DRAFT

RECORD OF DECISION

DUVA INACTIVE HAZARDOUS WASTE SITE

SITE NO. 7-34-051

TOWN OF CLAY
ONONDAGA COUNTY, NEW YORK

PREPARED BY:

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

MARCH 1993

DECLARATION STATEMENT - RECORD OF DECISION

Duva Site
Clay, New York
Site No. 7-34-051

STATEMENT OF PURPOSE

This Record of Decision (ROD) sets forth the selected Remedial Action Plan for the Duva Site. This Remedial Action Plan was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation Law (ECL). The selected remedial plan complies to the maximum extent practicable with the National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, of 1990.

STATEMENT OF BASIS

This decision is based upon the Record of the New York State Department of Environmental Conservation (NYSDEC) for the Duva Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A copy of all pertinent documents is on file at the North Syracuse Public Library, 210 South Main Street, Syracuse, New York. A bibliography of the documents included as a part of the Record is included in Appendix 2.

DESCRIPTION OF SELECTED REMEDY

The selected remedial action plan provides for the protection of human health and the environment by in-situ treatment of contaminated soil and removal and treatment of contaminated

groundwater at the site. The Remedial Plan is technically feasible and it complies with statutory requirements. Briefly, the selected remedial action plan includes the following:

1. Continued operation, maintenance and monitoring of the existing groundwater collection and treatment system.

2. Continued operation, maintenance and monitoring of the indoor air contaminant mitigation system.

3. Implementation of dual Soil Vapor Extraction (SVE)/Groundwater Extraction. Horizontal SVE trenches will be keyed into the top of the dense till. Groundwater will be extracted by wells and/or pipes installed into extraction trenches. Increasing the depth of the unsaturated zone in this way will increase the volume of contaminants extracted by SVE. SVE vapor discharge and extracted groundwater will be treated to remove contaminants.

4. Installation of a permanent impermeable cover over the remediation area. This cover serves to limit infiltration as well as to prevent short circuiting of air flow. It will remain in place to prevent possible future exposures to residual contamination.

5. Development and implementation of long term land use restrictions at the site to protect installed remedial systems and to eliminate possible disturbance or contact with any residuals left after remediation is complete.

6. Provide for comprehensive monitoring and evaluation of the effectiveness of the installed remedy and the need for modifications or enhancement of any remedial element.

DECLARATION

This selected Remedial Action Plan is protective of human health and the environment. The remedy selected will meet the substantive requirements of Federal and State laws, regulations and standards that are applicable or relevant and appropriate to the remedial action. The remedy will satisfy, to the maximum extent practicable, the preference for remedies that reduce toxicity, mobility or volume of hazardous wastes. This preference will be met by in-situ treatment of contaminated soil and extraction and treatment of contaminated groundwater. The potential long term environmental and human health threats associated with the site will be significantly reduced by removing contaminants from the site.

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Date

_____
Ann Hill DeBarbieri
Deputy Commissioner
Office of Environmental Remediation
New York State Department of
Environmental Conservation

Executive Summary

The Duva Site Remedial Investigation and Feasibility Study have been completed. Based on the results of the Investigation, a detailed evaluation of available remedial alternatives was performed in the Feasibility Study. A Proposed Remedial Action Plan (PRAP) was prepared to present the various alternatives and identify the preferred remedial action. The PRAP was presented for public review and input. Based upon the Site Record, the PRAP, and public input, the final selected remedial action includes the following:

1. Continued operation, maintenance and monitoring of the existing groundwater collection and treatment system. Evaluation during design of improvements to this system to maximize the effectiveness of the remedial measures. Modifications may be made with prior written approval of NYSDEC and NYSDOH.

2. Continued operation, maintenance and and monitoring of the indoor air contaminant mitigation system. Modifications agreed to by individual homeowners and the Responsible Parties may be made with prior written approval of NYSDEC and NYSDOH.

3. Implementation of dual Soil Vapor Extraction (SVE)/Groundwater Extraction. Horizontal SVE trenches will be keyed into the top of the dense till. Groundwater will be extracted by wells and/or pipes installed into extraction trenches. Increasing the depth of the unsaturated zone in this way will increase the volume of contaminants extracted by SVE. SVE vapor discharge and extracted groundwater will be treated to remove contaminants.

4. Installation of a permanent impermeable cover over the remediation area. This cover seems to limit infiltration as well as to prevent short circuiting of air flow. It will remain in place to prevent possible future exposures to residual contamination. Additional site clearing may be required.

5. Development and implementation of long term land use restrictions at the site to protect installed remedial systems and to eliminate possible contact with any residuals left after remediation is complete.

6. Pursuant to Federal Superfund Law, evaluation of the effectiveness of the installed remedy and the need for modifications or enhancement of any remedial element.

Section 1 - Site Location and Description

The Duva Property is located in the Town of Clay, Onondaga County, between Taft Road on the north and Platinum Drive on the south (see site location map, Figure 1). This five acre parcel consists of both open and wooded land, sloping gently to the south. It is secured with an 8' high chain link fence. Surrounding neighborhood consists of both residential and undeveloped land. The area is served by a municipal water supply. The Duva Property was added to the New York State Department of Environmental Conservation (NYSDEC) Inactive Hazardous Waste Site List as a Class 2 site, registry number 734051, in August 1989.

Section 2 - Site History

A. Initial Investigation

In June 1987 the NYSDEC Region 7 office was informed that drums had been discovered in a wooded area behind homes on the north side of Platinum Drive. Approximately 200 drums, mostly rusty and deteriorated, were found in three general locations. Analyses of samples taken from the drums by NYSDEC regional personnel showed primarily organic solvents (including trichloroethylene and tetrachloroethylene), with lesser amounts of cyanide, some Polychlorinated Biphenyls (PCBs), and various other compounds.

It was determined that some of the wastes originated from a General Electric facility for disposal. It is possible that some of the wastes came from other sources, however, there is no conclusive evidence regarding possible other sources. The wastes were disposed of in the 1960's by the former property owner, Mr. Peter Duva. The Duva property had subsequently been sold to Donald W. Miller, Inc. who retains ownership of the site.

Mr. Miller implemented a drum removal and excavation of visibly contaminated soil from the area in September 1988. This material was taken to a licensed hazardous waste facility for disposal.

B. Groundwater Interim Remedial Measure (IRM)

In May 1989, New York State Department of Health (NYSDOH) and Onondaga County Health Department sampled water in basement sumps in homes downgradient of the site on Platinum Drive. Analytical results revealed the presence of compounds (volatile organic solvents) previously identified in site soils and drums. Levels ranging from 17 parts per billion (ppb) to 32,000 ppb were found in four homes. General Electric was informed of this situation, and agreed to enclose and install outside vents on the basement sumps.

The NYSDEC determined the best course of action was to address the potential for chemical exposures posed by the migration of contaminated groundwater into the homes through an Interim Remedial Measure (IRM). Discussions with three Responsible Parties (RPs), General Electric, Donald W. Miller, Inc., and the Estate of Peter Duva, commenced during the summer of 1989. Conceptual agreement was reached for design and construction of a groundwater collection trench to be located between the site and the homes and a treatment facility for collected groundwater.

A Consent Order for the Groundwater IRM was signed with the RPs in May 1990. The groundwater collection trench and treatment facility were constructed in summer 1990. The collection trench consists of a perforated pipe, placed in a trench filled with crushed stone. Groundwater collects in the pipe and drains into a manhole. A pump in the manhole pumps the water to the treatment building. The collected groundwater is then treated by precipitation (to remove iron) and activated granular carbon (to remove organics) and discharged to the local storm sewer system. This system has been operating continuously since September 1990.

C. Indoor Air

Indoor air samples in the four affected homes were taken by NYSDOH and the Onondaga County Health Department in January 1990. Analytical results showed slightly elevated levels of volatile compounds in the air that had been previously identified in the sump water. At the request of NYSDOH, General Electric installed air purifying carbon filters in the homes, and sealed cracks and openings in the basements.

D. Soil IRM

In response to residents' requests, a Consent Order for an Interim Remedial Measure to remove soils (Soil IRM) was negotiated with the RPs in July 1990 to address soil contamination on the site. Under this Order, a Soil IRM Work Plan was completed and soil stockpiled during earlier investigative activities was removed and properly disposed.

E. Remedial Investigation/Feasibility Study (RI/FS)

An RI/FS Consent Order was signed by the RPs and the State in December 1990. Under this Order, the Responsible Parties implemented a detailed site Remedial Investigation (RI) to complete site characterization. An engineering Feasibility Study (FS) was also completed to identify and evaluate appropriate remedial alternatives.

Section 3 - Current Status

The Remedial Investigation (RI) at the Duva Site is complete. It was comprised of the following elements:

1. Magnetometer survey of site and adjacent fields - to test for possible buried drums or other scrap metal.

2. Test pit excavations to investigate anomalies from magnetometer survey - to confirm the presence or absence of drums or metal debris.

3. Surficial and sub-surface soil sampling - to determine presence and distribution of contaminants and evaluate soil characteristics.

4. Monitoring well installations on-site and off-site - to determine groundwater flow direction and presence of contaminants.

5. Surface water and sediment sampling - to evaluate possible chemical presence at the surface.

6. Ecological/Environmental Assessment - to evaluate potential site impacts on plant and animal communities.

A Public Health Evaluation was also performed and submitted in conjunction with the Remedial Investigation.

Site Geology

The surface of the Duva site slopes gently to the south. The northern half is overgrown field, and the southern half is mostly wooded, with the exception of the areas cleared for installation of the groundwater collection trench system.

Beneath the upper few inches of naturally occurring organic-rich soil is a silty sand unit that contains thin layers of finer-grained silt. The silty sand unit is generally thinner at the northern end of the site (two feet or less) and thicker at the southern end (up to eight feet).

A dense glacial till lies below the sand unit. The till is composed of very fine grained clay with small amounts of angular gravel. This unit is very tight, compacted by the overriding glacier.

A cross-section of the site from north to south is shown on Figure 2.

Site Hydrogeology

The silty sand unit is the primary waterbearing zone at this site. Although there is water in the till, there is little flow because the till has very low permeability. The vast majority, if not all, of groundwater flow is in the silty sand unit.

Prior to installation of the groundwater collection trench, groundwater moved slowly south from the contaminated areas to the vicinity of eastern Platinum Drive and northern Emerald Drive. Since installation of the collection trench, groundwater flowing south from the contaminated areas enters the trench. Groundwater at the very southern end of the site, beyond the collection trench, flows north into the trench. The northward flow zone does not appear to extend beyond the southern property line. Groundwater flow in the residential areas south of the site continues as it did prior to construction of the collection trench, that is, to the south and southeast, with localized effects from underground utilities.

Soil Contamination

Table 1 lists the primary compounds detected in soil and groundwater. Figures 3, 4, and 5 show the extent of surface, subsurface (18"-30" below ground surface), and deep (>4' below ground surface) soil contamination.

Surficial soil contamination is generally confined to the vicinity of drum disposal areas 1 and 2, with fewer detections in disposal area 3. Total volatile organic compounds (VOCs) at the surface range from less than 1 part per million (ppm) to 225 ppm. The subsurface (18"-30") contamination follows

approximately the same distribution as surface contamination. However, total VOCs are higher at this depth than at the surface, with concentrations as high as 7,305 ppm. Elevated levels of VOCs were detected in some boreholes in the till, at depths up to 30', however, concentrations of VOCs generally decrease with depth.

One isomer of PCB, Aroclor 1254, was detected in the eastern drum disposal area. The concentrations of this PCB was generally low to moderate and ranged from 0.056 ppm to 34 ppm. These PCB levels are below the threshold concentration for classifying the material as a PCB hazardous waste.

Semi-volatile organic compounds were detected in areas where VOC contamination is greatest, i.e., in the vicinity of drum disposal areas 1 and 2. The semi-volatiles most frequently encountered include 1,2 Dichlorobenzene, pyrene, and fluoranthene.

Concentrations of heavy metals were elevated above background levels in the three drum disposal areas. Among the heavy metals detected were copper, lead, zinc, and cadmium. Cyanide was detected in one sample in drum area 1 at a level of 2.8 ppm.

Groundwater Contamination

A total of 11 on-site and 6 off-site monitoring wells have been installed (see Figures 6 and 7). As with soils, the primary contaminants are VOCs, and the greatest concentrations are in the vicinity of drum disposal areas 1 and 2. The highest VOC levels found in groundwater were measured in MW6 at 432 ppm (see Figure 6).

The off-site contaminated groundwater plume was defined by temporary groundwater probes and monitoring wells. The plume extends south to northern Emerald Drive, and has been detected in monitoring wells installed in sewer bedding. The highest concentrations of VOCs in off-site wells were detected in MW13 at 1.2 ppm in October 1991. Follow up sampling at this well showed VOCs at 0.007 ppm (7 ppb). Results from the temporary probes and other downgradient wells range from no detection to 0.5 ppm.

Data gathered during the RI and routine monitoring of the groundwater collection system does not indicate any off-site groundwater migration is occurring.

Public Health Evaluation

A Public Health Evaluation (PHE) was performed by the RPs as part of the Remedial Investigation. The purpose of this evaluation was to characterize any possible current or future exposure and potential human health risks. To evaluate the possibility for site-related chemical residuals to pose potential human health risks, three general pathways were considered: (1) exposure by inhalation to site-related chemicals that may migrate to residences adjacent to the site under current and future conditions; (2) exposure by direct contact (incidental ingestion and dermal absorption) to site-related chemicals in on-site soil under current and future conditions; and (3) exposure to site-related chemicals by use of on-site groundwater as a potable supply under future conditions.

The following conclusions were reached by the RPs as a result of this evaluation:

1. Indoor air in some of the affected residences was found to contain at least one chemical (tetrachloroethylene) known to be present at the site that, under conservative (i.e., protective) assumptions used in the PHE (e.g., 30 year exposure to the maximum measured concentration), could potentially pose a minimally elevated excess cancer risk. Mitigative measures (groundwater interceptor trench, carbon air filters, sealing and venting sumps) have been instituted to protect indoor air quality.

2. Direct contact with on-site surface soil or with subsurface soil by temporary workers would not pose significant potential cancer or non-cancer health risks to exposed individuals.

3. Long-term ingestion of on-site groundwater poses unacceptable potential cancer and non-cancer health risks.

The NYSDEC and NYSDOH have reviewed the PHE and subsequent correspondence from the RPs presenting their health-based soil cleanup goals. The State concurs with the potential exposure routes identified in the PHE and with the identification of compounds of concern. However, because significant differences exist between the agencies and the RPs regarding the actual quantification of identified potential issues, the Public Health Evaluation has not been approved. The State believes that the PHE is sufficiently developed, however, to proceed with remedy selection using available site information and State cleanup criteria.

Section 4 - Enforcement Status

The three Responsible Parties (General Electric Company, Donald W. Miller, Inc. and the Estate of Peter Duva) have entered into and complied with three separate Consent Orders with the NYSDEC to address site contamination:

- Groundwater IRM - May 1990
- Soil Removal IRM - July 1990
- Remedial Investigation/Feasibility Study (RI/FS) - December 1990

Another Consent Order between these parties will be required if the RPs implement the required remedy.

Section 5 - Goals for the Remedial Action

The Duva site is located in a residential area. There are homes located less than 100 feet from the site. Contaminated groundwater has been detected in the basements of some of these homes. In addition, contaminated groundwater has also been detected in the bedding of off-site sewer pipes. Present or future use of the unremediated site poses a potential for human exposure to contaminants and a possible chronic health risk. The remedial action implemented must eliminate the potential exposure to the chemical wastes at the site.

The NYSDEC's overall goals for remedial action at the Duva Inactive Hazardous Waste Site are:

1. Protection of Human Health and the Environment, and

2. To return the site to unimpeded future use, or minimize future site restrictions to the maximum extent practicable.

To provide a framework for meeting the overall remedial goals, the following remedial action objectives were developed for the Duva Property:

a. To prevent further off-site migration of site-related contaminated soils and groundwater

Off-site migration of contaminated groundwater into a residental area was identified prior to development of the RI/FS. This problem was addressed through an interim remedial measure by construction of a groundwater interceptor trench in 1990. Extensive groundwater monitoring since installation of the interceptor trench has not generated evidence of off-site migration. Continued operation and maintenance of this system will assure protection of human health in off-site residential areas from exposure to contaminated groundwater until site remediation is concluded.

b. To remediate contaminated soils and groundwater to the extent that exposure to these media is eliminated or does not present an unacceptable risk to human health or the environment

The remedial action will seek to permanently and significantly reduce the toxicity, mobility or volume of contaminants in both affected media: soil and groundwater. This will result in elimination of significant threat to human health or the environment, and optimally, provide for future unimpeded use of site property. If any human health concerns remain with possible exposures to on-site materials, site restrictions will be instituted to prevent possible future exposure. Such restrictions will be held to a minimum.

c. To monitor groundwater and sample soils to verify effectiveness of remedial measures

Monitoring groundwater and soils during and following remediation is integral to every remedial system. A monitoring and sampling program will be developed to measure effectiveness of the system and determine when it can be concluded. Post-remedial monitoring will also be instituted.

Soil cleanup levels for the Duva Site are as set forth in the procedures of NYSDEC Division of Hazardous Waste Remediation Technical and Administrative Guidance memorandum (TAGM) 92-4046: Determination of Soil Cleanup Objectives and Cleanup Levels. Cleanup levels for groundwater are either Groundwater Standards, as set forth in NYSDEC Division of Water Technical and Guidance Series 1.1.1, or Drinking Water Standards, established in NYS Sanitary Code Part 5, whichever is more stringent of the two.

Section 6 - Description and Evaluation of the Alternatives

The Feasibility Study Report submitted by the RPs' consultant presented preliminary evaluations of remedial technologies to address contaminated soil and groundwater. These evaluations are summarized on Tables 4 and 5. Based upon these screening evaluations, some technologies were rejected from further consideration. The remaining technologies were developed into seven remedial

alternatives. Each of these seven alternatives provides for continued operation of the groundwater collection and treatment system.

Each of the seven remaining alternatives have been evaluated using the following criteria:

1. Compliance with Standards, Criteria, and Guidelines (SCGs)
2. Protection of Human Health and the Environment
3. Short-Term Effectiveness
4. Long-Term Effectiveness
5. Reduction of Toxicity, Mobility and Volume
6. Implementability
7. Cost

These criteria have been established by the State and Federal Governments for use in remedy selection at inactive hazardous waste sites and are set forth by New York State in 6 NYCRR Part 375. These criteria are explained in detail in Appendix 1.

Potential Chemical and Action Specific SCGs for the Duva Site are presented on Tables 2 and 3. No location specific SCGs are applicable to the site.

The following section discusses each remedial alternative relative to the evaluation criteria.

■ **Alternative 1:** No Further Action

Description of Alternative 1

Under this alternative, no remedial actions beyond continued operation of the groundwater collection system would be implemented at the site. This alternative is retained to serve as a baseline for comparison against the other alternatives.

Evaluation of Alternative 1

Compliance with SCGS: This alternative would not result in timely compliance with standards, criteria, or guidelines, particularly for on-site soil and groundwater.

Protection of Human Health and the Environment: Alternative 1 is not considered to be fully protective of human health and the environment. Future contact with contaminated soils or ingestion of on-site groundwater would pose potential human health risk. Continued operation of existing groundwater collection system protects against off-site migration of contaminated water.

Short-Term Effectiveness: Since no additional action would be taken, there are no construction activities which would impose any added short term risk to the community, environment or workers.

Long-Term Effectiveness and Permanence: Operation of the existing groundwater collection system extracts and treats contaminated groundwater. Soil contaminants would slowly leach into groundwater and be removed by the collection treatment system. Through this process, and natural degradation, site cleanup goals of the major constituents might eventually (possibly decades) be reached. In the interim, in the event that on-site groundwater was used as a potable supply, the site could potentially pose health risks to individuals using the water.

Reduction of Toxicity, Mobility, and Volume: No further action relies on continued operation of the existing groundwater collection system to address site contamination. Through natural attenuation, degradation and leaching, contaminants would slowly be reduced in mobility and volume. In the interim, the contaminants continue to pose risk to human health and the environment.

Implementability: Alternative 1 would be easy to implement. Implementability of no further action at this site requires nothing other than continued operation and maintenance of existing groundwater collection system.

Cost: The cost of this alternative is $1,903,000, which includes regular operation and maintenance of existing groundwater collection and treatment system (see Table 6 for cost summary).

- **Alternative 2:** Limited Further Action - use of deed restrictions and soil and groundwater monitoring

Description of Alternative 2

This alternative adds deed restrictions and soil and groundwater monitoring, and includes continued operation of the groundwater collection system. Deed restrictions would prohibit activities which would lead to exposure to site contaminants (e.g., prohibit use of groundwater, prohibit excavation, restrict land use, etc.).

Evaluation of Alternative 2

Compliance with SCGs: Implementation of this alternative would not result in timely compliance with chemical specific SCGs, particularly for on-site soils and groundwater.

Protection of Human Health and the Environment: With deed restrictions preventing use of on-site groundwater and exposure to site soils, minimum protection of human health is possible. Continued operation of groundwater collection/treatment system protects against off-site migration of contaminated groundwater.

Short Term Effectiveness: No construction activities would be undertaken with this alternative. Therefore, there would be no added short term risk to the community, environment, or workers.

Long Term Effectiveness and Permanence: Operation of the existing groundwater collection system extracts and treats contaminated groundwater. Soil contaminants would slowly leach into groundwater and be removed by the collection and treatment system. Through this process, and natural degradation, site cleanup goals of the major constituents might eventually (possibly decades) be reached. Identified human health risks to a user/trespasser would be addressed by site restrictions.

Reduction of Toxicity, Mobility and Volume: This alternative would not actively reduce toxicity, mobility, or volume of hazardous wastes beyond the reduction provided by the existing groundwater collection and Alternative 1.

Implementability: As the only additional action, implementation of deed restrictions would not be difficult to accomplish.

Cost: The cost associated with this alternative is $1,960,000, which includes continued operation and maintenance of existing groundwater collection and treatment system (see Table 6).

- **Alternative 3:** Physical Containment - soil cover

Description of Alternative 3

Under Alternative 3, a permeable soil cover would be placed over those areas of the site where contaminants have been identified in surface soils. The primary purpose of the soil cover would be to physically separate contaminated soil from possible human contact. The groundwater collection treatment system continues to collect and treat contaminated groundwater. Deed restrictions described in Alternative 2 would also be implemented.

Evaluation of Alternative 3

Compliance with SCGs: Alternative 3 would comply with action-specific SCGs. It would not result in timely compliance with chemical-specific SCGs, particularly for on-site soil and groundwater.

Protection of Human Health and the Environment: The soil cover would limit exposure to contaminated surficial soil, and deed restrictions described under Alternative 2 would restrict exposure to on-site contaminated groundwater and subsurface contaminated soil. Continued operation of the existing groundwater collection and treatment system would protect against further off-site migration of contaminated groundwater.

Short Term Effectiveness: Construction of the soil cover would not present significant risks to the community, workers or environment. Some generation of dust would be expected, but would be easily controlled without impacting community lifestyle.

Long Term Effectiveness and Permanence: Regular inspection and maintenance of soil cover would be required. Continued operation of the existing groundwater collection system extracts and treats contaminated groundwater. Soil contaminants would slowly leach into groundwater

and be removed by the treatment system. Through this process, and natural degradation, site cleanup goals of the major constituents may eventually (possible decades) be reached.

Reduction of Toxicity, Mobility and Volume: Placement of a soil cover reduces possibility of wind-dispersion of surficial contaminants. Due to permeability of cover, infiltration would permit continued operation of groundwater collection system. Through natural attenuation, degradation and leaching, contaminants in soil would slowly be reduced in mobility and volume. Contaminants dissolved in groundwater would be removed and treated by the groundwater collection system.

Implementability: Soil cover would not be difficult to construct, and the technology is reliable and readily available. Deed restrictions require minimal coordination with other agencies.

Cost: The cost associated with this alternative is $2,552,800, which includes continued operation and maintenance of existing groundwater collection and treatment system (see Table 6).

- **Alternative 4A:** Soil Vacuum Extraction

Description of Alternative 4A

Alternative 4A is in-situ treatment of contaminated site soils by soil vacuum extraction (SVE). An in-situ vacuum extraction system consists of a series of wells and/or trenches installed in soil above the water table. These wells/trenches are connected by piping to a vacuum extraction unit. When a vacuum is applied to the wells/trenches, air flow induced through soils causes volatile contaminants to enter the vapor phase. Vapors extracted by the unit are subsequently treated to remove contaminants prior to discharge of air to the atmosphere. A soil cover (as described in Alternative 3 but designed to be impermeable) may be placed over areas of the site to be treated.

Operation and maintenance of the existing groundwater collection system continues.

Evaluation of Alternative 4A

Compliance with SCGs: Application of SVE would be expected to be able to meet SCGs in soils above the water table. On-site groundwater would continue to exceed SCGs until reduced by natural attenuation and leaching. However, reducing the source of contaminants by SVE on soils above the water table would substantially reduce the time it would take to reach groundwater SCGs.

Protection of Human Health and the Environment: Placement of soil cover would eliminate unacceptable exposure to surficial soils for the near term. Application of SVE would remediate soils and permanently eliminate these exposures for the long term. Continued operation of the existing groundwater collection and treatment system would protect against further off-site migration of contaminated groundwater. This process, combined with natural attenuation and degradation would reduce contaminants to levels that pose no human threat more quickly than either Alternatives 1, 2, or 3.

Short Term Effectiveness: Temporary risks to the community associated with installation of the soil cover and wells and/or trenches due to possible dust generation and vapor releases could be easily controlled. There would be no significant short term risks to the environment, workers or the community.

Long Term Effectiveness and Permanence: SVE presents active, in-situ, on-site, permanent treatment of hazardous wastes above the water table. The RPs estimated that contaminant levels in soil in the unsaturated zone may be reduced to near clean-up levels in approximately seven years. It may take longer for groundwater to reach NYS Standards. This alternative, in conjunction with continued operation of the existing groundwater collection and treatment system, would reduce possible long-term exposure to site contaminants.

Reduction of Toxicity, Mobility and Volume: SVE reduces the volume of soil contaminants above the water table. Contaminants dissolved in groundwater would continue to be removed by the existing groundwater collection and treatment system. Soil cover would reduce the possibility of migration of surface soil contamination via wind dispersion.

Implementability: Construction and operation of an SVE system is reliable and not technically difficult. Services and materials required for implementation are readily available. Required coordination with other agencies is normal.

Cost: The cost of this alternative is $2,245,900, which includes continued operation and maintenance of existing groundwater collection and treatment system (see Table 6).

- **Alternative 4B:** Soil Flushing

Description of Alternative 4B

Alternative 4B is in-situ treatment of contaminated soils by soil flushing. Water or an appropriate flushing liquid is injected into soils, where it sorbs contaminants and is then extracted by the existing groundwater collection system. The fluid is then treated to remove contaminants prior to discharge. The existing groundwater treatment system may need to be modified. A soil cover may be included.

Evaluation of Alternative 4B

Compliance with SCGs: This alternative complies with action-specific SCGs. Chemical-specific SCGs for soils would not be met for an extended period of time. On-site groundwater would continue to exceed SCGs until flushing soils is complete.

Protection of Human Health and the Environment: Placement of soil cover would eliminate unacceptable exposure to surficial soils. Soil flushing would reduce the volume of contaminants in soils above the water table. Continued operation of the existing groundwater collection and treatment system would protect against further off-site migration of contaminated groundwater.

Short Term Effectiveness: Temporary risks to the community due to possible dust generation and vapor releases associated with installation of the soil cover and injection wells could easily

be controlled. There are no significant short term risks to the environment, workers, or the community.

Long Term Effectiveness and Permanence: This is an on-site, in-situ, permanent remedy for contaminated soils. The RPs have estimated that this remedy would take significantly longer (up to twenty-two years or more) than Alternative 4A. Continued operation and maintenance of existing groundwater collection and treatment system would protect against off-site migration of contaminated groundwater. A soil cover would eliminate contact with surficial soils.

Reduction of Toxicity, Mobility and Volume: Soil flushing would reduce the volume of contaminants in soils. Mobility of contaminants is increased by their transfer into groundwater, but contaminated groundwater would be collected and treated and mobility into the environment would be minimized. Total volume of contaminants would decrease with time.

Implementability: Implementation of this alternative may encounter difficulty. Low-permeable soils may not permit effective flushing. Additional feasibility studies would be required prior to implementation. Required coordination with other agencies would be normal.

Cost: The cost of this alternative is $2,216,100, which includes continued operation and maintenance of existing groundwater collection and treatment system (see Table 6).

- **Alternative 5:** Removal/Treatment of Soils - consists of excavation of soils and on-site treatment by a mobile low temperature thermal extraction unit

Description of Alternative 5

Remedial Alternative 5 consists of the excavation of soils contaminated at levels above cleanup criteria, on-site treatment by a mobile low temperature thermal extraction (LTTE) unit, and return of treated soils, if possible, back to the excavation. Operation of the existing groundwater collection and treatment system would continue until all residual contamination has been removed.

Evaluation of Alternative 5

Compliance with SCGs: Alternative 5 would be expected to comply with all action-specific and chemical-specific SCGs.

Protection of Human Health and the Environment: This alternative would be fully protective of human health and the environment. It would eliminate all contamination above cleanup levels.

Short Term Effectiveness: Significant short term risks to the community, workers and the environment during implementation of LTTE must be addressed. Risks include dust generation and volatile emissions during excavation of contaminated soil. Mitigative measures would be required to minimize impacts. Of the seven alternatives, Alternative 5 carries the highest short-term risk and degree of difficulty regarding construction controls. Implementation of this remedy and the need for initigative measures may require four years.

Long Term Effectiveness: Excavation of contaminated soils and thermal extraction of organic contaminants would result in permanent remediation of the site. Operation of existing groundwater collection and treatment system would continue until all residual groundwater contamination has been removed.

Reduction in Toxicity, Mobility and Volume: Organic contaminants would be permanently destroyed, resulting in reduction of toxicity, mobility and volume.

Implementability: Excavation of contaminated soils and treatment by LTTE is difficult and requires significant coordination. The technology is available and fairly reliable though there are substantially fewer vendors than exist for SVE. Potential problems exist with replacing treated soils back into excavation. Naturally occurring organic material in soils are destroyed and soil moisture is driven off during LTTE. This makes the treated soils difficult to handle, prone to dust emissions, and structurally weak and unusable as normal fill material. Additional treatability studies would be required to determine feasibility of replacing soils, or alternatively evaluating off-site disposal and import of clean soil into excavation.

Cost: The cost of this alternative is $18,387,000, which includes continued operation and maintenance of the existing groundwater treatment system (see Table 6).

- **Alternative 6:** Dual Soil/Groundwater Treatment System - a combination of soil vacuum extraction wells and/or trenches and groundwater extraction wells and/or trenches

Description of Alternative 6

Alternative 6 combines Alternative 4A (soil vacuum extraction) with enhanced groundwater extraction. Because SVE is effective only above the water table, more effective remediation by SVE can be accomplished by lowering the water table, and exposing more soil to SVE. Groundwater across the affected area would be extracted using additional wells or trenches and treated prior to discharge. An impermeable soil cover would be placed over the areas to be treated to reduce water infiltration and control soil vapor flow. Operation and maintenance of the existing groundwater collection system would continue.

Evaluation of Alternative 6

Compliance with SCGs: Alternative 6 fully complies with SCGs.

Protection of Human Health and the Environment: Alternative 6 would be protective of human health and the environment. Contact and exposure to surface soils over the near term would be prevented by placement of soil cover over the affected area. Both surface and subsurface soils would be remediated by SVE. Groundwater extraction wells and existing groundwater collection trench and treatment system would prevent off-site groundwater migration. This alternative would significantly reduce possible long-term exposures to site contaminants.

Short Term Effectiveness: Temporary risks to the community may occur during installation of the soil cover, SVE wells and/or trenches, and groundwater extraction wells. Risks include

generation of dust and organic vapor releases during intrusive activities. Mitigative measures could be readily employed to minimize risks.

Long Term Effectiveness and Permanence: Dual SVE/groundwater extraction is a permanent remedy for soils and groundwater. SVE is an in-situ, on-site permanent remedy for contaminated soils in the unsaturated zone. Groundwater extraction increases the thickness of the unsaturated zone by lowering the groundwater table, exposing more soils to SVE. The total amount of time required to reach clean-up criteria in both media is decreased. A soil cover reduces possibility of contact with surficial soil hot spots contaminated with heavy metals.

Reduction of Toxicity, Mobility and Volume: Dual SVE/groundwater extraction would reduce volume of contaminants above and below the water table. Extracted vapor would be treated to remove contaminants. The existing groundwater collection and treatment system would continue to operate to prevent off-site migration of contaminated groundwater.

Implementability: Design and construction of dual SVE/groundwater extraction system is reliable and not technically difficult. Services and materials required for implementation are readily available. Normal coordination with other agencies would be required.

Cost: The cost of this alternative is $2,250,000, which includes operation and maintenance of existing groundwater collection and treatment system (see Table 6).

Section 7 - Summary of the Government's Decision

Based on the evaluation of alternatives performed in the feasibility study, the RPs recommended Alternative 6 as the preferred alternative, Dual SVE/Groundwater extraction. NYSDEC concurs that this alternative may be an effective alternative, and requested the RPs perform a treatability study to further evaluate the potential effectiveness of SVE in on-site soils. The RPs subsequently presented a workplan for this study, which was approved and implemented in July 1992. The report detailing the results of the pilot study indicates SVE will be effective.

Based upon all available site information, and the above evaluation, the NYSDEC proposed remedial action is Alternative 6, with some minor modifications to the Alternative 6 presented by the RP's. The proposed remedy is as follows:

1. Continued operation, maintenance and monitoring of the existing groundwater collection and treatment system. Evaluation during design of improvements to this system to maximize the effectiveness of the remedial measures. Modifications may be made with prior written approval of NYSDEC and NYSDOH.

2. Continued operation, maintenance and monitoring of the indoor air contaminant mitigation system. Modifications agreed to by individual homeowners and the Responsible Parties may be made with prior written approval of NYSDEC and NYSDOH.

3. Implementation and operation of dual Soil Vapor Extraction (SVE)/Groundwater Extraction. Horizontal SVE trenches will be keyed into the top of the dense till. Groundwater will be extracted by wells and/or pipes installed into extraction trenches. Increasing the depth of the

unsaturated zone will increase the volume of contaminants extracted by SVE. SVE vapor discharge and extracted groundwater will be treated to remove contaminants.

Figure 9 is a conceptual cross-sectional diagram of an SVE trench with a groundwater extraction well.

4. Installation of a permanent impermeable cover over the remediation area. This cover serves to limit infiltration as well as to prevent short circuiting of air flow. It will remain in place to prevent possible future exposures to residual contamination. Additional site clearing may be required.

5. Site monitoring to assure remedy effectiveness, including chemical analyses and groundwater level monitoring to be performed during remedial system operation and thereafter as needed to monitor long-term site conditions.

6. Development and implementation of long term land use restrictions at the site to protect installed remedial systems and to eliminate possible contact with any residuals left after remediation is complete.

7. Pursuant to Federal Superfund Law, evaluation of the effectiveness of the installed remedy and the need for modifications or enhancement of any remedial element.

The NYSDEC proposed Alternative 6 will include a detailed evaluation during remedial design of means to increase soil air permeability. Such efforts may be implemented if it is determined that soil modification efforts (e.g, soil mixing, deep plowing, pneumatic fracturing) would be effective to significantly reduce the length of remedial operation and are cost effective. Remedial design will also include an evaluation of the effectiveness of an upgradient groundwater collection trench.

Soil cleanup levels for the Duva Site are those listed in NYSDEC Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum (TAGM) 92-4046: Determination of Soil Cleanup Objectives and Cleanup Levels. As stated in this TAGM, these levels may be unattainable after implementation of the remedial program. It is believed that the selected remedy is the best for the site, that it will be protective of human health and the environment. The majority of contaminants should be removed by the SVE system within a couple of years.

In the event that contaminant removal ceases to be effective before cleanup levels are reached, and remaining contamination does not pose risk to human health and the environment, the RP may request that operation of the SVE system be discontinued prior to attainment of the soil cleanup goals.

Cleanup levels for groundwater will be either Groundwater Standards, as set forth in the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1, or Drinking Water Standards, established in NYS Sanitary Code Part V, whichever is more stringent of the two.

Briefly described, the system will operate as follows:

Groundwater extraction will lower groundwater table, creating a deeper unsaturated zone. A vacuum is applied to extraction trenches, an air flow through unsaturated soils is produced, and contaminants attached to soil particles volatilize into the air flow. The air stream passes through an air/water separator which removes moisture. The air stream is then treated to remove contaminants and is

discharged to the atmosphere. Water collected from extraction wells and the air/water separator is also treated and discharged. A generic soil vapor extraction system is diagramed in Figure 10.

The existing groundwater collection trench will continue to operate, although after the impermeable cover has been installed and the dewatering wells begin to extract water, it is probable that the volume of groundwater flowing into this trench will diminish. The existing groundwater treatment facility will continue to be utilized to treat process residual and groundwater.

Volatile organic compounds (VOCs) will be removed from the silty sand layer by advection to low parts per million in two to three years after dewatering. It will take longer for VOCs to be removed from the dense till. The removal of VOCs from till will occur by diffusion of contaminants into the advective air flow zone in the overlying layer (see Figure 11). This diffusion is expected to take six to twelve years to complete if soil moisture can be decreased by 25%.

Soil sampling during the Remedial Investigation identified three areas of heavy metals elevated above background concentrations in surficial and near surficial soils. These three areas are located in each of the original drum disposal areas. The proposed dual SVE/groundwater extraction will not remediate these metals. However, the cover to be placed over the site will prohibit possible air dispersion, dermal contact, or ingestion. Elevated levels of heavy metals were not found in groundwater, thus, this exposure route is not a concern. Deed restrictions will be instituted to prevent future breach of the cover and exposure to heavy metals contamination.

Appendix 1
Explanation of Evaluation Criteria

1. **Compliance with SCGs** - SCGs are the New York State Standards, Criteria and Guidelines that are appropriate for the site. There are three general categories for SCGs (modeled after the Federal ARARs - Applicable or Relevant and Appropriate Requirements): Chemical specific, location specific and action specific. Chemical specific SCGs include surface and groundwater standards for the chemicals of concern at the site. Location specific SCGs deal with any special requirements that may be necessary due to site-specific physical or environmental settings. Action specific SCGs are requirements that would have to be met during implementation of the remedy.

2. **Overall Protection of Human Health and the Environment** - This evaluation criterion provides a final check to assess whether each alternative meets the requirement that it is protective of human health and the environment. The overall assessment of protection is based on a composite of factors assessed under other evaluation criteria, especially long-term effectiveness and performance, short-term effectiveness and compliance with SCGs.

3. **Short-Term Impacts and Effectiveness** - This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial response objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on human health and the environment during implementation of the remedial action. The following factors of this evaluation criterion are addressed for each alternative:

   - Protection of the community during remedial actions
   - Environmental impacts
   - Time until remedial response objectives are achieved
   - Protection of workers during remedial actions

4. **Long-Term Effectiveness and Permanence** - This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual remaining at the site after response objectives have been met. The primary focus of this evaluation is the extent and effectiveness of the controls that may be required to manage the waste or residuals remaining at the site and operating system necessary for the remedy to remain effective. The following components of the criterion are addressed for each alternative:

   - Permanence of the remedial alternative
   - Magnitude of remaining risk
   - Adequacy of controls
   - Reliability of controls

5. **Reduction of Toxicity, Mobility and Volume of Hazardous Waste** - The evaluation criterion assesses the remedial alternative's use for treatment technologies that permanently and significantly reduce toxicity, mobility or volume of the hazardous wastes as their principal element. As a matter of the Department's policy, it is preferred to use treatment to eliminate any significant threats at a site through destruction of toxic contaminants, reduction in contaminant mobility, or reduction of total volume of contaminated media.

6. **Implementability** - This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. This criterion involves analysis of the following factors:

   - Technical Feasibility
     - construction and operation
     - reliability of technology
     - ease of undertaking additional remedial action
     - monitoring considerations
   - Administrative Feasibility
   - Availability of services and materials

7. **Cost** - The cost of each alternative is estimated on the basis of Capital Costs and Operation and Maintenance Costs. Capital costs consist of direct (construction) and indirect (non-construction and overhead) costs. Operation and maintenance costs are post-construction annual costs necessary to ensure the continued effectiveness of a remedial action.

Appendix 2
Administrative Record

A. Groundwater Interceptor Trench IRM Documents

1. Interim Remedial Measures, Duva Property

   Volume 1 - Engineering Report
   Appendix A - Design Information

   Volume 2 - Appendix B - Contract Drawings
   Appendix C - Project Specifications

   Volume 3 - Appendix D - Site Safety Plan
   Appendix E - Operation & Maintenance Information

   Prepared by Malcolm Pirnie, Revised May 1990.

2. Health and Safety Plan for Duva Property Site IRM, prepared by Sevenson, July 10, 1990

3. Duva Property IRM Pilot Study Report, prepared by Malcolm Pirnie, March 1991

4. Duva Property Operations, Quarterly Reports, prepared by Malcolm Pirnie:

   1991 First Quarter Report, June 1991
   1991 Second Quarter Report, July 1991
   1991 Third Quarter Report, October 1991
   1991 Fourth Quarter Report, January 1992
   1992 First Quarter Report, May 1992

5. Duva Property Groundwater Treatment Plant Operations, Maintenance and Monitoring Manual (2 volumes), prepared by Malcolm Pirnie, March 1992

6. Duva Property Operations 1991 Annual Report, prepared by Malcolm Pirnie, March 1992

B. Soil Interim Remedial Measures Documents

1. Interim Remedial Measures Work Plan, Duva Property, prepared by Conestoga-Rovers and Associates, June 26, 1990

2. Interim Remedial Measures Health and Safety Plan, Duva Property, prepared by Conestoga-Rovers and Associates, July 13,1990

3. Soil Interim Remedial Measures Interim Data Report, Duva Property, prepared by Conestoga-Rovers and Associates, November 14, 1990

4. Interim Remedial Measures Soil Stockpile Removal Work Plan, Duva Property, prepared by Conestoga-Rovers and Associates, November 20, 1990

5. Soil Interim Remedial Measures, Soil Stockpile Removal/Disposal Final Engineering Report, Duva Property, prepared by Conestoga-Rovers and Associates, October 9, 1991

C. RI/FS Documents

1. Remedial Investigation/Feasibility Study, Duva Property,

   a. Volume I, Work Plan
   b. Volume II, Quality Assurance Project Plan
   c. Volume III, Health and Safety Plan

   prepared by Conestoga-Rovers and Associates, November 6, 1990

2. Site Specific Parameter List Milestone Report, Duva Property, prepared by Conestoga-Rovers and Associates, February 28, 1991

3. Remedial Investigation (RI) Report
   - Text
   - Appendices

   Duva Property, prepared by Conestoga-Rovers and Associates, March 30, 1992

4. Public Health Evaluation, Duva Property, prepared by Weinberg Consulting Group, March 1992

5. Feasibility Study (FS) Report, Duva Property, prepared by Conestoga-Rovers and Associates, June 1, 1992

6. Off-Site Investigation - Addendum, Duva Property, prepared by Conestoga-Rovers and Associates, December 11, 1992.

7. Feasibility Study Addendum (Results of Soil Vapor Extraction Pilot Test), Duva Property, prepared by Vapex Environmental Technologies, October 1992.

8. Proposed Remedial Action Plan, Duva Site, December 1992.

9. Transcript of Public Meeting held January 21, 1993 to receive public comment on Proposed Remedial Action Plan for the Duva Site.

D. Site Specific Legal Documents

1. Order on Consent, Index #A7-0225-90-03 (GW IRM), May 4, 1990

2. Order on Consent, Index #A7-232-90-05 (Soil IRM), July 6, 1990

3. Order on Consent, Index #A7-0233-90-05 (RI/FS), December 14, 1990

E. Other

1. Citizen Participation Plan, prepared by NYSDEC, March 28, 1991

2. New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation Technical and Administrative Guidance Memoranda, 4000-4046.

3. New York State Environmental Conservation Law 6 NYCRR Part 375, May 1992.

4. National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, 1990.

Appendix 3
Responsiveness Summary for Comments Received During Public Comment Period for the Duva Site, Proposed Remedial Action Plan

A public meeting was held on January 21, 1993 to present the Duva Site Proposed Remedial Action Plan (PRAP). The public comment period on the PRAP ran from December 29, 1992 through February 5, 1993. During this time period, one letter regarding the PRAP was received. This responsiveness summary addresses the concerns and questions raised, both at the public meeting and in the letter. A transcript of the public meeting is part of the Administrative Record for this Record of Decision.

Q. 1: Will the deed restrictions apply to the entire 5-acre site?

A. 1: As part of the remedial system design,the Responsible Parties will evaluate the feasibility of consolidating soil from the western-most drum disposal area into the eastern area of the site. If this is done and soil remaining in the western drum area does not pose human health risk, the deed restriction may not be applied to the entire site, but to the area undergoing active remediation, plus a reasonable buffer zone.

Q. 2: How will the site be accessed?

A. 2: The site is currently accessed from Taft Road by a gravel road constructed for use during remedial investigation studies. It is anticipated that this road will be used for remedial activities as well. Some improvement may be necessary to accommodate heavier traffic.

Q. 3: What is a permanent impermeable soil cap/cover?

A. 3: An impermeable soil cap is a cover placed over an area, designed to prevent water infiltration into underlying soils. For the Duva Site, the impermeable cap will also function to assure proper air flow within soil pores by preventing short-circuiting air flow pathways. It may be constructed in any of a number of ways with various types and thicknesses of soil layers. It may also include filter fabric and/or a synthetic liner. A permanent cap is one that will remain in place and is maintained after remediation is complete.

Specifications for cap design will be determined during remedial system design.

Q. 4: How will the site appear once it is capped?

A. 4: Most SVE sites have above ground PVC pipes which carry the extractedpor and groundwater to a building for treatment. However, it is possible that the Responsible Parties will design the entire system of pipes to be buried underground. In either case, when construction is complete, the area will be graded and seeded to prevent erosion and be aesthetically pleasing.

Q. 5: How much noise will the SVE system make?

A. 5: During installation of the system, standard construction equipment such as backhoes, pumps, etc. will be used and noise from this equipment will be heard. After construction, the vacuum pump used to pull air through the ground is the only component of the system which will make noise during operation. It will be located as far from the residences as possible, and will likely be enclosed in a building.

Q. 6: How close will the SVE trenches come to the houses? Will they treat soils near the houses?

A. 6: Locations of trenches have not been set at this time and will be determined during remedial system design. The pilot study indicated that trenches have an influence of about 20 feet. They will be placed to remediate all on-site contaminated soils. It is possible that a trench may be installed downgradient and on the residential side of the existing groundwater trench as a result of design evaluation. The location of this trench, if needed, will be discussed with the adjacent homeowners prior to finalizing designs for construction.

Q. 7: How will the sale of GE affect GE's partnership in the project?

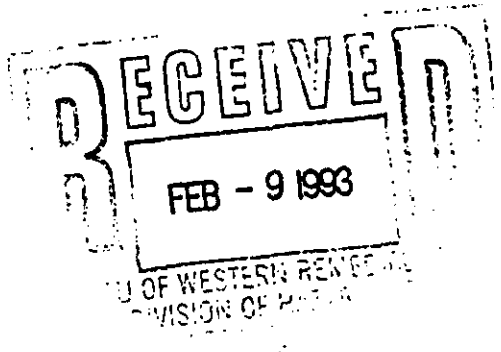
A. 7: GE reported that this will have no effect - the project will continue as planned.

GE Corporate
Environmental Programs

Michael Ianniello
Project Manager

General Electric Company
1 Computer Drive South
518 [illegible]

February 5, 1993



Ms. Karen Maiurano
Project Manager
New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
50 Wolf Road - Room 222
Albany, New York 12233-7010

Re: **Proposed Remedial Action Plan ("PRAP")**
Duva Inactive Hazardous Waste Site
Clay, New York

Dear Ms. Maiurano:

General Electric Company ("GE") appreciates the opportunity to submit comments on the Proposed Remedial Action Plan ("PRAP") for the Duva Inactive Hazardous Waste Site ("Site"). As set forth below, GE generally supports the Department's proposed remedial action alternative of in situ soil vapor extraction ("ISVE") and continued operation of the groundwater interception trench system and residential air measures. GE believes that this remedy represents an effective and relatively undisruptive method of managing residual risks associated with the site that is consistent with the requirements of the National Contingency Plan ("NCP") and the New York State Inactive Hazardous Waste Site regulations. GE would propose, however, certain modifications to the proposed remedy to provide for increased flexibility, to minimize the impact of the remedy on the surrounding community, and to maximize the success of the remedy. In addition, certain aspects of the PRAP pointed out below should be revised or clarified in the Record of Decision to correct certain statements and to avoid unnecessary confusion regarding the results of the RI/FS or the remedy selected.

GE is appreciative of New York State Department of Environmental Conservation's ("NYSDEC") efforts at the Site. NYSDEC's practice of thorough and prompt review of submittals was critical in allowing work to proceed apace. In addition, the early actions at the Site, directed by NYSDEC, such as the residential air measures and the groundwater Interim Remedial Measure ("IRM"), have been very effective at controlling the principal exposure pathways in a timely way. We believe that NYSDEC's efforts at the Site have been responsive to the community and the Performing Party, and have allowed potential risks from the site to be dealt with quickly. The success of these efforts is evidenced by the cooperative interactions with the public and borne out by the PHE.

I. THE PROPOSED REMEDY IS AN APPROPRIATE REMEDY FOR THE SITE.

A. GE SUPPORTS THE DEPARTMENT'S DECISION TO SELECT ISVE, INTER ALIA FOR SITE REMEDY.

The Department's proposed remedial action for the Duva Site provides a permanent, effective remedy that is consistent with the requirements of the NCP (40 CFR 300.420), and New York State Inactive Hazardous Waste Site regulations (6 NYCRR Part 375). This remedy, essentially, ISVE, and continued operation of the groundwater interception trench system and residential air measures offers an effective, relatively unobtrusive method of managing residual risks associated with the Site by reducing the levels of Site soil contamination in the source areas and by preventing the groundwater contaminants from leaving the site.

As described in the Feasibility Study ("FS"), ISVE is the most appropriate remedial technology for the Site. The FS examined the remedial alternatives in a systematic manner, described in the NCP. That study sets out nine (9) criteria for evaluation and assigns a priority to remedies that are permanent, that have long term effectiveness and that protect human health and the human environment. By these criteria, it was shown that ISVE is the most appropriate remedy.

This was further supported by the FS Addendum: SVE Pilot Study. That document demonstrated that ISVE would work effectively at the Site, and that a large reduction in the level of VOC contaminants in soil could be expected in the first years of operation. In addition, certain preliminary remedial design issues such as the use of ISVE extraction trenches in lieu of extraction points were evaluated.

In addition, the groundwater IRM has been an effective means of managing risks by preventing contaminants from leaving the Site. Over two years of operational experience has demonstrated that the groundwater IRM is reliable and well suited for hydrogeologic conditions (i.e. large water table fluctuations and low transmissivity) at the Site. Furthermore, water table monitoring has consistently shown that the groundwater IRM has provided hydraulic containment of the plume. Marked declines in groundwater VOC concentrations can be traced to the implementation of the groundwater IRM; this decline serves to further reduce any potential risks associated with this exposure pathway.

Finally, the residential air measures have also been effective. These measures undertaken early in the process, have provided a simple, reliable means of limiting any potential exposures to Site contaminants. Planned refinements to those measures (e.g. air to air heat exchangers) serve to further reduce any maintenance associated with the residential air measures, will likely provide a higher level of residential air quality and will be less intrusive into the affected residents daily lives.

As discussed below, GE would propose that the ROD provide flexibility so as to allow evaluation of certain less intrusive, yet equally effective measures such as air-to-air heat exchanges and allow their implementation executed where effective.

B. ISVE HAS DISTINCT ADVANTAGES OVER OTHER ALTERNATIVES.

As noted in the PRAP, the Department's proposed soil remedy ISVE provides several distinct advantages such as, ease of implementation, conservation of soil properties, e.g. bearing capacity, when compared with the low temperature thermal extraction ("LTTE") remedial alternative.

In addition to the advantages of ISVE noted, there are several shortcomings associated with the use of LTTE. LTTE typically would require that the activities be conducted around the clock, and the process noise and support activity noise associated with this work would be considerable. Both of these side effects would be disruptive to the residential area. Also, in addition to those problems, it should be noted that the "footprint" of the typical high volume LTTE units is large and not well suited for residential areas; some LTTE operations require up to 40 trailers and support vehicles.

Another LTTE shortcoming that is particular to the Site is evident when this alternative analyzed on a system-wide basis. GE believes that the effectiveness of the LTTE alternative is questionable when evaluated on a long term basis. Passive recontamination of the treated soil mass above termination criteria is likeley to occur at the Site due to seasonal water table fluctuations and from contaminant transport by molecular diffusion from residual areas.

Another shortcoming evident by any analysis, is the poor cost effectiveness of the LTTE remedial alternative, when compared to the selected alternative, ISVE. This criteria is an important consideration to GE, as well as to the

policy makers within the Department. Especially important, to both parties, is the notion that the level of cost and management effort be somewhat commensurate with the level of risk posed by a given site.

C. FLEXIBILITY SHOULD BE CRAFTED INTO THE ROD

GE suggests that flexibility be crafted into the Record of Decision ("ROD") for this site so that fine tuning and modifications to the existing remedial systems can be undertaken without the burdensome administrative paperwork requirements of a ROD Amendment or an Explanation of Significant Differences. This flexibility will be necessary for implementing the anticipated changes to the residential air measures, and flexibility will be necessary to modify the existing Operations, Maintenance and Monitoring Plan as the system requirements change and obsolete and redundant measurements are eliminated.

Flexibility in the ROD is necessary for a successful remedial design and remedial action ("RD/RA"). As explained in the Public Meeting, it is expected that the remedial design engineers will provide innovative ideas that will allow for a more effective remedy. As a starting point, some of the ideas that are going to be examined by the remedial design engineers are those that have been suggested by the Department. These are noted in Section 7 - Summary of the Department's Decision. GE supports these efforts. Oftentimes, many of the best innovations are suggested by the remedial contractors during the bid solicitations and during the construction phase of the remedy. This participatory process is a standard construction industry practice and should be encouraged. Additionally, we feel that some of the aspects of the remediation that will likely require that flexibility be crafted into the ROD have already come to our attention. In general, these aspects deal with being able to react to unanticipated field conditions. Some examples are listed as follows: (1) allowing flexibility in consolidating soil from the location referred to as area 3, if appropriate; (2) adjusting the configuration and spacing of the trenches, as appropriate; and, (3) to allow for the use of extraction points in lieu of trenches in some locations, as appropriate. The ROD should, at a minimum, allow for these modifications as the RD/RA is implemented, and we learn even more about the Site.

It should be noted that recently some of the affected residents have supported changing certain aspects (e.g. installing air to air heat exchangers) of their residential air systems, and these changes are likely to be implemented. The ROD should allowed for and anticipate that there will be

continued refinement of this nature regarding the air measures, and should allow these requirements to proceed with review by NYSDEC, as is currently the practice.

D. GE GENERALLY SUPPORTS THE NYSDEC'S CONSIDERATION OF INSTITUTIONAL CONTROLS AT THIS SITE. IF THE DEPARTMENT DETERMINES INSTITUTIONAL CONTROLS ARE AN APPROPRIATE MEANS OF MANAGING RISKS POSED BY RESIDUAL CONTAMINANTS AND A MEANS TO PROTECT INSTALLED EQUIPMENT, SUCH CONTROLS SHOULD BE NARROWLY TAILORED TO SUIT SUCH PURPOSES.

The use of restrictive controls (i.e., restrictions to the future use of the property) to achieve protection of the human health at sites where long term obligations are anticipated may be appropriate. While recognizing that at this Site institutional controls are largely a matter between the risk managers and the property owners, GE supports the approach that was described by C. Jackson during the public meeting, that the planning and execution of the institutional controls, if necessary, should take place after the remedial action is completed. This approach would allow for tailoring the restrictions, so that only those portions of the property that need to be restricted are in fact, restricted. GE would propose that such controls if necessary, be imposed at the time the review action is complete, after the "as built" drawings are received so that only the footprint areas of the remediation becomes restricted.

Moreover, the implementation of institutional controls by the parties should allow for future modifications, upon the consent and approval of the Department. So that as the treatment progresses and the residual levels in contaminated media fall to levels below the clean up levels, restrictions imposed due to contamination of those media are lifted.

II. GE SUGGESTS THAT THE DEPARTMENT'S USE OF TAGM-DERIVED CLEANUP LEVELS FOR THE SITE IS NOT APPROPRIATE AND COULD POTENTIALLY BE MISLEADING, AND THIS USE MAY CAUSE CONFUSION WITH THE PUBLIC.

The objectives for site remediation identified in the PRAP include: (a) prevention of further off-site migration of site-related contaminated soils and groundwater; (b) remediation of soil and groundwater to the extent that exposure to these media is eliminated or does not present an unacceptable risk to human health or the environment; and (c) verification of the effectiveness of the remedial measures through groundwater and soil monitoring. The PRAP cites an intent to use

standardized State cleanup criteria to verify the effectiveness of Site remediation. We feel that a better approach, from the public's perspective would be to use a risk-based termination criteria, with the agreement that the soil remediation would continue as long as the systems continues to be effective in removing contaminants.

GE concurs, in general, with the PRAP's characterization of potential health risks associated with the site and, in principle, with its recommendations for site remediation. However, GE believes that a reliance solely on State cleanup criteria for verifying the protection of human health could lead to inefficient and unnecessary use of State and private resources for Site remediation.

GE would propose that the use of NYSDEC Division of Hazardous Waste Remediation, Technical Administrative Guidance Memorandum 92-4046 ("TAGM") based cleanup levels are not appropriate for use at the Site for termination criteria. This is because the potential for confusion exists, in the future, when GE will seek to terminate operation of the remediation system. GE believes that termination criteria selected for the Site should be set at risk-based levels and with the added provision that ISVE operation would continue until technology-based levels are achieved.

As a product of conducting the work at the site, currently, there are two sets of potentially appropriate clean up criteria: risk assessment-based criteria (transmitted by GE in a letter dated November 2, 1992) and the TAGM-based criteria. Both sets of clean up criteria purport to characterize the risk posed by a hypothetical level of chemical residuals. However, there are important differences between the two sets of clean up criteria concerning what chemical residual level could be considered to be an acceptable chemical residual level. These seemingly redundant sets of criteria might lead to confusion with the public who would interpret any chemical residual levels at the site that are higher than the TAGM levels (even if the residual levels fall well below health-based levels) as sign of failure and a potential health threat.

First for consideration, are the TAGM-based cleanup levels. According to the Department's proposal, the site specific soil cleanup levels should be set to the levels specified in the TAGM. According to the language in the TAGM on page one, and in communication with C. Jackson and K. Maiurano, these levels are relatively low and they essential function as goals, and that at many site remediations, the technological limits actually serve as the clean up levels.

TAGM soil cleanup levels were extrapolated (using a simple leaching model) from criteria used to protect public drinking water supplies, i.e., maximum contaminant levels ("MCLs"), and NYS Drinking Water Standards. While public drinking water criteria takes into account health-based considerations, and thus, soil levels incorporating them are health-based, they are not necessarily appropriate based on Site specific factors. Arguably, the TAGM-based soil criteria are inappropriate at this Site where any potential leaching to a groundwater receptor pathway is controlled by a remedial system.

Second for consideration, in contrast to the TAGM-based cleanup criteria, are the risk assessment-based clean up criteria. These criteria were developed using standard conservative (protective) assumptions and systematic methods to provide a site-specific estimate of Site-related risk. As determined by the risk assessment, the incremental cancer risk calculated using current Site data for all hypothetical soil contact exposure pathway scenarios falls well below the Government's risk management range of (1x10-4 to 10-6) increased incidence of cancer risk.

GE recommends that the NYSDEC should consider the unique conditions that may be important for developing appropriate cleanup strategies and cleanup criteria for the Site. The exposure and risk assessment information developed for the Public Health Evaluation ("PHE") provides a scientifically supportable basis derived according to procedures commonly used by government regulators to accomplish this objective.

GE suggests that, in lieu of the proposed TAGM-derived ISVE termination criteria, that the PHE-derived ISVE termination criteria be used. These PHE-derived criteria more accurately represent site risk. In addition, GE supports the continuation of ISVE operation as long as the ISVE system continues to be effective. In essence, this approach provides a technology-based termination criteria which is consistent with the directives of the TAGM. It is fully expected that the GE suggested end point and the TAGM-based endpoint will likely lead to the same result; the major difference being that the GE suggested approach has a higher potential as being perceived as a successful outcome by the public. Most importantly, both of these outcomes will be successful from the standpoint of protectiveness of public health.

III. OTHER ISSUES

A. GE SUGGESTS THAT THE PRAP SUMMARY OF THE PHE COULD BE MISINTERPRETED AND GE REQUESTS THAT SUCH DISCUSSION IN THE ROD BE REVISED TO ELIMINATE CONFUSION OF THE PUBLIC.

Set forth below are the PRAP provisions and our suggested changes.

1. **Page 6, Paragraph 1:**

Indoor air in some of the affected residences was found to contain one chemical (tetrachloroethylene) known to be present at the site that would pose an excess cancer risk. However, this chemical is a common solvent in household products, and it is not clear that it's presence in the homes is due to migration from this site.

Comment:

This summary statement regarding one of the conclusions reached in the PHE report is incomplete, and, it could be misleading to the readers of the PRAP. The phrase "an excess cancer risk", while taken directly from the PHE, could potentially be misread by people who are unfamiliar with risk assessment

terminology, as an excessive cancer risk. This, of course, would be a much different finding than the intended finding, and could cause unnecessary concern.

As suggested in the above, GE recognizes that characterization of the significance of any cancer or non-cancer health risks with regard to protection of public health is a risk management responsibility of the Government. Notwithstanding the above reservation, GE concurs with the Government's observation that exposure to Site-related chemicals in indoor residential air appears to be minimal and that the associated potential health risks are not significant. Government regulators commonly consider excess lifetime cancer risks within a range of 1x10-4 to 1x10-6 to be acceptable for exposure to known or potential carcinogens in the environment and, for risk management purposes, the USEPA has determined that remedial action generally is not warranted where cumulative carcinogenic risk is less than 1 X 10-6. Using the conservative (protective) assumptions discussed previously, the total potential excess cancer risk to local residents associated with current or future inhalation of volatile compounds in the indoor air of residences near the site are 4 X 10-6.

Based on the comments provided above, GE recommends revising the referenced section of the PRAP as follows:

Indoor air in some of the affected residences was found to contain one chemical (tetrachloroethylene) known to be present at the site that, under conservative (i.e., protective) assumptions used in the PHE (e.g., 30 year exposure to the maximum measured concentration), could potentially pose a minimally elevated excess cancer risk. However, this chemical is a common solvent in household products and it is not clear that its presence in the homes is due to migration from the site. Because the numerical estimate of the excess cancer risk is at the lower risk end of the range of risks commonly considered to be acceptable by government regulators, it appears that inhalation of site related chemicals in indoor air does not pose significant health risks to local residents.

2. **Paragraph 8, last complete paragraph:**

In the interim, the site would continue to pose risk to human health and the environment.

Comment:

The results of the PHE suggest that there currently are not exposures to Site related chemical residuals that would pose significant risks to human health. Furthermore, it appears that only use of on Site ground water as a potable supply could potentially pose future health risks among exposed individuals. Accordingly, the referenced section should be revised as follows:

In the interim, in the event that on Site ground water was used as a potable supply, the Site could potentially pose health risks among exposed individuals.

B. GE SUGGESTS THAT SECTION 2.A OF THE PRAP IMPROPERLY IMPLIES THAT THE NEXUS BETWEEN GE AND THE RESIDUAL CONTAMINANTS FOUND AT THE SITE IS CONCLUSIVE

In the case of the Duva Site, the details of the waste drum-related operations, and the source of Mr. Duva's drum supply are not well known. The contaminants (various industrial solvents) that have resulted in the majority of the problems associated with the site are the most commonly found ground water contaminants at waste sites, and these industrial solvents are used by many of the greater-Syracuse area industries. The allegation that the cooperating party, GE, is solely responsible is highly speculative and it is not

supported by the existing evidence, i.e., that some GE related litter and some resins associated with television tube manufacturing were found in or near drums at the site.

This section should be revised in the ROD so that the speculative phrase in the sentence:

"It was determined that some, if not all, the wastes originated from a GE facility for disposal."

is dropped and is restated as:

"It was determined that some of the wastes allegedly originated from a GE facility for disposal."

C. GE SUGGESTS THAT THE LANGUAGE IN THE PRAP SUMMARY REGARDING METAL CONTAMINATION COULD BE MISINTERPRETED AND THAT SUCH DISCUSSION IN THE ROD BE REVISED TO ELIMINATE CONFUSION OF THE PUBLIC.

GE recognizes that there are several soil sample results that show heavy metal concentrations elevated above background levels. However,it is important to consider the fact that these levels are not based upon human health considerations.

In reviewing the Site Remedial Investigation ("RI") heavy metals concentrations in soils data, the risk assessors found that the risks posed by exposure to these relatively small areas was not quantifiable. Arguably, to refer to these areas as "hot spots" implies that there is a risk and that is not supported in the record.

Instead of referring to these areas as "hot spots" these areas should be referred to as "elevated above background concentrations.

IV. CONCLUSION

As stated above, GE supports NYSDEC's efforts with respect to the Duva Site. GE believes that the proposed remedy represents an effective, protective and relatively undisruptive method of managing the residual risks associated with the site. NYSDEC's efforts at implementing early measures to control principal exposure pathways and its prompt and thorough review of activities conducted

by the performing party are to be commended. GE would propose, however, that the certain modifications proposed above be made in the ROD for the Site to allow for flexibility in addressing site conditions and in limiting the impact of remedial activities to the surrounding community. In addition, GE proposes that NYSDEC reexamine its proposal to use TAGM-derived cleanup levels for the Site and instead base such levels on Site specific risks, existing remedial measures, and the efficiency of remedial technology.

If you have any questions regarding the above, please do not hesitate to call me.

Respectfully submitted,

Michael Ianniello

Michael L. Ianniello

cc: T. Corneil
K. Macfarlane, Esq.

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

March 3, 1993

Mr. Michael Ianniello
General Electric Company
1 Computer Drive South
Albany, NY 12205

Re: Duva Site PRAP

Dear Mr. Ianniello:

The New York State Department of Environmental Conservation (NYSDEC) has received your February 5, 1993 comment letter on the Proposed Remedial Action Plan (PRAP) for the Duva Site. We offer the following response to your comments.

1. Flexibility in Record of Decision (ROD)

a. Indoor air mitigation system and groundwater collection and treatment system.

It is NYSDEC's intent that the ROD contain flexibility to allow modifications, as appropriate, to the existing systems. Language in the ROD will be revised to clarify that with prior NYSDEC and New York State Department of Health approval, the Responding Party may modify operation, maintenance, and monitoring of the existing systems.

b. Remedial Design

The ROD will not attempt to incorporate elements of remedial design into the selected remedial action. The description of the dual SVE/groundwater extraction system was intended to be only as specific as necessary while general enough to allow flexibility of design. Examples cited by General Electric (GE) on Page 4 of the February 5, 1993 comment letter are elements of remedial design and will not be detailed in the ROD. In addition, we anticipate the Remedial Design/Remedial Action Order will incorporate provisions for modifying remedial design during construction, if necessary, with prior approval by NYSDEC.

c. Institutional Controls

NYSDEC is in agreement that the final selection of long term institutional controls be determined after the remedial action is complete. However, the Responding Parties must provide adequate temporary controls

during remedial construction and operation to ensure site security and to avoid any incompatible use of the site during this period. The statement made in item number 6 on Page 16 of the PRAP sufficiently addresses long term institutional controls, does not dictate timing, and will be carried over into the ROD.

2. Utilization of Technical and Guidance Memorandum (TAGM) 4046 to determine soil clean-up levels

The NYSDEC Division of Hazardous Waste Remediation developed TAGM 4046 as the basis and procedure to determine soil clean-up goals. The Department considers this TAGM to be one of the State Standards, Criteria and Guidelines (SCG's) that are applicable to the Duva Site. Levels to be calculated by this procedure for each contaminant should be the goal toward which remedial efforts are directed. However, the NYSDEC does not intend to suggest that inability of the SVE system to meet these TAGM-based cleanup-goals is a failure of either the system or of efforts to achieve remedial objectives. As discussed in the Feasibility Study prepared by GE, and in the PRAP prepared by NYSDEC, SVE presents the best remedial alternative for the Duva Site. Results of the SVE Pilot Study indicate that SVE can be very effective in significantly reducing soil contamination.

The Department recognizes that given the specific conditions and dynamics at the Duva Site, it is possible that operation of the SVE system will reach a point before clean-up goals are achieved where it no longer efficiently removes contaminants. If that occurs, the Department expects that reasonable modifications be evaluated and possible made to operation of the installed SVE system to increase removal rates of the contaminants. It may happen that contaminant levels remain above the clean-up goals and no additional modifications will improve contaminant removal. In that case, if these residual levels do not pose a risk to human health or the environment, the Responding Party may submit a proposal to the NYSDEC to discontinue operation of the remedial action. This would not be construed as a failure of the remedial action.

3. Other Comments

a. Item number IIIA.1 of GE's letter, referring to PRAP Page 6, paragraph 1:

The New York State Department of Health bases acceptability of indoor air quality on background values or levels found in control homes, not on risk assessment-based values. For this reason, the NYSDEC will revise the discussion as follows:

Indoor air in some of the affected residences was found to contain at least one chemical (tetrachloroethylene) known to be present at the site that, under conservative (i.e., protective) assumptions used in the PHE (e.g., 30 year exposure to the maximum measured concentration),

could potentially pose a minimally elevated excess cancer risk. Mitigative measures (groundwater interceptor trench, carbon air filters, sealing and venting sumps) have been instituted to protect indoor air quality.

b. Item number IIIA.2 of GE's letter referring to PRAP Page 8, last complete paragraph:

The NYSDEC will revise the discussion as follows:

In the interim, in the event that on-site groundwater was used as a potable supply, the site could potentially pose health risks to individuals using the water.

c. Item number IIIB of GE's letter referring to PRAP Page 2, paragraph 3:

The NYSDEC will revise the discussion as follows:

It was determined that some of the wastes originated from a GE facility for disposal. It is possible that some of the wastes came from other sources; however, there is no conclusive evidence regarding possible other sources.

d. Item number IIIC of GE's letter referring to PRAP Page 17, paragraph 2:

The NYSDEC will revise the statement as requested.

The Department will incorporate your February 5, 1993 letter and this response within the Duva Site Responsiveness Summary.

If you should have any questions, please contact me at (518) 457-5636.

Sincerely,

Karen Maiurano

Karen S. Maiurano
Project Manager, Duva Site
Bureau of Western Remedial Action
Div. of Hazardous Waste Remediation

KSM/slh

cc: R. Heerkens
G. Robinson
L. Letteney

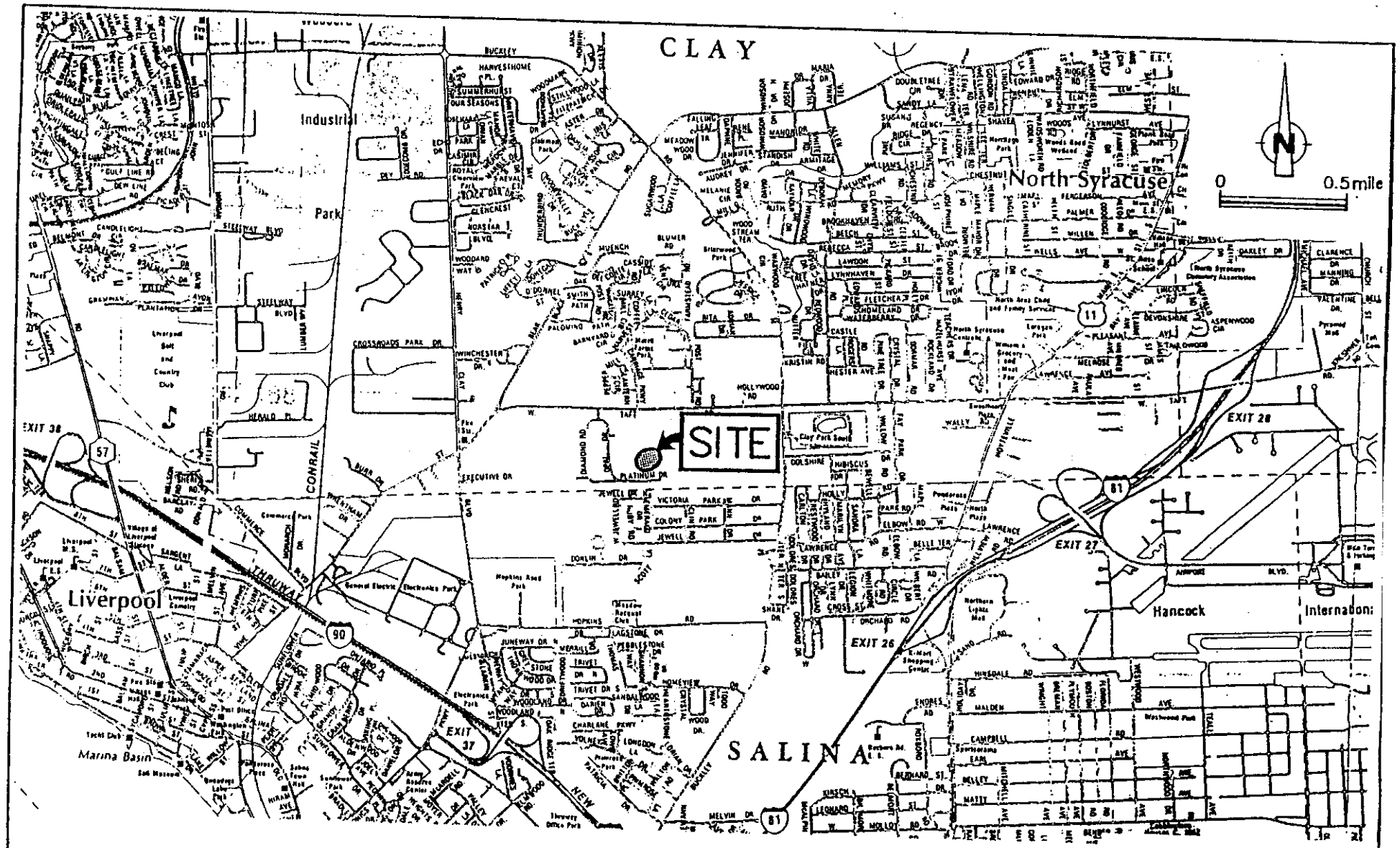
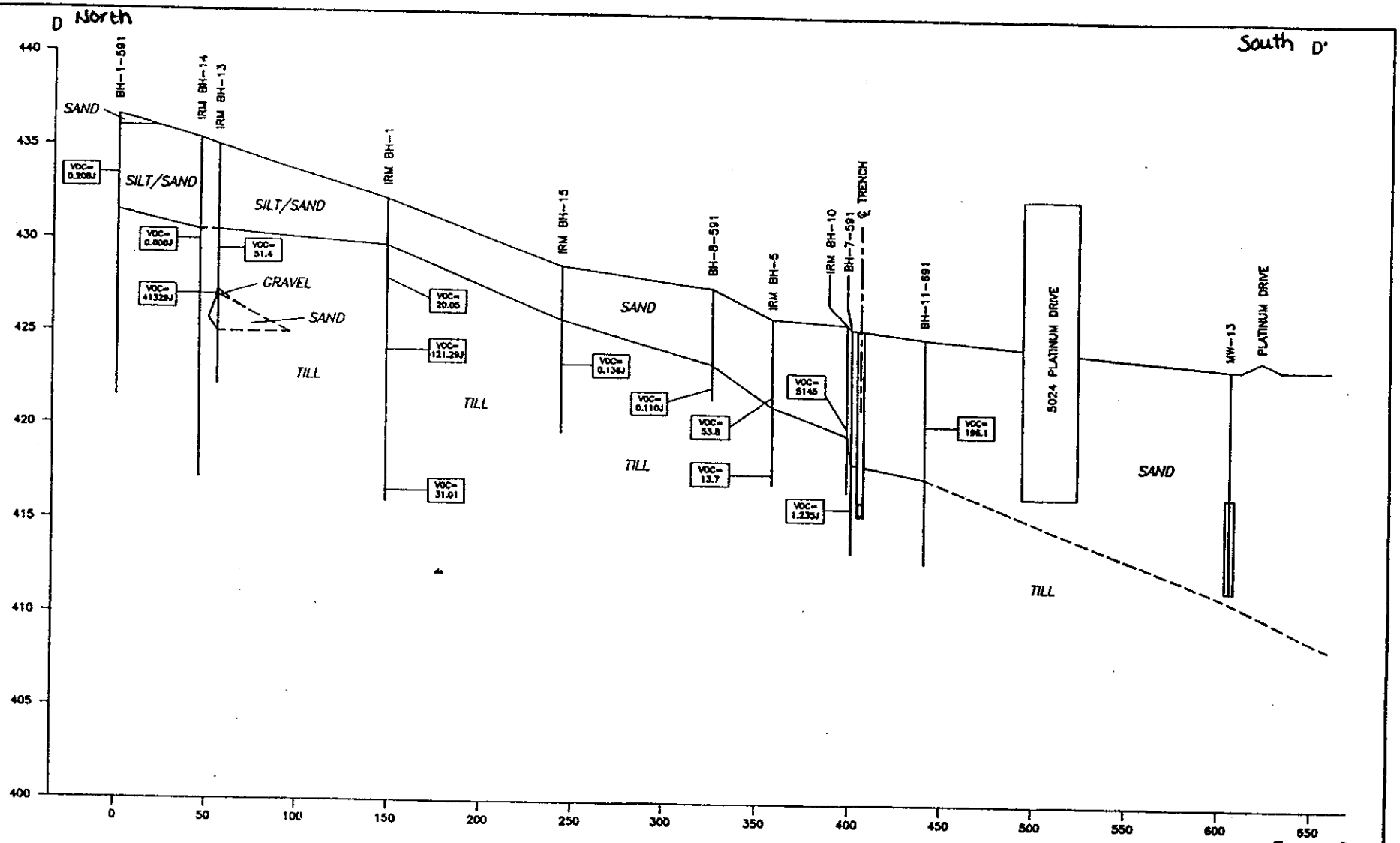


FIGURE 1
SITE LOCATION
DUVA PROPERTY
Town of Clay, New York

CRA

3442-19/03/92-(NF)-12



CROSS SECTION D–D'

SCALE: HORIZ: 1"=50'
VERT: 1"=5'

figure 3

CROSS SECTION D–D'
DUVA PROPERTY
Town of Clay, New York

:RA
442-27/03/92-(NF)-12 (X-06)

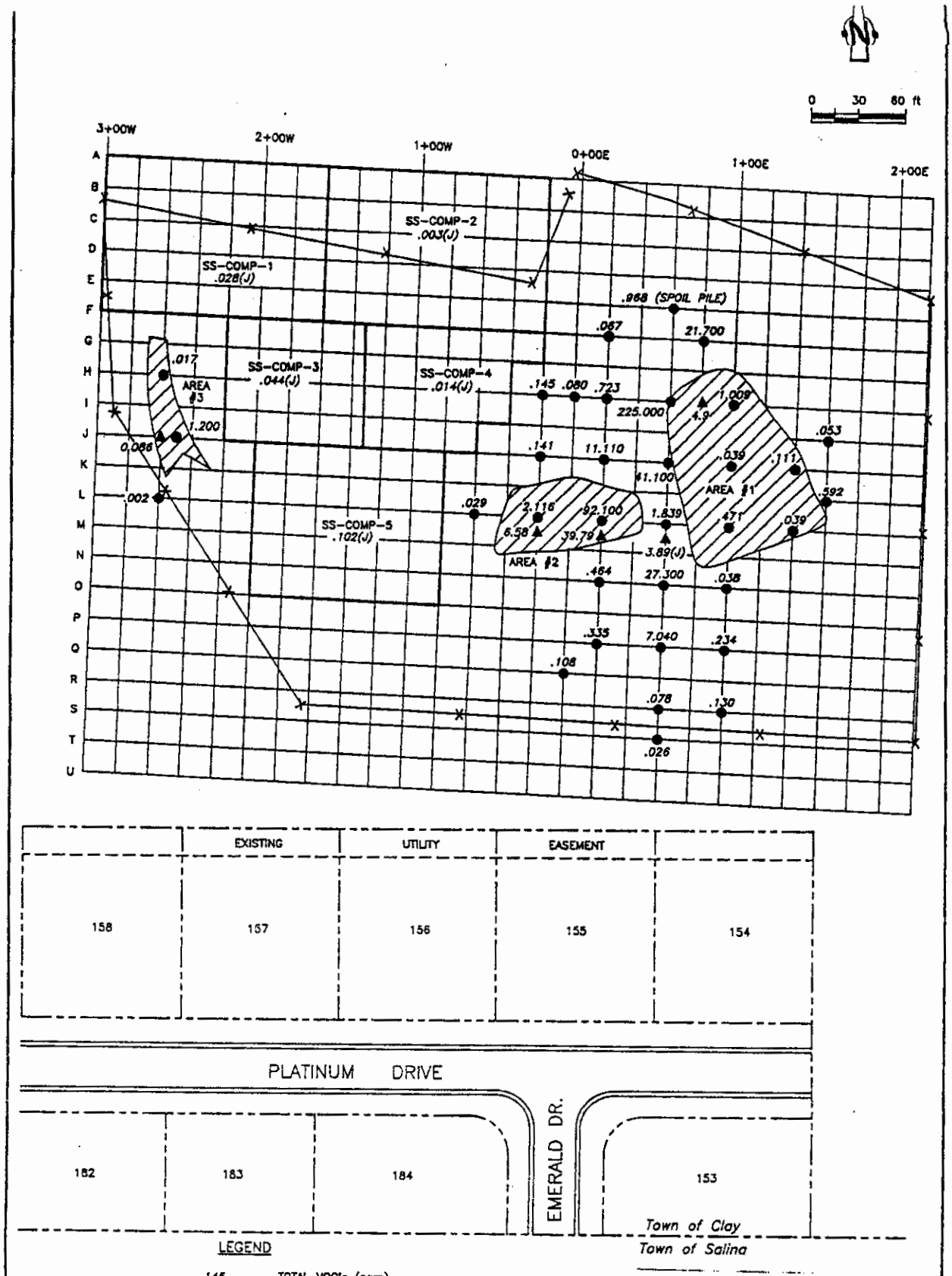


figure 3
TOTAL VOC CONCENTRATIONS IN SURFACE SOILS (0–6")
DUVA PROPERTY
Town of Clay, New York

3442-19/03/92-(NF)-12 (P-14)

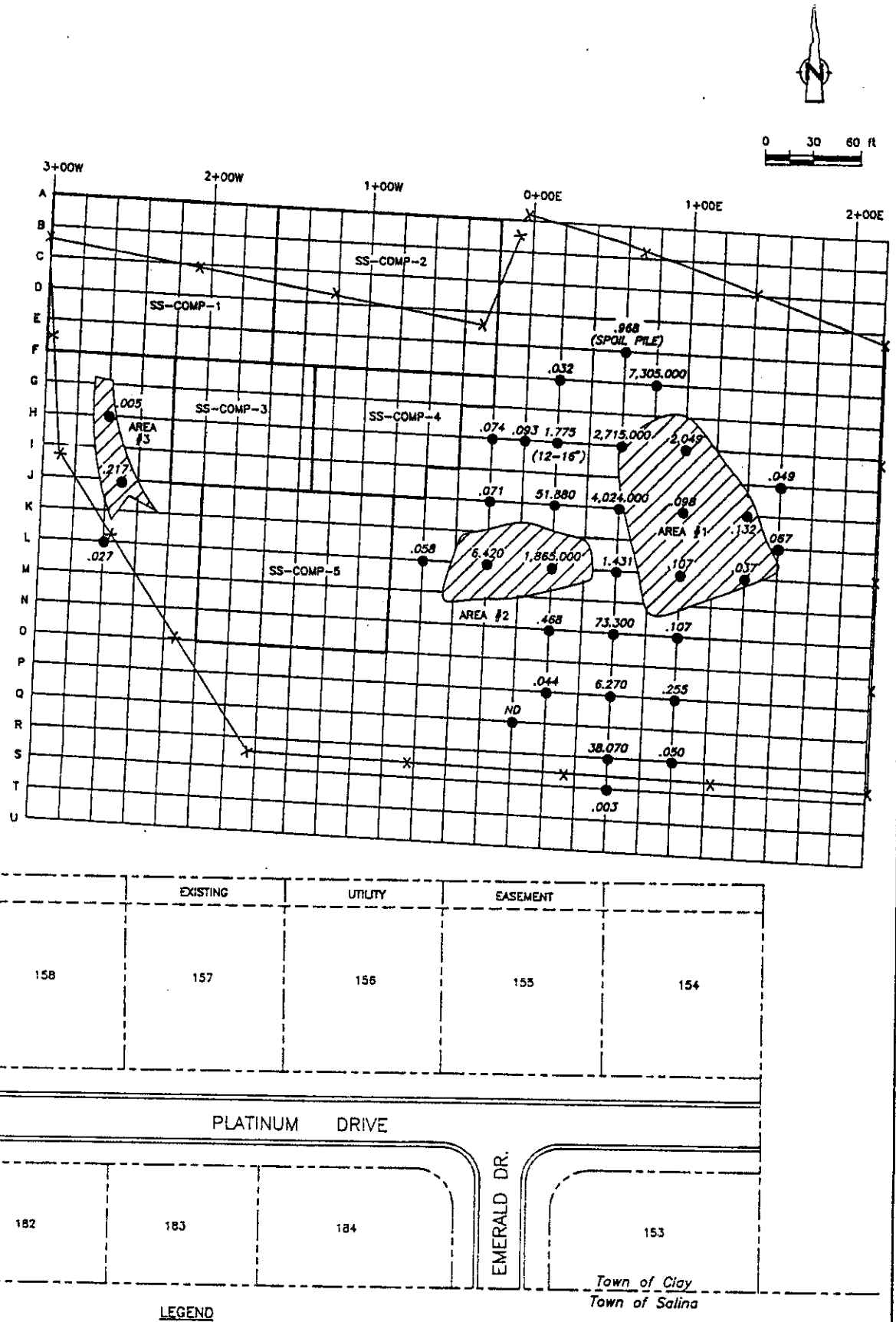


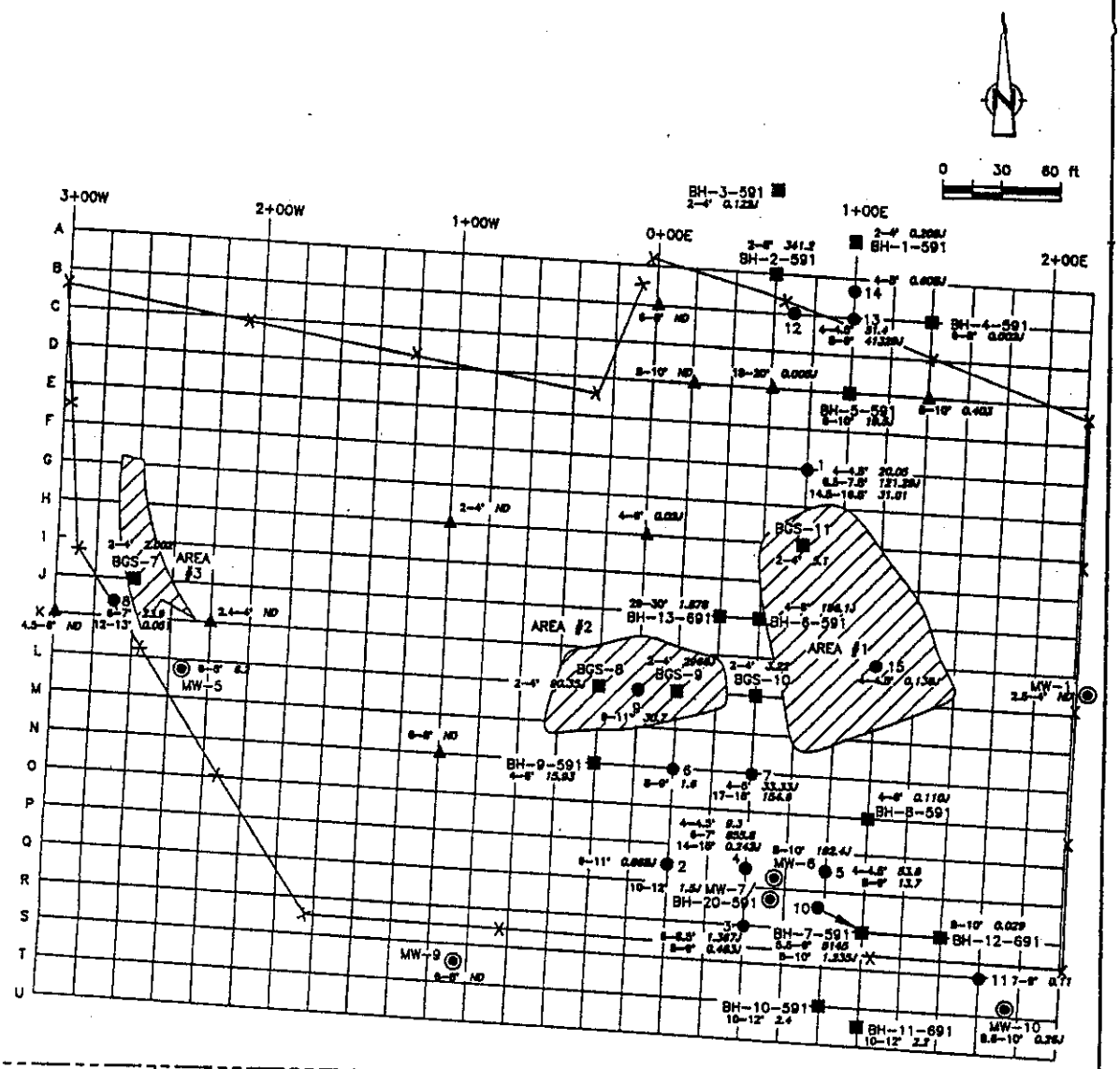
figure 4

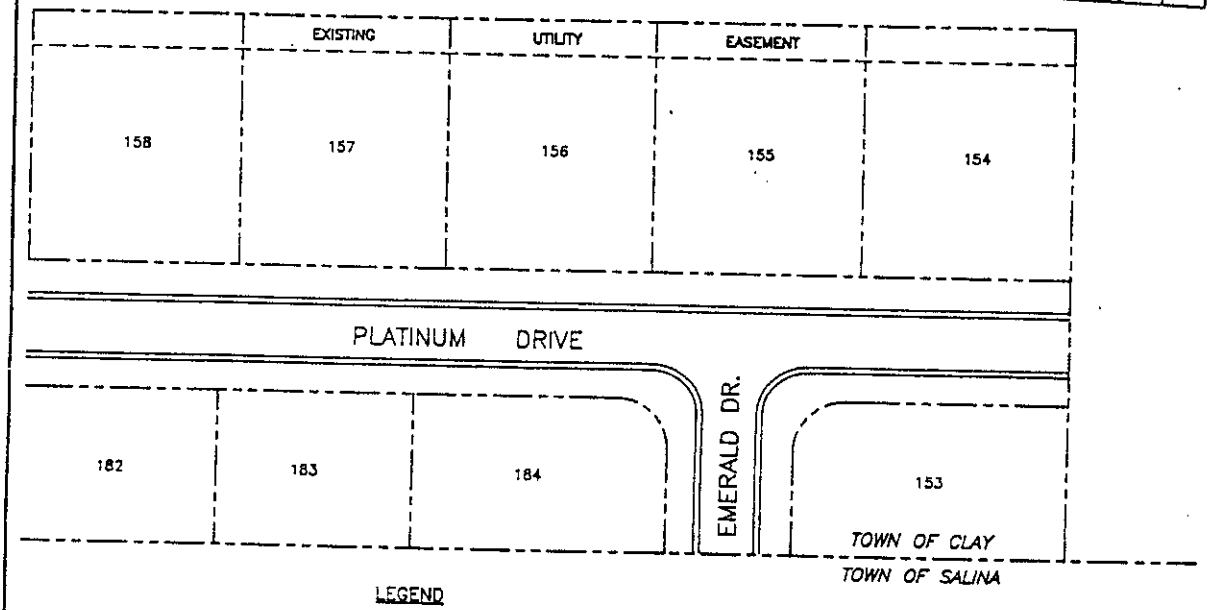
TOTAL VOC CONCENTRATIONS IN SUB-SURFACE SOILS (18-30") DUVA PROPERTY

Town of Clay, New York

CRA

3442-19/03/92-(NF)-12 (P-15)





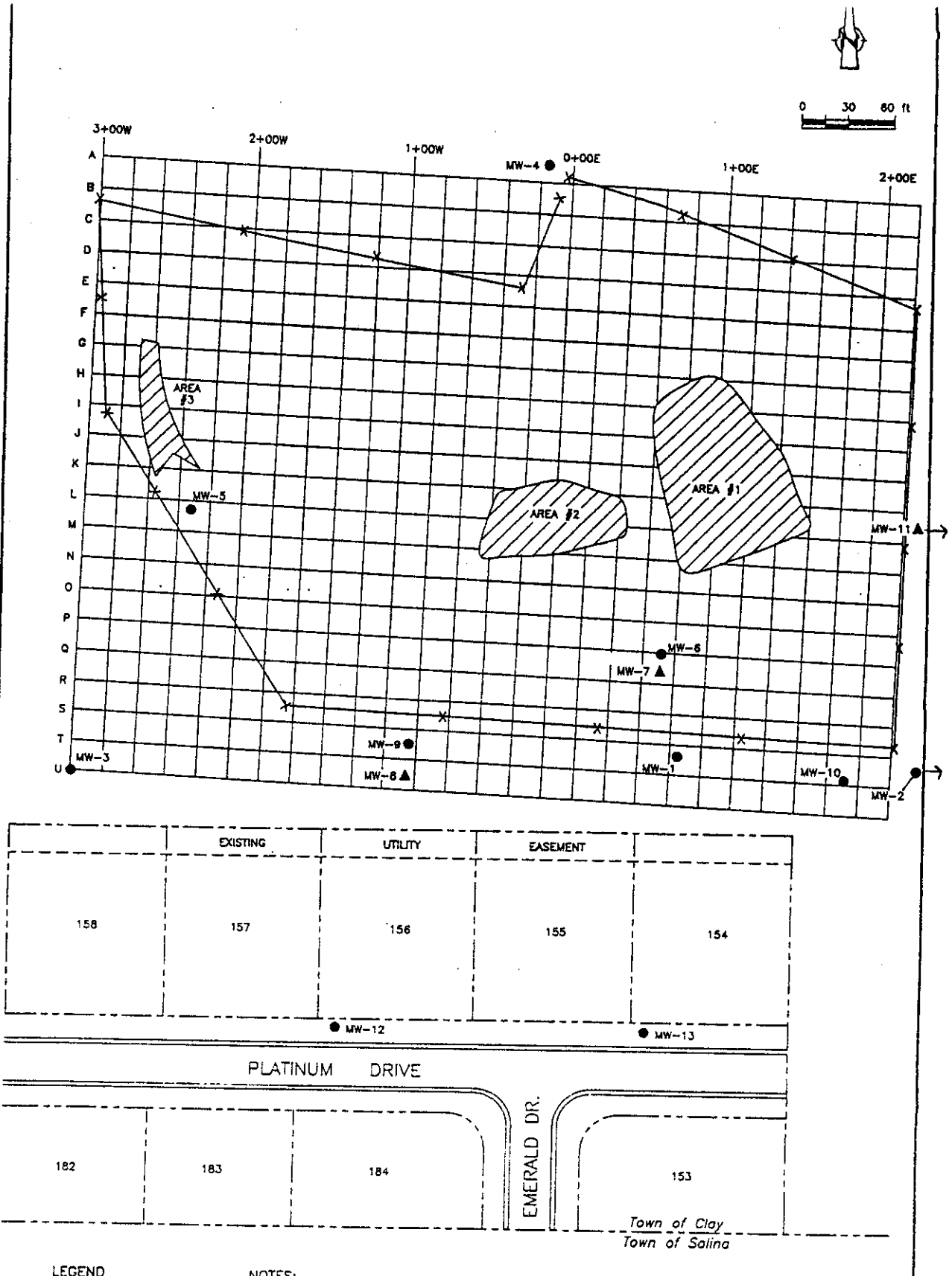
LEGEND

- IRM BOREHOLE SAMPLING LOCATION
- BH-8-591 RI BOREHOLE SAMPLING LOCATION
- ADRP BOREHOLE SAMPLING LOCATION
- MONITORING WELL

CRA

figure 5
TOTAL VOC CONCENTRATIONS (ppm)
IN SUB-SURFACE SOILS (>30")
DUVA PROPERTY
Town of Clay, New York

3442-19/03/92-(NF)-12 (P-21)



LEGEND

MW-4 ● MONITORING WELL COMPLETED IN UPPER SAND UNIT

MW-7 ▲ MONITORING WELL COMPLETED IN TILL

NOTES:

1. MW-11 LOCATED 105'± EAST OF GRIDLINE 2+20E
2. MW-2 LOCATED 185'± EAST OF SOUTHEAST CORNER OF FENCE

figure 6

MONITORING WELL LOCATIONS
DUVA PROPERTY
Town of Clay, New York

CRA

3442-19/03/92-(NF)-12 (P-10)

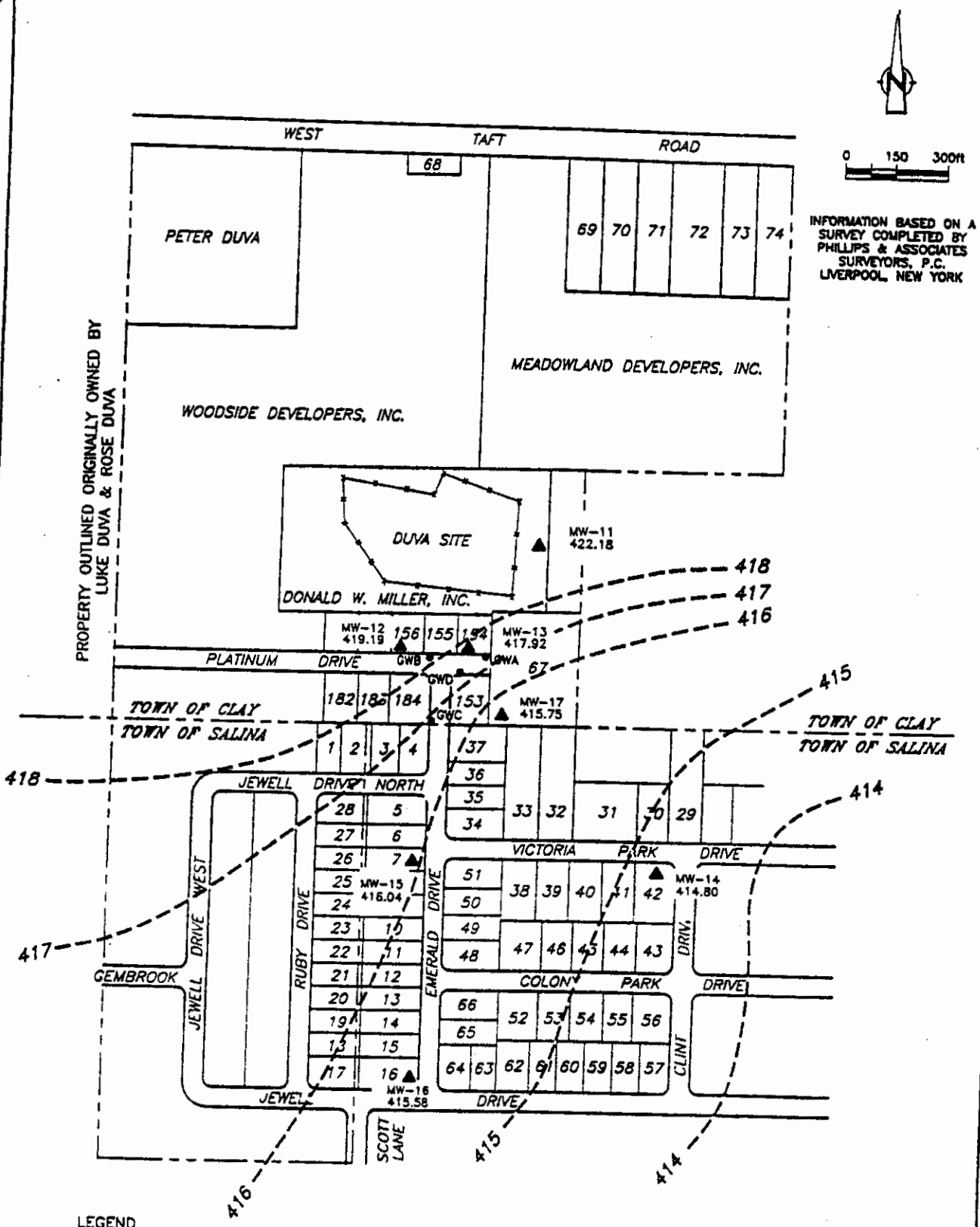
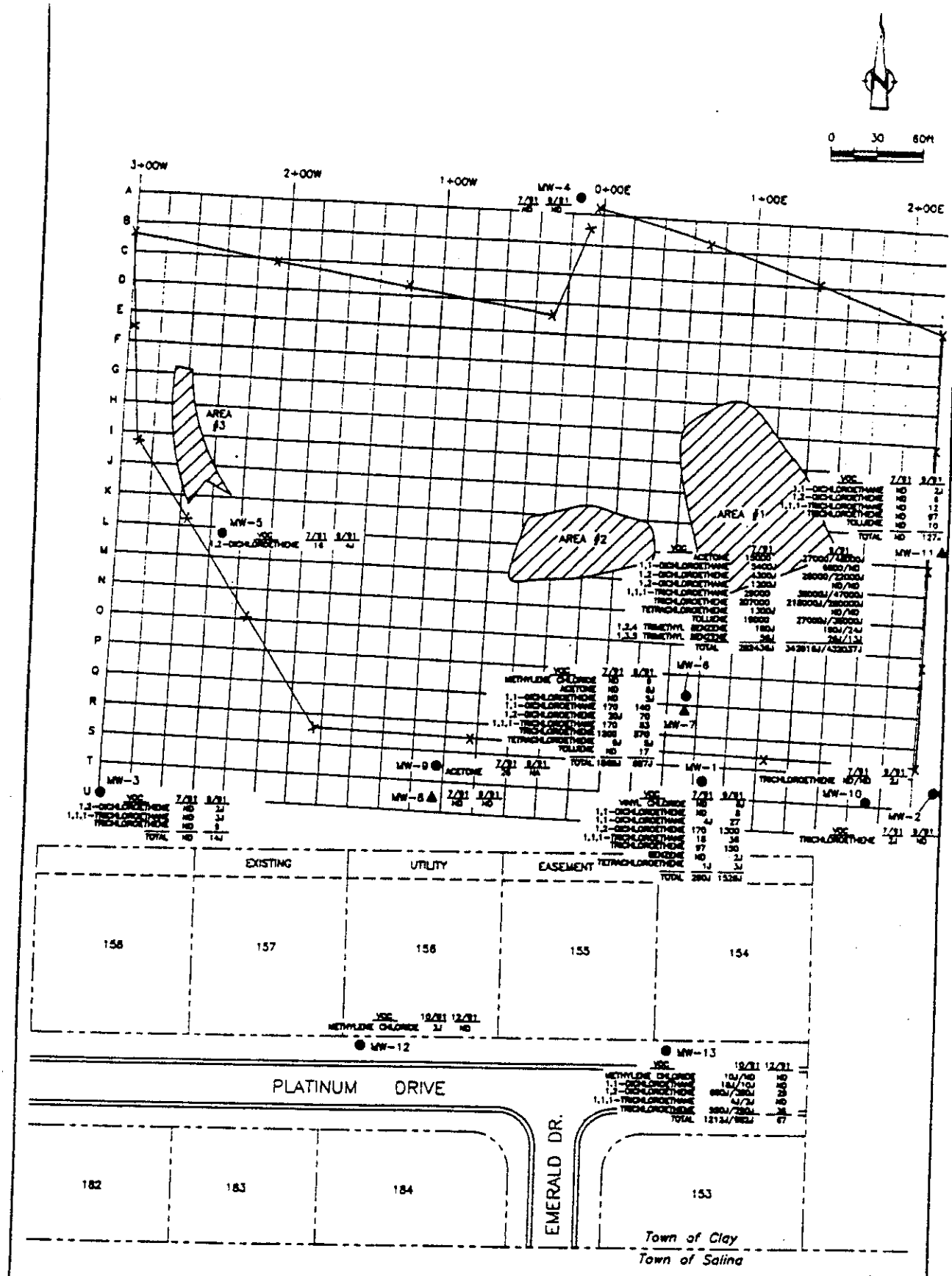


figure 7
OFF-SITE GROUNDWATER CONTOURS
DUVA PROPERTY
Town of Clay, New York

CRA

3442(L)-18OCT/92-REV.0 (NF)



LEGEND

MW-4 ● MONITORING WELL COMPLETED IN ALLUVIUM

J ESTIMATED VALUE

▲ MONITORING WELL COMPLETED IN TILL

NOTES:

1. MW-11 LOCATED 105'± EAST OF GRIDLINE 2+20E
2. MW-2 LOCATED 185'± EAST OF SOUTHEAST CORNER OF FENCE
3. ALL VOC's REPORTED IN ppb

figure 8

TOTAL VOC CONCENTRATIONS IN GROUNDWATER DUVA PROPERTY

Town of Clay, New York

CRA

3442(12)-27AUG/92-REV.1 (NF) (P-22)

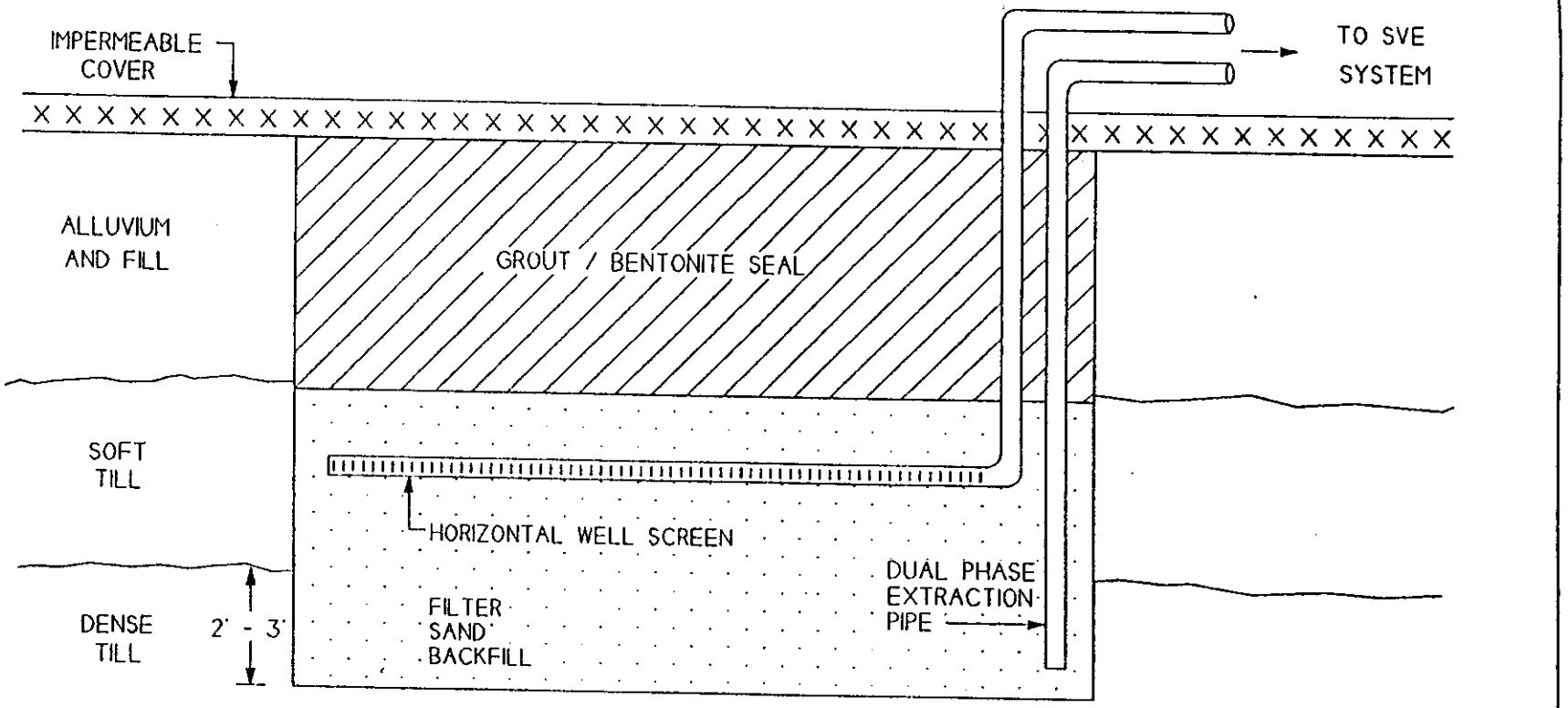


FIGURE 9

JOB#: 92-275	TITLE: CONCEPTUAL SVE TRENCH CROSS SECTION
DATE: 10/92	SITE: GE / DUVA SITE CLAY, NY
SCALE: NTS	DRAWING#: 275-HD-P
DRAWN:	
CHECKED:	

VAPEX®
Environmental Technologies
480 Neponset Street
Canton, MA 02021
Tel. 617 821 5560 Fax 617 821-4967

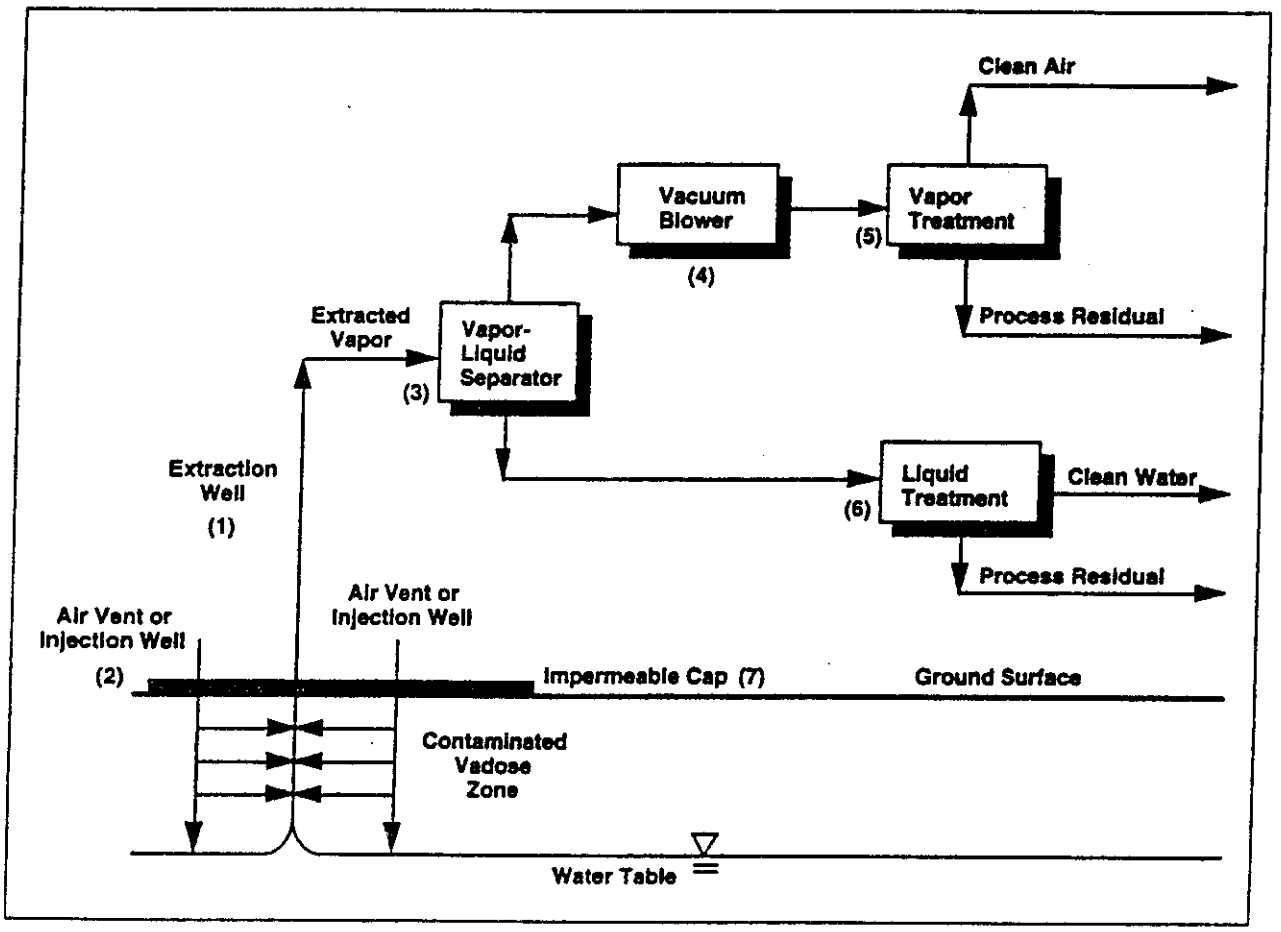


Figure 10- Generic soil vapor extraction system.

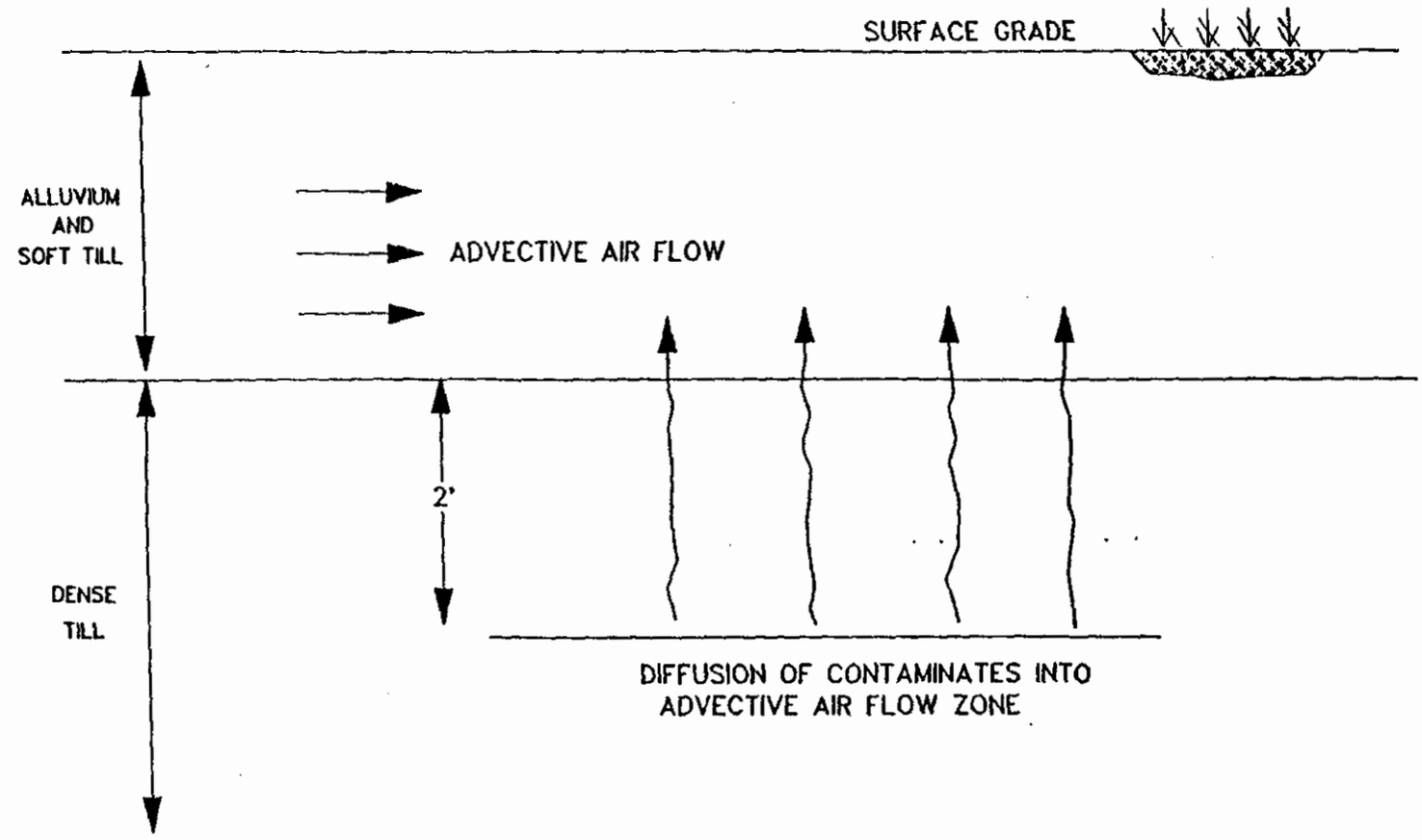


FIGURE 11

JOB#: 92-275	TITLE: DIFFUSION MODEL SCENARIO
DATE: 10/92	SITE: GE / DUVA SITE CLAY, NY
SCALE: NTS	DRAWING#: 275-AD-V
DRAWN:	
CHECKED:	

VAPEX®
Environmental Technologies
480 Neponset Street
Canton, MA 02021
Tel. 617 821-5560 Fax 617 821-4967

Table 1
Primary Chemicals of Concern

Soil

- Volatile Organic Compounds
  - Tricholorethene
  - 1,1,1 - Trichloroethane
  - 1,2 - Dichloroethene
  - Tetrachloroethene
  - Toluene
- Semi-volatile Organic Compounds
  - 1,2 - Dichlorobenzene
- PCBs
  - Aroclor 1254
- Metals
  - Cadmium
  - Chromium
  - Copper
  - Lead
  - Zinc

Water

- Volatile Organic Compounds
  - Trichloroethene
  - 1,1,1 - Trichloroethane
  - 1,2 - Dichloroethene
  - 1,1 - Dichloroethane
  - Tetrachloroethene

TABLE 2

NEW YORK STATE GROUNDWATER AND SURFACE WATER
STANDARDS AND GUIDELINE CONCENTRATIONS
FOR SITE-SPECIFIC PARAMETER LIST

Parameter	*Most Stringent MCL(1) (ug/L)*	
	Class GA Groundwater	*Class AA Surface Water*
Volatile Organic Compounds		
Acetone	NS/G[2]	NS/G
Benzene	0.7 (S)	0.7 (S)
2-Butanone	NS/G	NS/G
1,1-Dichloroethane	5 (S)	5 (G)
1,2-Dichloroethane	5 (S)	0.8 (S)
1,1-Dichloroethene	5 (S)	0.07 (G)
1,2-Dichloroethene (trans)	5 (S)	5 (G)
Ethylbenzene	5 (S)	5 (G)
Methylene Chloride	5 (S)	5 (G)
4-Methyl-2-pentanone	NS/G	NS/G
Tetrachloroethene	5 (S)	0.7 (G)
Toluene	5 (S)	5 (G)
1,1,1-Trichloroethane	5 (S)	5 (G)
Trichloroethene	5 (S)	3 (G)
Vinyl chloride	2 (S)	0.3 (G)
Xylene (total)	5 (S)[3]	5 (G)[3]
Semi-Volatile Organic Compounds		
Benzo(a)pyrene	ND (S)[4]	0.002 (G)
Benzo(b)fluoranthene	0.002 (G)	0.002 (G)
Benzo(g,h,i)perylene	NS/G	NS/G
Benzo(k)fluoranthene	0.002 (G)	0.002 (G)
Bis(2-ethylhexyl)phthalate	50 (S)	4 (G)
Chrysene	0.002 (G)	0.002 (G)
1,2-Dichlorobenzene	4.7 (S)[5]	5 (S)[6]
1,4-Dichlorobenzene	4.7 (S)[5]	30 (S)
Fluoranthene	50 (G)	50 (G)
Indeno (1,2,3-CD)pyrene	0.002 (G)	0.002 (G)
2-Methylnaphthalene	NS/G	NS/G
Naphthalene	10 (G)	10 (S)
Phenathrene	50 (G)	50 (G)
Phenol	1(S)[7]	1 (S)[7]
Pyrene	50 (G)	50 (G)
1,2,4-Trimethylbenzene	5 (S)	5 (G)
1,3,5-Trimethylbenzene	5 (S)	5 (G)

TABLE 2

NEW YORK STATE GROUNDWATER AND SURFACE WATER
STANDARDS AND GUIDELINE CONCENTRATIONS
FOR SITE-SPECIFIC PARAMETER LIST

Parameter	*Most Stringent MCL(1) (µg/L)*	
	Class GA Groundwater	*Class AA Surface Water*
Metals		
Arsenic	25 (S)	50 (S)
Cadmium	10 (S)	10 (S)
Chromium	50 (S)	50 (S)
Copper	200 (S)	200 (S)
Lead	25 (S)	50 (S)
Nickel	NS/G	NS/G
Silver	50 (S)	50 (S)
Zinc	300 (S)	300 (S)
Cyanide	100 (S)	100 (S)
Polychlorinated Biphenyls (PCBs)		
Arochlor 1254	0.1 (S)(8)	0.6 pg/L (G)(8)

Notes

(1) The maximum contaminant level (MCL) is the most stringent value obtained from "Water Quality Standards and Guidance Values", Division of Water, New York State Department of Environmental Conservation, Albany, N.Y., November 1991.
S - Standard
G - Guidance Value

(2) NS/G - No standards or guidance values have been established for these substances.

(3) Standard and guidance value applies to each isomer (o-,m-,p-) individually.

(4) Non Detectable (ND) means by tests or analytical determinations referenced in 6 NYCRR Part 703.4.

(5) Standard applied to sum of 1,2- and 1,4- Dichlorobenzene.

(6) Standard applies to sum of Dichlorobenzene isomers.

(7) Standard applies to sum of all phenolic compounds.

(8) Standard and Guidance Value applies to sum of all polychlorinated biphenyls.

TABLE 2.

NEW YORK AMBIENT GUIDELINE CONCENTRATIONS
FOR SITE-SPECIFIC PARAMETER LIST (1)

Parameter	*SGC*(2) ($\mu g/m^3$)	*AGC*(3) ($\mu g/m^3$)
Volatile Organic Compounds		
Acetone	140,000 (R)	14,000 (R)
Benzene	30 (P)	0.12 (E,U)
2-Butanone	140,000 (T)	300 (E)
1,1-Dichloroethane	190,000	500
1,2-Dichloreoethane	950 (R)	0.039 (EU)
1,1-Dichloroethene (cis)	2000 (T)	0.02 (E,U)
1,2-Dichloroethene (total)	190,000 (T)	1,900 (T)
Ethylbenzene	100,000 (T)	1,000 (T)
Methylene Chloride	41,000 (T)	27 (D,U)
4-Methyl-2-pentanone	48,000 (R)	480 (R)
Tetrachloroethene	81,000 (T)	0.075 (D,U)
Toluene	89,000 (R)	2,000 (I)
1,1,1-Trichloroethane	450,000	1000
Trichloroethene	33,000 (R)	0.45 (D,U)
Vinyl Chloride	1,300 (T)	0.02 (E,U)
Xylene (total)	100,000 (T)	300 (I)
Semi-Volatile Organic Compounds		
Benzo(a)pyrene	–	0.002 (H,U)
Benzo(b)fluoranthene	–	–
Benzo(g,h,i)perylene	–	–
Benzo(k)fluoranthene	–	–
Bis(2-ethylhexyl)phthalate	1,200 (T)	12 (T)
Chrysene	–	–
1,2-Dichlorobenzene	30,000	200
1,4-Dichlorobenzene	–	–
Fluoranthene	–	–
Indeno (1,2,3-CD)pyrene	–	–
2-Methylnaphthalene	–	–
Naphthalene	12,000 (T)	120 (T)
Phenathrene	–	–
Phenol	4,500 (T)	9.6 (H)
Pyrene	–	–
1,2,4-Trimethylbenzene	29,000 (T)	290 (T)
1,3,5-Trimethylbenzene	29,000 (T)	290 (T)
Metals		
Arsenic	0.2 (R)	0.00023 (E,U)
Cadmium	0.2 (P)	0.0005 (H,U)
Chromium (hexavalent)	0.1 (R)	0.00002 (H,U)
Copper (fumes)	48 (T)	0.48 (T)
Copper (dusts/mists)	240 (T)	2.4 (T)

TABLE 2

NEW YORK AMBIENT GUIDELINE CONCENTRATIONS
FOR SITE-SPECIFIC PARAMETER LIST (1)

Parameter	*SGC*(2) ($\mu g/m^3$)	*AGC*(3) ($\mu g/m^3$)
Metals (cont'd)		
Lead	1.5 (4)	–
Nickel	1.5 (R)	0.02 (H)
Silver	–	–
Zinc	150 (5)	50 (S)
Cyanide	150 (S)	12 (T)
Polychlorinated Biphenyls (PCBs)		
Arochlor 1254	0.10 (R)	0.00045 (E,U)

Notes:

(1) New York State Air Guide-1 (Draft), Division of Air Resources, NYSDEC, 1991.
– no Guideline concentrations have been established for these substances.

(2) SGC "Short-Term Guideline Concentration", source:
(R) - SGC derived from NIOSH REL-TWA (1988);
(T) - SGC derived from ACGIH TLV-TWA (1990-1991);
(S) - SGC based on Federal or NYS standard.

(3) AGC "Annual Guideline Concentration", source:
(R) - AGC derived from NIOSH REL-TWA (1988);
(T) - AGC derived from ACGIH TLV-TWA (1990-1991);
(S) - AGC based on Federal or NYS standard;
(D) - AGC derived by NYSDEC, Division of Air Resources;
(E) - AGC based on derivation by USEPA;
(I) - AGC based upon RFC developed by USEPA - Integrated Risk Information System (IRIS), input pending;
(H) - AGC derived by NYSDOH, Division of Environmental Health;
(U) - AGC is the ambient air concentration which corresponds to an excess cancer risk of 10^{-6} after lifetime exposure

(4) New Federal standard for lead not yet officially adopted by NYS but is currently being applied to determine compliance status. Based on averaging period of three months.

(5) 150 $\mu g/m^3$ is the Federal SGC particulate standard (maximum 24 hour concentration not to be exceeded more than once per year).

TABLE 3

POTENTIAL ACTION-SPECIFIC STANDARDS, CRITERIA AND GUIDELINES

Activity	FEDERAL SCGs			NEW YORK STATE SCGs		
	Title	Subtitle	Citation	Title	Subtitle	Citation
Capping	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Closure and post-closure care Post-closure care and use of property	40 CFR 264.310 40 CFR 264.117(c)	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
				Final status standards for owners and operators of hazardous waste treatment, storage and disposal facilities	–	6 NYCRR Subpart 373-2
Container Storage	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Condition of containers Compatibility of waste with containers Management of containers Inspections Containment	40 CFR 264.171 40 CFR 264.172 40 CFR 264.173 40 CFR 264.174 40 CFR 264.175	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
Construction of New Landfill on Site	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements Operation and maintenance Closure and post-closure care Groundwater protection	40 CFR 264.301 40 CFR 264.303-304 40 CFR 264.310 40 CFR 264.91-100	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
Discharge of Treatment System Effluent	Administered permit programs: The national pollutant discharge elimination system	Establishing limitations, standards and other permit conditions	40 CFR 122.44 and State regulations approved under 40 CFR 131	Implementation of NPDES program in New York State	–	6 NYCRR Part 750-757
				Technical and Operations Guidance Series	–	–
	Criteria and standards for the national pollutant discharge elimination program	Best management practices Discharge to waters of the U.S.	40 CFR 125.100 40 CFR 125.104	Bleeding policy for use of sources of drinking water Drinking water supplies Use and protection of waters	– – –	NYSDOH PWS 68 Part 5 of State Sanitary Code 6 NYCRR Part 608
	Guidelines establishing test procedures for the analysis of pollutants	Identification of test procedures and alternate test procedures	40 CFR 136.1-4			
	Effluent guidelines and standards	Organic chemicals plastics and synthetic fibres	40 CFR Part 414			
Excavation	Land disposal restrictions (also see Closure)	Treatment standards	40 CFR 268 (Subpart D)	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
Incineration Off Site	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Waste analysis	40 CFR 264.341			
Land Treatment	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Treatment program Design and operating requirements Unsaturated zone monitoring Special requirements for ignitable or reactive waste	40 CFR 264.271 40 CFR 264.273 40 CFR 264.278 40 CFR 264.281	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
				New York air pollution control regulations	General provisions Permits and certificates General prohibitions General process emission sources	6 NYCRR Part 200 6 NYCRR Part 201 6 NYCRR Part 211 6 NYCRR Part 212
Placement of Waste in Land Disposal Unit	Land disposal restrictions	Treatment standards	40 CFR 268 (Subpart D)	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
Surface Water Control	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements for waste piles Design and operating requirements for land treatment Design and operating requirements for landfills	40 CFR 264.251(c),(d) 40 CFR 264.273(c),(d) 40 CFR 264.301(c),(d)	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1 6 NYCRR Part 701 and Part 703

TABLE 3

POTENTIAL ACTION-SPECIFIC STANDARDS, CRITERIA AND GUIDELINES

	FEDERAL SCGs			NEW YORK STATE SCGs		
Activity	*Title*	*Subtitle*	*Citation*	*Title*	*Subtitle*	*Citation*
Treatment (in a unit)	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements for waste piles	40 CFR 264.251	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
		Design and operating requirements for thermal treatment units	40 CFR 265.373	Interim status standards for owners and operators of hazardous waste facilities	–	6 NYCRR Subpart 373-3
		Design and operating requirements for miscellaneous treatment units	40 CFR 264.601	New York air pollution control regulations	General provisions	6 NYCRR Part 200
					Permits and certificates	6 NYCRR Part 201
					General prohibitions	6 NYCRR Part 211
					General process emission sources	6 NYCRR Part 212
Treatment (when waste will be land disposed)	Land disposal restrictions	Identification of waste	40 CFR 268.10-12	Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
		Treatment Standards Waste	40 CFR 268 (Subpart D)	Interim status standards for owners and operators of hazardous waste facilities	–	6 NYCRR Subpart 373-3
		Specific prohibitions - Solvent wastes	40 CFR 268.30			
			RCRA Sections 3004 (d) (3), (e) (3)			
			42 USC 6924 (d) (3), (e) (3)			
Waste Pile	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements	40 CFR 264.251	New York air pollution control regulations	General provisions	6 NYCRR Part 200
					Permits and certificates	6 NYCRR Part 201
					General prohibitions	6 NYCRR Part 211
					General process emission sources	6 NYCRR Part 212
				Hazardous waste treatment, storage and disposal facility permitting requirements	–	6 NYCRR Subpart 373-1
				Interim status standards for owners and operators of hazardous waste facilities	–	6 NYCRR Subpart 373-3
Closure with Waste in Place	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Closure and post-closure care	40 CFR 264.258			
		Post-closure care and groundwater monitoring	40 CFR 264.310			
Closure of Land Treatment Units	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Closure of land treatment units	40 CFR 264.280	Final status standards for owners and operators of hazardous waste facilities	–	6 NYCRR Subpart 373-2
Transporting Hazardous Waste Off Site	Standards applicable to transporters of hazardous waste	–	40 CFR 263	Waste transport permits	–	5 NYCRR Part 364
				Hazardous waste manifest system and related standards for generators, transporters and facilities	–	6 NYCRR Part 372

TABLE 4
SUMMARY OF PRELIMINARY EVALUATION OF SOIL REMEDIAL TECHNOLOGIES

Soil Response Action	*Remedial Technology/ Process Options*	*Screening Comment*	*Evaluation of Results*
No Further Action	NA	• Required by the NCP • Acceptable risk, identified in PHE, for direct contact with soils	Retained (1)
Limited Further Action	Access Restrictions/ Deed Restrictions	• Technically implementable • Must be enforced	Retained (1)
Physical Containment	Cap •soil cover	• Technically implementable • Effective in isolation of site contaminants; allows for surface water infiltration; no reduction in site contaminant levels	Retained (1)
	•impermeability cap	• Technically implementable • As effective in isolation of site contaminants as the soil cover • minimizes surface water infiltration	Eliminated
In Situ Treatment	Biological Treatment/ Aerobic/anaerobic Biodegradation	• In Situ process technologies are unproven • Degradation products (i.e. vinyl chloride) are more toxic • Technically unimplementable and not effective	Eliminated
	Physical Treatment •vacuum extraction	• Remove site contaminants of concerns (VOCs) from unsaturated zones • Technically implementable • Reduces source of contaminant loading to the groundwater • Requires vapor phase treatment • May require groundwater extraction to maintain unsaturated zone	Retained
	•soil flushing	• Technically feasible but may be difficult to implement	Retained (1)

TABLE 4
SUMMARY OF PRELIMINARY EVALUATION OF SOIL REMEDIAL TECHNOLOGIES

Soil Response Action	*Remedial Technology/ Process Options*	*Screening Comment*	*Evaluation of Results*
		• Requires hydraulic control and good understanding of groundwater flow system • Possible contamination due to surfactant additives, if used • Treatment of extracted water/surfactant required	
Removal/On-Site Treatment	Physical and Biological Treatment • landfarming/aeration	• Technically feasible • Difficult to control odors and air emissions from process • Long treatment duration • Requires excavation of soils	Eliminated
	Biological Treatment • aerobic/anaerobic	• Same as landfarming/aeration • Requires laboratory testing to determine suitable bacteria	Eliminated
	Thermal Treatment • low temperature thermal extraction	• Technically feasible but may be difficult to implement in residential area • Reduces site contaminant levels • Requires excavation of soils • Difficult to control air emissions during excavation • Liminted mobile units available • May require treatment of off-gas	Retained
	• incineration	• Same as low temperature thermal extraction • Just as effective as low temperature thermal extraction • Generally not accepted by community • Test burns are required • Permanent facilities require permitting	Eliminated

TABLE 4
SUMMARY OF PRELIMINARY EVALUATION OF SOIL REMEDIAL TECHNOLOGIES

Soil Response Action	*Remedial Technology/ Process Options*	*Screening Comment*	*Evaluation of Results*
Removal/Off-Site Treatment	Thermal Treatment • incineration	• Technically feasible • Requires excavation of soils • Transportation of soils to an off-site facility may create traffic problems in a residential area • Difficult to control air emissions from excavation • Limited available capacity at off-site incinerators • Reduces site contaminant levels	Eliminated
Removal/Disposal	On-Site Landfill	• No reduction in Site contaminant levels • Requires excavation soils • Soil may require treatment to comply with land disposal restrictions • Potential long term liability • Site physical characteristics are not conducive to a construction of a landfill • Generally not accepted by communities • Difficult to implement	Eliminated
	Off-Site Landfill	• No reduction in soil contaminant levels • Requires excavation of soils • Soil may require treatment because of land disposal restrictions • Truck traffic may create problems in a residential area • Does not comply with CERCLA remedial action goals	Eliminated

Note:
(1) Retained as a support technology not as a primary technology.

TABLE 5
SUMMARY OF PRELIMINARY EVALUATIONS OF
GROUNDWATER REMEDIAL TECHNOLOGIES

Groundwater Response Action	*Remedial Technology/ Process Options*	*Screening Comment*	*Evaluation Results*
No Further Action	None	• Required by NCP • Unacceptable risk levels identified in PHE if contaminated groundwater is ingested	Retained (1)
Limited Further Action	Access Restrictions • Deed Restrictions	• Implementable • Does not reduce contaminant levels • Requires enforcement • Reduces potential for ingestion of contaminated groundwater	Retained (1)
	• Municipal By-Laws	• Implementable • Does not reduce contaminant levels • Requires enforcement • Reduces potential for ingestion of contaminated groundwater	Retained
Physical Containment	Barrier Walls • Slurry Wall/Grout Curtain/Sheet Piling	• Technically implementable • Does not reduce contaminant levels • Off-Site migration of groundwater is already liminted by existing hydraulic containment system	Eliminated
Hydraulic Containment	Groundwater Extraction • Wells	• Not evaluated since existing intereceptor trench has been proven to be effective	Eliminated
	• Trenches	• Proven to be effective in providing a hydraulic barrier • Does not reduce Site contaminant levels • Technically implementable	Retained (1)

TABLE 5
SUMMARY OF PRELIMINARY EVALUATIONS OF
GROUNDWATER REMEDIAL TECHNOLOGIES

Groundwater Response Action	*Remedial Technology/ Process Options*	*Screening Comment*	*Evaluation Results*
Source Removal	Groundwater Extraction • Wells	• May require extensive well network to be effective in removal of groundwater • Reduces Site contaminant levels • May require additional testing (i.e. pumping tests) • Requires long time to cleanup groundwater	Retained (1)
	• Trenches	• Proven to be effective in the collection of groundwater • Technically implementable • Reduces Site contaminant levels • Requires long time to cleanup groundwater if not used in conjunction with soil remedial technology (soil vapor extraction)	Retained (1)
In Situ Treatment	Biological Treatment • Aerobic/Anaerobic Degradation	• Requires laboratory testing to find appropriate bacteria to degrade contaminants • Difficult to control process and maintain conditions required for biological degradation • Not reliable in reducing site contaminant levels	Eliminated

Table 6

Summary of Costs of Seven Alternatives

Alternative	Capital Costs	O & M Costs	Total Costs
1	3,000	1,900,000	1,903,000
2	60,000	1,900,000	1,960,000
3	299,000	2,253,800	2,552,800
4A	493,400	1,752,500	2,245,900
4B	275,100	1,941,000	2,316,100
5	17,808,000	579,000	18,387,000
6	732,600	1,518,200	2,250,800

All alternatives include continued O & M of existing groundwater collection/treatment system.

1,2,3 Present worth based on 5% interest and 30 years of operation.

4A Present worth based on 5% interest and 7 years of operation.

4B Present worth based on 5% interest and 22 years of operation.

5,6 Present worth based on 5% interest and 5 years of operation.