybe a meeting before that, maybe one after that, depending on what the community's requirements are and the community's concerns are. But here it is written in stone and we're never going to talk to you again, we'll never do that. We've been in touch and we'll stay in touch. You guys have been very important in this process.

MR. SINGERMAN: Plus if you have any ideas now or any recommendations in writing, we consider that --

MS. RYCHLENSKI: Absolutely.

MR. SINGERMAN: -- for the future.

MS. RYCHLENSKI: Absolutely.

Yes, sir?

MR. SAM FARRELL: I'm Sam Farrell. You mentioned the groundwater extraction and treatment. Could you go into more detail on that? If that happened, would that eliminate a cap if that was done in this particular area?

MR. GRANGER: No, it would not.

MR. SAM FARRELL: It would not.

MR. GRANGER: The purpose of the cap is to eliminate exposure to surface soils. Are you talking about the cap over the cooling pond or the surface cover?

MR. SAM FARRELL: Yes, well --

MR. GRANGER: Or both?

MR. SAM FARRELL: About the groundwater extraction, would that also --

MR. GRANGER: Right.

MR. SAM FARRELL: -- would you be on the Rosen site? Of course would that.

MR. GRANGER: Okay.

MR. SAM FARRELL: Would you also be drying out the pond?

MR. GRANGER: Okay. The pond is not necessarily -- the pond is not any different from the remainder of the site in terms of the aquifer. It's not a pond. It's basically a landfill. It's been covered and it's flat on -- it's at ground level on one end and it's mounded up fifteen feet high on the other end, so there's no pond, per se. Basically when we say pond, we mean landfill. And there's construction debris, actually most of the Wickwire buildings were dumped into the cooling pond.

So, as we were digging down doing our investigation, what you tended to see was twenty feet deep of bricks mixed in with timbers and metal rods and things of that nature. So, the groundwater extraction and treatment actually -- just backing up -- and one of the things I had mentioned in my talk was that there's a massive groundwater flow that's moving beneath the Rosen site and beneath the Cortland area in general.

As you extract groundwater, you wouldn't tend to dry out anything. You'd tend to extract the groundwater, you'd extract a lot, probably a million to a million and a half gallons a day, but you wouldn't be drying anything out. So, that would not influence the cap at all. The purpose of the cap doesn't have anything to do with the groundwater, per se.

Is that clear?

MR. SAM FARRELL: Yes.

MR. GRANGER: Did I address your question?

MR. SAM FARRELL: (Nods head)

MR. GRANGER: Okay.

MS. RYCHLENSKI: Yes?

MS. JAMIE DAGLER: Jamie Dagler (phonetic) from Curb. Our second question, Mark, is kind of related to the first question that Larry asked. We're just pressing you a little bit more on this. In general we just want to know why more options weren't costed out in the Proposed Plan?

For example, you know, the fact that the Proposed Plan, there are four alternatives; however, alternative 1 and alternative 2 are out of the question, I think, right?

MS. RYCHLENSKI: Well, I think alternative 2 is a viable alternative, but that's a subjective statement.

MS. JAMIE DAGLER: Okay. I think I can, at least speaking for Curb, it would certainly not be acceptable to Curb, but -- so, alternatives 3 and 4 are what we agreed is really the only real alternatives for any kind of significant cleanup of the site, and alternative 4, certainly based on the informal discussions that we've had with you all along, appears to be a bit unreasonable perhaps, given the cost in relation to the likely benefit of groundwater treatment, which leaves us then with only one alternative.

Our question or our comment is this: Now, again, I am kind of echoing what Larry already said, given the lack of detail about groundwater monitoring, about the surface cover and alternative 3 as it has been presented in the plan, we're wondering if -- if what the Proposed Plan actually incorporates is an alternative which actually encompasses many possible alternatives?

In other words, why, perhaps, wouldn't you have costed out the difference between an asphalt cover as opposed to a one-foot soil cover with a geothermal -- what's it called -- a geotextile cover as opposed to a two-foot soil cover, et cetera?

In other words, are there significant differences in cost to doing these kinds of options or doing some combination of those things?

And, you know, as you know, we certainly raised the issue of a soil scrapedown with you informally earlier in the process, and I guess we want to, for the record, ask that again. Wouldn't it have been useful to cost out, as another alternative, a soil scrapedown?

For example, it seems to us as a soil scrapedown would have been a more permanent remedy. And if that's the case, would it have been cost effective in terms of reducing long-term maintenance costs? For example, as opposed to blacktop, asphalt or other alternatives?

So, again, we're a little bit perplexed about what we see as a narrow -- really literally just one realistic option which seems to have within it the possibility of a number of options which are not costed out as separate options.

Does that make sense to you?

MR. GRANGER: Yes. As I had mentioned as we were talking to Larry, I can't emphasize enough that the flexibility that's built into the site-wide cover system is a strong point in the Proposed Plan, not a weakness.

In fact, most likely the cost difference between an asphalt cap, a gravel cap, a dirt cap is probably not all that much. What we were looking to get was the reduction of risk by ensuring that the site was covered from one end to the other. The flexibility comes in whereby if I specify -- or I shouldn't say I -- but if EPA specifies in a Record of Decision some cap configuration and then locks it in, it eliminates the possibility of anything else being done on those portions of the site, which is significant. That's seventeen acres of property, seventeen acres of undeveloped property in the City of Cortland.

Again, for example, if I specify -- if EPA specifies a grass -- a dirt cover covered with soil and grass from one end to the other, it doesn't allow the possibility for then going in and putting a road and developing some sort of -- performing some kind of development on the property in the future. Is that clear?

MS. JAMIE DAGLER: Yeah, although I guess I'm kind of confused, maybe, about the process and the significance of the ROD. For example, I guess I just envision this as proceeding such that at some point there is a definite decision made about all aspects of the cleanup, because, I mean, we've been under the impression that eventually EPA turns the site over to the DEC, for example, and at that point obviously you're no longer involved.

So, I'm not clear on -- I understand your point about flexibility, and certainly makes perfect sense, but at what point does the final configuration of what's going to be done there become decided?

And certainly Curb has been interested in making sure that public comment -- official public comment certainly, as well as the kind of informal interchange will continue to be allowed through all of those. Maybe we're just not clear about how the process will actually unfold after the ROD.

MR. GRANGER: Well, we'll be looking for a design document, whether we're performing it or whether the PRPs are performing it, within -- let me see -- probably 1999, and at that point you'll be finalizing all your cover configurations and your monitoring programs and your cap configuration.

MS. JAMIE DAGLER: So, the flexibility you're talking about, you're conceiving about the desirability of that flexibility for that now two- or three-year period?

MR. GRANGER: That's the way I envision it at present, yes, although depending on what the City of Cortland -- you know, as you know, EPA's not in the land development, we're just allowing for it. Depending on how creative the City of Cortland is or Cortland County or whoever's approaching the City in the meantime would dictate somewhat how that flexibility is going to fall out.

I don't think I was done with the second part of Jamie's question. Before we move on

MS. RYCHLENSKI: I think Larry had another question.

MR. LARRY ASHLEY: No, it was really a follow to Jamie's.

MR. GRANGER: Okay, jump in.

MR. LARRY ASHLEY: The flexibility might seem important if you were going to gather some new information meanwhile, that is if we're keeping flexible for a couple of years, and that's an advantage. Presumably you're going to get some information that will come down solidly on the side of one form of capping rather than another or one display of monitoring rather than another. Are we planning to gather information during the intervening couple of years so that we gather information we don't presently have in making that decision?

MR. GRANGER: Absolutely.

MR. LARRY ASHLEY: Absolutely, okay.

MR. GRANGER: The information is going to be is anyone interested in putting some kind of enterprise on the site?

MR. LARRY ASHLEY: That's the information that we're --

MR. GRANGER: Yes.

MR. LARRY ASHLEY: Not testing or anything like that?

MR. GRANGER: No, absolutely.

MR. LARRY ASHLEY: Okay.

MR. GRANGER: No, there's no testing necessary for implementation of a cover on the site.

And getting to a second part of Jamie's -- is that clear, Larry?

MR. LARRY ASHLEY: Yeah.

MR. GRANGER: Getting to the second part, Jamie, we have four options in the Proposed Plan. There were several other options that were evaluated in the Feasibility Study. Obviously we can't put all of the information that's included in the Feasibility Study into the Proposed Plan.

One of the sections of the Feasibility Study screens out alternatives that don't really appear to be realistic from a number of standpoints. And one of those addressed excavation of the entire contaminated soils from one end of the site to the other, which basically entails a massive undertaking of digging down six feet across the entire site, which is what we found after going through several test pits, that the soils look like they've been impacted in some way down to six feet, and without, like, testing, which is another probably tens of thousands of dollars more, that we would -- that that was not really a realistic approach.

And that covering the site meets the goal of reducing the risk, which is basically the entire thrust of the program is to -- in balancing the nine criteria coming up with approaches that address site risks, not necessarily ease of maintenance over the long term, which is a consideration, but granted, doing that massive undertaking would make things very simple, because you're just removing everything, you don't have anything else to worry about. But when you start putting that into -- weighing that against what your other options are, it doesn't appear to be realistic.

MS. RYCHLENSKI: This gentleman here has been waiting (indicating).

MR. ERIC DUMOND: Yeah, my name is Eric DuMond from Curb. And this right now we're in the middle of the public comment period. What happens if, say, a year-and-a-half from now after the Record of Decision is made you're talking about maybe new technologies possibly arising to -- that may alter, you know, the cap, will there be any future public comment period before the Record of Decision is implemented, before action is taken?

MR. GRANGER: The Record of Decision being implemented as is, there would not be any further comment period unless there's a comment period associated with closeout.

MR. SINGERMAN: Well, there are mechanisms in the law that allow for changes to remedies. There's ROD amendments, there's an explanation of significant differences, and really it's a function of what type of changes are necessary.

Quite frequently during design we may find something in the site that changes our opinion about the remedy, a new technology may come about, so we have the ability and flexibility to change remedies.

So, depending upon which mechanism we would use to change a remedy, we would seek public comment to make sure that -- that whatever we changed would be, you know, acceptable to the public, and in the same way we're requesting public comment now.

MR. ERIC DUMOND: But the only -- the problem that I see is that, you know, we're in the Record of Decision, you know, public comment comes before the Record of Decision. We don't have any definite --

really any definite answer as -- as far as specifics on the site. How can we, as a community, or as an individual really, decide whether this proposal is acceptable to us?

That's, you know, we had a meeting the other night -- last night, and I was -- I'm quite -- I'm very adamant about imposing, you know, the proposal number 3, because without any specifics, how can this community accept this proposal as is?

And if after the record of, you know, or after this time period is over we're not allowed -- our comments aren't going to influence the EPA's decision on this until extremely late in the process, I don't think that's doing this community any justice.

MR. SINGERMAN: The Record of Decision comment period is just a comment on the remedy. EPA will accept comments all throughout the process, through the deletions of the site from the National Priorities List, at any time. We're always willing to hear what people have to say about what we're doing.

We have meetings all the time, you know. We can have -- like say, for example, in various, you know, through the design, I mean, really what we feel is necessary, what the public feels is necessary as far as keeping them informed and trying to make sure the public's happy with what's going on with the site.

We're not trying to ram this down anyone's throat. Basically we're here, there's some basic principles of the remedy that are being identified and we're excavating four known hot spot areas that we believe are the significant sources of contamination. We're covering over the former cooling pond. And I mean, we specifically identified, you know, those, I mean, those are the major part of the remedy.

And the other part covering over is -- we're not exactly sure what we'll be covering with, but, I mean, whatever we do, we'll be protective of public health and the environment.

MR. ERIC DUMOND: So, basically in all actually the official public comment period doesn't end the 17th, in other words, is what you're saying?

MR. SINGERMAN: The comment on the actual remedy, once we consider public comment, then we'll make a decision on the remedy, but we're always open to concerns or comments from the public.

I mean, we -- just as we -- I presume comments were provided, you know, from the beginning, you know, when the site was listed up until now we have -- people have commented on various things and Curb has presented concerns to our agency and, you know, Mark has met with the group and, you know, various other parties, I mean, you know, have expressed concern, so EPA has considered those.

So, throughout the whole process from listing the site on the National Priorities List to deletion, EPA will always consider anybody's concerns, whether it be the public's, potentially-responsible parties, you know, local officials, elected officials, whatever.

MS. RYCHLENSKI: And just to add to what Joel has said, I've been doing community relations for the agency for a very long time. And this is --

A VOICE: You need to speak up.

MS. RYCHLENSKI: I'm sorry, I've been doing community relations for the agency for a very long time and I have seen RODs reopened and changed, and what we call an Explanation of Significant Differences done, because communities are vocal and because they are concerned.

So, this is an official public comment period, as Joel mentioned, to this proposed remedy, but the public activity and especially, a group like yours in a community like this, does not end until the site is deleted. It continues.

We have some sites that are extremely active. This is one where the community's very active. We have some where the communities don't become active at all, but especially on sites like this it's a continuing process. Especially you have a TAG, it's a continuing process.

Yeah, Larry?

MR. LARRY ASHLEY: I think I can cut through this pit. Is it possible within Mark's guidelines or EPA's guidelines that you return to this community before the decision is already made?

Because I'm a person who does not believe that once a decision has been made you're in the same position as just before it is made. I think what would be best from the point of view of -- of bringing this community into the decision, would be if just prior or just at that moment when you're trying to decide what the nature of that cap is, you would return to this community and say here are the realistic alternatives as we're now looking at them, we're about to decide, give us some input, because we know you're going to live with what we decide.

If it's decided independently of us, I think it will leave residually. There will always be people who think they have been kept out of the process and would -- may move to opposition just on that. I think in the point of community relations and procedure I think it would be -- not give a -- a fet a compli (phonetic), but a genuine chance of contribution from -- not that you have to follow what we do, but we'd like the language of being part of the process to have some real meaning, and something like that would do it.

Now, that may not be standard, but I guess I would like to request it, if it's possible within the framework of what you do.

MS. RYCHLENSKI: It's not unusual. We can do it.

MR. GRANGER: I just want to make sure exactly what you're talking about. You're saying before the decision's final. We're anticipating finalizing our decision within the next month or so.

Now, but what you're talking about especially is a final decision as to what the final cap configuration's going to be, which is presumably at the stage of completion of the remedial design, is that correct?

MR. LARRY ASHLEY: What you're talking about for desirable purposes from your point of view leaving open and flexible for up to two years.

MR. GRANGER: It's not from my point of view. It's from EPA's point of view and from the community point of view.

MR. LARRY ASHLEY: Okay, stand corrected. But in any case, if that's still going to remain open, we'll still be here and we will be interested in knowing what you are considering doing to that twenty acres, which is our twenty acres, you know.

We don't want to see it -- we don't want to see it become either an eyesore or unuseable. Or actually I would say I trust that whatever cover you put on will be health protective. I mean, I just -- I have to believe that you're going to do a good job of insulating whatever residual health dangers remain on the site from the community, but there's much more that remains at stake, because I think I could do that along the whole spectrum of things, some of which could be a disaster from our community.

And economics aside, if you won't tell us what the costs of these various things are, we would certainly like to tell you which various alternatives we would prefer as a community to end up with for that site, and I think that's really where Eric was going with his question.

MR. GRANGER: Let me just state for the record and make sure that I paraphrase for the record, you're not worried about acceptable cap configurations. What you're worried about, is it an unacceptable cap configuration from the community standpoint? For example, one example of which would be a complete asphalt paving of the property.

MR. LARRY ASHLEY: Exactly.

MR. GRANGER: And you would like to be kept informed and the opportunity to have input at the point where those decisions are being made?

MR. LARRY ASHLEY: Yes.

MR. GRANGER: Okay. That's my paraphrase, and I'll defer to my supervisor.

MR. SINGERMAN: But also is there anything else in the list of your, you know, dislikes, as far as, I mean, we'd be more than happy to consider if you want to just identify other, you know, other caps that you don't think are appropriate, asphalt and anything else?

One of the reasons we're here is to hear your concerns. I mean, you don't have to identify them right now. It's an ongoing process. One of the reasons we have TAG is that your advisor, you know, we can interact with the advisor and the group to make sure that the group is and the community at large is happy with what we're selecting, what we're ultimately selecting for the site.

So, if you can identify now or at

some time in the future, we'd be more than happy to take that request.

MR. LARRY ASHLEY: Yes. Would just like to say, although I don't know if you would like to be pressed on this too hard, that we were sort of surprised when the possibility was mooted of one-foot cover, because we had thought that two feet, in fact someone asserted three feet, but it's controversial for us what the depth of that cover is expected to be, so we'd like to think that through, and if a soil cover for the site is the selected capping surface, capping method.

MR. GRANGER: So, I mean, I anticipate an ongoing relationship with Curb and individual members of Curb, although there's always the hit by a bus syndrome whereby, you know --

MR. LARRY ASHLEY: Right, something doesn't --

A VOICE: You or us?

MR. GRANGER: Yeah, could be either way. So --

MR. LARRY ASHLEY: We've dodged a few buses.

MR. GRANGER: So, let's put down for the record that we need to address the possibility of formalizing an agreement to maintain communication with the community regarding the cap configuration.

MR. LARRY ASHLEY: Thank you.

MR. SINGERMAN: Because also we don't want to preclude the appropriate development of the property, so we don't want to put something down there, therefore it can't be developed, so, I mean, ultimately we see it as being -- developing the piece of property.

MS. RYCHLENSKI: Jamie?

MS. JAMIE DAGLER: Yeah. Could I also just kind of state for the record that I think one reason why we're concerned about -- this is not the main reason, I think Larry's discussed the main reason -- is that, you know, I guess we would like to see, you know, that kind of more official commitment that there will be a public comment at this stage, et cetera. Because we have had a really good relationship as a result of the TAG process, et cetera. It's not clear that we will have that TAG for very much longer.

I mean, Mark, you know our situation, we're basically out of money. We need to decide whether we want to reapply for an additional TAG. And the fact of the matter is administering this TAG has been a nightmare for us and I'm not really sure that we can do it. And so if that happens, Curb is not going to dissolve. I can say that we are in it for the longrun, but the nature of our relationship with you may change, you know, if we don't have the technical advisor.

And we want to make sure that, you know, if that happens, you know, if Curb kind of officially dissolves as a TAG group, that there are mechanisms in place to allow for us as individuals, or collectively without TAG and the technical advisor --

MR. GRANGER: Well, the technical

advisor works for you. Any relationship that you have established with EPA through my position or any other relationships that you might have is very straightforward.

MS. JAMIE DAGLER: Yeah.

MR. GRANGER: The TAG is ancillary to any relationship that's been established.

MS. JAMIE DAGLER: Well, Mark, again, I firmly believe that that is what will happen if you remain Project Manager, but if you don't -- and you really stuck with us over the long -- we went through two Project Managers in a short period of time and you've been with us for a long time and we really appreciate that. But again, we're talking about years really into the future, and so we're a little bit nervous about our ability to sustain that relationship with EPA, because we may not have a TAG.

And also if you end up not being in this position we'd be having to forge around with a new Project Manager without a TAG, which I assume would be a bit more difficult to do, maybe depending on that individual and his or her experience with community groups. That's kind of where we're at.

MR. GRANGER: Okay.

MR. SINGERMAN: Mark will look both ways twice before crossing now.

MS. RYCHLENSKI: So, basically what we're doing is we're chaining Mark to the Rosen site for the rest of his professional life.

I saw a hand go up here (indicating).

MR. TODD MILLER: Todd Miller. I've got my public hat on tonight. My question's two parts, hypothetical. Maybe one, Mark, you can answer and maybe the second part Dave here.

One: Option 3 will allow a plume to go beyond the extent of the site underneath the residences. Is there a plan for surveys, such that in the future someone doesn't come in the neighborhood and drill a well?

And two: If someone wanted to drill a well anyway over the plume, what are their water rights situation? Can they go ahead, drill it and say, yeah, my water's contaminated, I'm going to sue or something like that?

MR. GRANGER: My understanding is that there are restrictions on installing potable drinking water wells within the City of Cortland, or at a minimum you need to obtain a permit first. I would say that as part -- typically as part of EPA's remedy and as part of the consent decree that would be entered into with the potentially-responsible parties, or as part of EPA's implementation of the remedies should the potentially-responsible parties not desire to proceed with implementation of the remedy, a part of whatever remedy that gets selected is the formalization of institutional controls, such as deed restrictions and restrictions on installation of wells for potable purposes, sometimes even for nonpotable purposes.

I don't see, personally at this point, just speaking from my own opinion, I don't see the need to restrict groundwater withdrawals for industrial purposes at this point in time, but I do see the wisdom of restricting potable withdrawal of water downgrading of the Rosen site, and that would be formalized in the future.

MR. TODD MILLER: I guess it comes down to a question of water rights of the property owner. Can you prevent a property owner from using their water underneath their property?

MR. GRANGER: That's a good question. I don't know if that would be enforceable, but it certainly would be -- I'm going to have to look into that one, Todd.

MR. SINGERMAN: Well, if institutional controls is part of the remedy, then EPA could effectively prohibit people from using the water underneath the property. I mean, if we select, you know, part of the remedy that we're proposing includes institutional controls, such as deed restrictions or other mechanisms to prevent any installation of potable water wells within the extent of the plume, so basically that's, you know, that would be part of the remedy.

So, it would be up to some local authority to implement that aspect of it. Like, for example, whoever controls the issuance of permits for installation of wells would know that they cannot issue permits for X number of years until EPA says that, you know, the water is now safe. So, therefore, you cannot install a well, so that would be controlled as part of the remedy.

But EPA itself cannot -- you can't go out and say -- we're not the authority that issues the permits, so we're not the one that can say you can't issue a permit. We would just tell the party, whether it's the County or City. I guess it's the City.

MR. TODD MILLER: Does the County have a right to refuse a permit on the basis that water is contaminated beneath them? That's my question.

MR. SINGERMAN: Yes, because one of

the purposes of issuing a permit is that you don't want to install a well that's not a potable supply, so they're not going to approve a permit if it's not going to have usable water, and if it's contaminated it's not usable unless you treat it, so there's also some interrelationship between the fact that there's already public water supply.

So, sometimes there's -- there are local ordinances that preclude installation of private wells in the area that's controlled by a public water supply, so I don't know the specific -- specifically what the law is here, but that, I mean, it's likely to be the case.

MR. TODD MILLER: Actually that would work in Cortland, because actually Cortland is only one of the few places that has a permitting system. Most counties don't in New York, but fortunately Cortland does.

MS. RYCHLENSKI: Okay. This lady here (indicating).

MS. AUDREY LEWIS: My name is Audrey

Lewis. I am from the Health Department, the agency that would be issuing permits, and I think that the issue may soon be a moot point, because for other reasons they're looking into restricting any wells drilled within the City public water supply, water district to cross-contamination, cross-connection problems. So, it may not be allowed anywhere within the water district to drill potable waters. As well as the plume doesn't go outside City limits and once it reaches Cortlandville that's no longer in that.

MR. GRANGER: Do you have a time frame for that, Audrey, of when you expect that decision to be finalized?

MS. AUDREY LEWIS: Probably we talk to the Water Board. Doug, you would have a better estimate.

MS. RYCHLENSKI: Okay.

Yes, sir?

A VOICE: What you just said, are you saying that the EPA's proposing to monitor the plume from the plume broke --

MR. SINGERMAN: Part of the remedy is to include monitoring of the plume to make sure that it is attenuating. We're just not going to just ignore it and walk away from it. Part of the long-term monitoring is to make sure that natural attenuation is occurring ss part of the remedy.

A VOICE: So, does that mean that you're going to be proposing more wells downgradient of the site?

MR. SINGERMAN: Well, it depends. I mean, we may be able to use existing wells, we may have to install additional wells. These are some of the decisions we have to make during design, but we basically want to el -- find out what's happens with the plume over some time, so if we need more wells we would install them.

A VOICE: That's -- once again, that is one of my big concerns is once this Record of Decision is made and this decision is implemented, what happens if the EPA, god forbid, they fix a hot spot and a hot spot develops, what happens then? Are the PRPs still responsible for any additional cleanup costs?

MR. SINGERMAN: PRPs are responsible for -- for anything at the site, even if we delete the site from the National Priorities List and find contamination after that, so they're always on the hook. That's why it's in their best interest for them to implement a remedy at the site and do it the best possible way, because if they don't do it to our satisfaction, they may have to do it over again. Or EPA may have to go in and spend additional funds.

So, the thing is, is that, as I mentioned earlier, the ROD amendments, ESDs, we have mechanisms for changing remedies, if necessary. So, if we find some additional hot spot in the future, you know, if we can't address it under the current ROD, we can perhaps modify the ROD as, you know, as necessary to encompass other contaminant sources or problems we find in the future.

MR. GRANGER: And just to add one

more thing to that, you'll notice in the Proposed Plan as one of the bullet items under the preferred alternative, the provision for a five-year review, so that such -- such that the Superfund program requires that the site be reviewed and all the data that's been received reviewed every fire years to ensure that the remedy that's used remains protective.

MS. RYCHLENSKI: Larry?

MR. LARRY ASHLEY: I'd like to ask some really just basically informational questions I'm sure will be no problem. They mostly surround the 360 cap.

MR. GRANGER: I'm sorry?

MR. LARRY ASHLEY: The 360 cap over the cool pond.

MR. GRANGER: Yes.

MR. LARRY ASHLEY: Several questions about it.

MR. GRANGER: Okay.

MR. LARRY ASHLEY: One: Could you tell us in other terms other than 360 cap what the nature of that barrier is like?

Two: Is it in the end covered with this same sort of cover as is being committed for the other seventeen acres? Is it set aside in some way, is it visually differentiable from the other areas of the site?

I gather that the cooling pond gets treated differently because it deserves this cap. And what way does that translate to any difference that you can see once the remediation is completed?

And finally, there's language in those bullet items on page 15 that says that the nonhazardous wastes from the cooling pond are going to be removed, compacted and replaced or something for fill, and it struck us as curious, how do you separate the hazardous from the nonhazardous material that's in the cooling pond? I assume that there's hazardous material there.

So, that's a battery of questions, basically information questions.

MR. GRANGER: Let's break that into two parts. The part about compaction and consolidation, I'll answer that. The first part about the 360 cap is, yes, it varies dramatically from the site-wide cover. I could try to tackle it, but we have an expert here on 360 caps, so did you want to tell them?

MR. DAVID CAMP: Yeah, I mean, a 360 cap, basically you would just contour the area a little bit to shape it into the shape you want. And then it's the capping is just impermeable layer first, like something like a plastic, high-density polyethylene liner, or it could be a clay layer, something that meets the permeability requirements of Part 360. And then on top of that is -- it's a guess, a couple feet of what they call barrier protection layer, which is just this type soil. And then on top of that you put a topsoil layer. And then you seed it so that the topsoil is stable.

And in this case that's basically what we're talking about for a 360 cap.

MR. LARRY ASHLEY: The plastic part remains after a couple of decades still intrical? I mean, it's --

MR. DAVID CAMP: Yeah, as long as I -- yeah, it lasts a long time, as long as it's not exposed to sunlight, which it won't be.

MR. LARRY ASHLEY: Right. Mark, you're looking up the section I was talking about?

MR. GRANGER: Yeah, I'll read it out loud for the record. "Nonhazardous debris that is located on the surface of the areas where the site-wide surface cover would be installed and/or is commingled with the excavated soil would be removed and consolidated onto the former cooling pond."

What that's referring to is as we do the excavations, you know, assuming this remedy moves forward, as the excavations would be performed you'd be digging up soils that are contaminated with PCBs and TCA, there's going to be like large boulders, let's say, that is not necessarily PCB- or TCA-related whatsoever, and you could decontaminate it quite simply by rinsing it off. Or a pipe or a car body, that is something that's not the kind of thing you'd want to send to a hazardous waste landfill in a rolloff or treat in some way.

In addition, that's excavated-related materials. Then there's material on top of the site, like bricks and, you know, a pile of fishing wire, you know, from -- you know what I mean? There's, like, a big mass of spaghetti of old fishing line, things of that nature, that's what that's referring to in terms of, okay, we're putting -- we have a landfill, we're going to be capping a landfill, these are the type of materials that are already in the landfill, let's consolidate those materials and focus our attentions on the hazardous materials in terms of treatment and sending off site, and we'll put the cap over the top of the cooling pond and other nonhazardous debris.

MR. LARRY ASHLEY: So, that bullet item began with a description of the cooling pond, but actually the materials that are going to go in is from the rest of the site?

MR. GRANGER: Well, what it says is nonhazardous debris that is located on the surface of the areas where the site-wide surface cover would be installed, meaning the seventeen acres on the surface, so you have structural steel, fishing line, et cetera, bricks.

MR. LARRY ASHLEY: I don't know if we are talking about the same part. The bullet item that begins a cap -- a cap meeting the requirements --

MR. GRANGER: Oh, I'm sorry.

MR. SINGERMAN: Prior to the construction of the cap, the consolidated soils --

MR. LARRY ASHLEY: Nonhazardous debris --

MR. GRANGER: -- debris, and existing fill materials would be regraded and compacted to provide a stable foundation.

Okay. That's building on the previous bullet, so what that's saying is that all those materials, and with the addition of these other materials, would then go through what Dave said in terms of contouring. You have to have, like, specific grades in order to meet the specifications of the State standard, Part 360.

MR. LARRY ASHLEY: Okay.

MR. GRANGER: When they say compacted, you have to -- in order to maintain that slope you have to send the equivalent of a steam roller over the top and it has to meet -- it's a very technical specification and they have machines that measure compaction. You have to have ninety-nine percent, et cetera.

MR. SINGERMAN: It's all so it doesn't start settling too, so the cap doesn't collapse.

MS. RYCHLENSKI: Okay. Any more questions or comments?

Jamie?

MS. JAMIE DAGLER: Yeah. Just wanted to ask a question about the institutional controls. Can you give us an idea, Mark, of at what point in the process that's going to unfold? Would EPA begin the process of developing those institutional controls with the community?

We're assuming that EPA takes the lead in bringing together, if it be City, County, whomever, or the DEC, obviously, to sit down and actually establish what those controls would be. For example, under what conditions could there be excavation on the site?

And actually that's a question is would this remedy, if selected, still allow the possibility of excavation on the site as long as the soils underneath the surface cover were treated as hazardous waste, is that --

MR. GRANGER: That's how I envision the institutional controls for soils related to the site proceeding.

Very briefly, institutional controls could be begun to be instituted concurrently with design of the remedy or after. My experience has been that institutional controls are usually addressed kind of like as the period on the end of the sentence, where you're done with your remediation or you're done constructing your remedy, assuming that you don't have any thirty-year remedy going on, but in terms of just constructing the remedy, design and construction, and then you move into your institutional controls, fails that could be moved up.

But I'm assuming perhaps, Joel, did you have any further insights on that?

MR. SINGERMAN: There's really no requirement as to when it has to be done. If you definitely want to have the institutional controls in place before the remedy is basically completed, because at that time, you know, you don't want to have people be able to do something to the covered area or cap that, you know, would adversely impact it, so we probably want to start early enough in the process that by the time the remedial action is completed, that we would have those protections in place.

But there's really no specific time when we're required to start doing it, but, you know, I guess the sooner, the better.

MS. JAMIE DAGLER: So, that is the EPA's responsibility, to make sure that these are implemented?

MR. SINGERMAN: Well, everything at the site is EPA's responsibility depending if we -- we intend to negotiate with potentially-responsible parties to undertake the remedy, so, you know, certain aspects may untimately be their responsibility, but ultimately everything is EPA's responsibility.

If they do something on behalf of EPA we would want to make sure that it's done as we would do it.

MS. RYCHLENSKI: Mark?

MR. LARRY ASHLEY: Sorry to jump in again. Once the remediation is complete, will need there be a fence around the property or will it again be open to children who use it quite naturally as means of cutting down distances to and from their house and school, et cetera, which remains a problem for any fencing that remains in place?

As you know, people have used, over the years, that land as a thruway. Does any remediation, absent someone on the site who fences it for purposes of security for whatever is going on there, does the type of cleanup we're talking about here end up with no fence around it or is a fence kept around it sort of perpetually in recognition of the fact that it's a site that needs to be treated carefully?

MR. GRANGER: I would say that the basic policy of EPA is to err on the side of conservative, such that any portions of the site that had not been remediated to eliminating health risks would be fenced, would remain fenced.

MR. LARRY ASHLEY: But that would not be true for the huge majority of the site, is that right?

MR. GRANGER: I would say

ultimately -- let's say that hypothetically half of the site was remediated and had some kind of cover configuration placed over the site, over that portion of the site, that the fence line could then be moved back to the unremediated portion of the site.

In addition, I envision that the cooling pond portion of the site will be fenced in perpetuity, typically to protect the integrity of the cover that's done.

MR. SINGERMAN: That's currently fenced now.

MR. GRANGER: The whole site is fenced now and that fence will stay up as long as there's remediation work going on.

MR. SINGERMAN: We have no intention of taking the fence down, though. I -- I mean, basically it's private property, so it's not -- so if the property owner will maintain the fence, then the fence will stay.

MR. ERIC DUMOND: I'm going to speak from a little bit of the ignorant side of my education. My understanding is groundwater rises, it fluctuates, right? It goes up and down. This 360 cap is going to be on top of basically the cooling pond?

MR. GRANGER: (Nods head)

MR. ERIC DUMOND: Is there any possibility of when the water rises it carrying away any hazardous chemicals when it rises?

MR. GRANGER: Eric, that's the total point of this remedy is, first of all, to remove sources of contamination to the aquifer, so that when the groundwater does rise it doesn't carry away these chemicals.

There's four areas of the site that are going to be excavated, two of which have a direct impact on groundwater. That's the first thing.

The second part is the cap over the cooling pond is one thing, but we did an investigation of the cooling pond and did not find hazardous materials contributing to aquifer contamination.

MR. ERIC DUMOND: Okay.

MR. GRANGER: So, we're going to be

excavating the materials outside of the cooling pond that have been determined to be a source to the aquifer, we're covering the cooling pond simply because it was a construction and demolition debris landfill and that's what you do with old landfills, rot because it's hazardous.

MR. ERIC DUMOND: Now, you're quite positive that there are no other -- and I'm, you know, talking to you, we've dealt for a long time, and I, you know, I respect your opinion -- are you quite confident that there are no other possible hot spots on the site?

MR. GRANGER: I'm quite confident, yes, I would use that phrase.

I think that we have an impressive data set, database for the site. There's just sampling points from one end of the site to the other. The nature of the site is such that it is not out of the question, I think it's remote, but it does remain a possibility. And if a source was determined to be present on the site, then we would evaluate the need to address that in addition to what else we have.

That builds on something that Joel had mentioned earlier, that if information comes to EPA in the future, we do have mechanisms for reopening our decision, for reevaluating our decision and formalizing that in a post Record of Decision document.

MS. RYCHLENSKI: Jamie, just let me get this gentleman in front of you.

Yes, sir?

MR. RICHARD PARKER: I'm Dick Parker with Curb. I've lived at that end of town most of my life, especially since '65.

This Perplexity Creek and Owego Creek frequently go wild in the spring. Now, when you're going to cover that area of the cooling pond over there, which I'm really familiar with, you will have the Perplexity Creek to deal with, it goes right through it.

And having had -- brought up a granddaughter that I confronted that Perplexity Creek commonly going under the fence along with her friends. I don't think it's going to get remedied that easily. I just brought her home from LeMoyne this afternoon, so she's not one of your worries anymore.

That would be a concern of mine, as to how you're going to get that thing so it doesn't run out of there, out of this creekbed. Some parts of it are underground.

MR. GRANGER: Right. The creek is definitely a consideration in remedial design.

MR. RICHARD PARKER: Yeah.

MR. GRANGER: Absolutely.

MR. RICHARD PARKER: That's something you want to keep in your monitoring.

MR. GRANGER: You mean just during the construction of the cap or just long term?

MR. RICHARD PARKER: They'll tear it apart for you. If that thing wants to run wild up there it goes.

MR. GRANGER: We're going to have to

design for that and they're going to put proper surface water drainage around the cap, you know. They might have to beef that up and put riprap or something, you know, different measures to prevent erosion and whatnot, but, yeah, that's definitely something that we're going to have to address.

MR. RICHARD PARKER: There will be considerable pressure from underneath there, because you may not be aware of the elevation of the subterrainian land, there are two aquifers there, an upper one and a lower one. I don't know if you drove through both of them or not. Did you not? Both of the aquifers?

MR. GRANGER: I'm familiar with them.

MR. RICHARD PARKER: You were?

MR. GRANGER: I'm familiar with the aquifers beneath the Rosen site.

MR. RICHARD PARKER: The two of them?

MR. GRANGER: Right, exactly.

MR. RICHARD PARKER: The upper and the lower?

MR. GRANGER: Yeah.

MR. RICHARD PARKER: And I don't know if the lower one puts the pressure on or the upper one.

MR. GRANGER: Well, that's one of the reasons that the site-wide cover system is being designed to be permeable, because the groundwater tends to rise so high, I mean, I've been out at the site where you could literally dig to groundwater with a teaspoon, so it really would be counterproductive to put a permeable cover across the site when the groundwater comes up so high, and it could actually compromise the cover system. So, I think the permeable specification is important for the site-wide cover.

MR. RICHARD PARKER: I don't think they'll do it, but they were considering putting a bypass highway just above that in Polkville. It had all been surveyed and staked off. I don't think they can get through there anymore, but they put that water tank up there, they might go around it, and that's a State project from Route 13 across Route 11 -- or Route 81.

MS. RYCHLENSKI: Okay. Lot of stuff going on out near that site, that's for sure. Thank you.

MR. RICHARD PARKER: Been there a long time.

MS. RYCHLENSKI: Been here a long time, know it inside out, better than him, I guess.

No offense.

Jamie?

MS. JAMIE DAGLER: Mark, with regard to natural attenuation, if that's the remedy selected for groundwater, would you actually set goals for reduction of contaminants? In other words, I'm trying to project ahead. Say natural attenuation doesn't work, you know, in the long run you need to come back and revisit, at what point will you make that determination that this is not working, we need to go back and figure out why it's not working?

Will you set goals based on the levels of contamination you know are there, they should be reduced to a certain level by a certain time or something like that?

MR. GRANGER: There's already goals in terms of State and Federal groundwater standards for drinking waters, so those are ultimately the goals. That's the rods, the yardstick that we're measuring it against.

In terms of those goals being met over time, there's the stipulation, which is part of the Superfund program, for a five-year review. Every five years that this site is reviewed to ensure that the remedy remains protective. So, we're saying right now that we believe natural attenuation will meet those drinking water standards within ten years. That's an estimate. If it turns out to be fifteen years, at the second five-year review we would evaluate whether that remedy has remained protective and make a decision based on that.

I would say that in the unlikely instance where the City of Cortland wanted or absolutely had to place their groundwater extraction well for drinking purposes downgradient of the Rosen site, that would be -- that would change the equation dramatically and that would be the kind of scenario where we would say, well, okay, this remedy's no longer protective, you know. If that's the circumstance we'd have to evaluate that, okay?

MS. RYCHLENSKI: Okay. Any other questions or comments?

(Whereupon there was no verbal response)

MS. RYCHLENSKI: Okay, then we'll close for the evening. I thank you all very much. And just remember, written comments, get them to Mark by close of business December 17th. And I'm sure we'll see you soon.

(Whereupon the meeting adjourned at 8:30 PM)

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STATE OF NEW YORK :
COUNTY OF BROOME :

I, MICHELE L. RICE, Shorthand Reporter, do hereby certify that the foregoing is a true and accurate transcription of the proceedings in the Matter of a PUBLIC MEETING, held in Cortland, New York, on the 9th day of December, 1997.

Michele L Rice

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