

## Explanation of Significant Differences (ESD) Summary Sheet

November 2001



Site Number: 738003  
Name of Site: Volney Landfill  
Town and County: Town of Volney, Oswego County

Prepared By:  
United States Environmental Protection Agency

### Description of Problem:

Landfilling operations were conducted at the 85 acre unlined Volney Landfill from 1969-1983. The landfill is presently owned by Oswego County, the RP for the site. Most of the waste materials disposed of at the landfill consisted of residential and industrial wastes, however approximately 8,000 drums from Pollution Abatement Services, a hazardous waste incineration facility located in Oswego County, were approved for disposal by NYSDEC. Although the approval was for only known and limited chemical residues, it was later learned that about 50 to 200 drums contained liquid waste of unknown volume and composition. The location(s) of these drums within the landfill is unknown. In 1979 NYSDEC entered into a consent order with the landfill owner, Oswego County, after groundwater quality standards were contravened in monitoring wells near the site.

### Description of Remedy:

A Record of Decision was prepared by USEPA to address source control measures for the Volney Landfill site. The ROD was later modified by a 1989 Post-Decision Document and a 1997 ESD, calling for the capping of the landfill side slopes and ground water extraction and treatment, on an as-needed-basis. The ROD also mandated the performance of a Contamination Pathways Remedial Investigation and Feasibility Study (CPRI/FS) as a second operable unit (OU2) to evaluate the potential for the migration of contaminants into the ground water, surface water, and sediments of the adjacent areas surrounding the site. Based upon the results of the Contamination Pathways Remedial Investigation Report (CPRI), EPA has determined that the above-described ground water remedy, in combination with natural attenuation, will adequately address the site-related ground water contamination. In addition, EPA has determined that the surface water and sediments located in the nearby creek and the surrounding wetlands do not pose a threat to public health nor an ecological threat. Based upon these above referenced conclusions, EPA has decided that completing a Feasibility Study and ROD for the second operable unit of the site are unnecessary, and has therefore issued the attached ESD.

### Issues:

NYSDEC and NYSDOH have asked EPA for the implementation of institutional controls restricting the use of groundwater on all county owned properties neighboring the landfill site. Bedrock and overburden monitoring wells showed concentrations of VOCs and SVOCs above 6 NYCRR Part 703.5 standards. Arsenic has been detected above drinking water standards in downgradient bedrock wells. Elevated levels of arsenic found in bedrock wells has been attributed to naturally occurring arsenic. Residential wells sampled have not shown contamination above drinking water standards. Delineation of specific downgradient wells to be sampled under a long term groundwater monitoring plan has not yet been completed.



# Explanation of Significant Differences

## VOLNEY LANDFILL SITE

TOWN OF VOLNEY  
Oswego County, New York

EPA  
Region 2

October 2001

**MARK YOUR CALENDAR**

November ??, 2001 at 7:00 p.m.: Public availability session to discuss this Explanation of Significant Differences.

**Volney Town Hall**  
1445 County Route 6  
Fulton, New York 13069

Based upon the results of this supplemental investigation, it has been determined that the above-described ground water remedy will adequately address the site-related ground water contamination. Moreover, natural attenuation<sup>2</sup> appears to be occurring between the landfill and downgradient residential wells, thereby providing further protection to these wells. In addition, it has been determined that the surface water and sediments located in Bell Creek and the surrounding wetlands do not pose a threat to public health or an ecological threat. Therefore, it has been concluded that the remedy for the site is protective of human health and the environment and complies with federal and state requirements that were identified in the ROD. The findings noted above are being documented by this ESD.

### INTRODUCTION

Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan require an explanation if, after the selection of a remedial action plan, a component of the action differs in any significant respect from the original action. Any such significant difference, and the reasons for such changes, must be published.

The 1987 Record of Decision (ROD) for the Volney Landfill site, as modified by a 1989 Post-Decision Document (PDD) and a 1997 Explanation of Significant Differences (ESD), called for the capping of the landfill side slopes<sup>1</sup> and ground water extraction and treatment, on an as-needed-basis, to address the intermittent ground water contamination impacting areas immediately downgradient from the landfill. In addition, institutional controls (*i.e.*, deed restrictions) will be implemented to prevent the installation of drinking water wells immediately downgradient from the landfill.

The ROD also called for a supplemental investigation to evaluate the potential for the migration of contaminants in the ground water and to the surface water and sediments of the adjacent Bell Creek and wetlands surrounding the site.

This ESD will become part of the Administrative Record file for the site. The entire Administrative Record for the site, which includes the remedial investigation (RI) report, feasibility study (FS) report, ROD, PDD, Contamination Pathways Investigation Report, Contamination Pathways Investigation Human Health and Ecological Risk Assessments, the 1997 ESD, this ESD, and other relevant documents are available for public review at the following location:

Fulton Public Library  
160 South First Street  
Fulton, NY 13069

*Hours:* 10:00 A.M. - 5:00 P.M. (Monday, Friday, and Saturday), 10:00 A.M. - 8:00 P.M. (Tuesday - Thursday)

The Administrative Record file and other relevant reports and documents are also available for public review at the EPA Region II office at the following location:

U.S. Environmental Protection Agency  
290 Broadway, 18<sup>th</sup> Floor  
New York, New York 10007

<sup>1</sup> The top of the landfill was capped in the early 1980s

<sup>2</sup> Natural attenuation is the use of natural processes, such as degradation, dispersion, and dilution, to reduce contaminant concentrations to levels that are protective of human health and the environment

Hours: 9:00 A.M. - 5:00 P.M. (Monday - Friday)

## SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The 85-acre Volney Landfill is located in a rural area of the Town of Volney, New York. Bell Creek, which flows north to south, is located to the east of the landfill and wetlands are located to the north, east, southeast, and southwest of the landfill.

Landfilling operations were conducted in a 55-acre unlined disposal area from 1969 to 1983. Most of the waste materials disposed of at the landfill consisted of residential, commercial, institutional, and light industrial wastes; however, approximately 8,000 drums from Pollution Abatement Services, a hazardous waste incineration facility located in Oswego, New York, were approved for disposal at the landfill by the New York State Department of Environmental Conservation (NYSDEC). While the approval applied only to discarded drums containing known and limited chemical residues, it was later reported that approximately 50 to 200 of these drums contained liquid waste of unknown volume and composition. The physical condition and locations of these drums in the landfill are unknown.

After ground water quality standards were contravened in monitoring wells located near the site, in 1979, NYSDEC entered into a consent order with the current owner of the landfill, Oswego County. The consent order required the capping the landfill top with a liner and soil, capping the side slopes with compacted soil, installing a gas collection system, and installing a leachate<sup>3</sup> collection system. This work was performed between 1979 and 1985. Off-site leachate disposal and ground water monitoring have been performed since the completion of the closure activities.

In October 1984, the Volney Landfill site was included on the Superfund National Priorities List.

An RI/FS was conducted from 1985 to 1987 by NYSDEC, and a ROD was signed by EPA on July 31, 1987. The selected remedy included capping of the landfill side slopes with an impermeable membrane, installation of a more extensive leachate collection drain system and a subsurface ground water containment barrier (slurry wall), treatment of the collected leachate either on- or off-site, and long-term monitoring.

After the signing of the ROD, it was learned that a quality assurance/quality control review of the analytical data associated with the RI had not been performed. EPA re-sampled the site in 1988 and, based upon the sampling results, concluded that hazardous substances were present at the site at levels that posed a risk to public health and the environment. On September 29, 1989, EPA issued a PDD,

which reaffirmed the remedy selected in the ROD. In response to comments received during the public comment period, the PDD also called for a re-evaluation of the cost-effectiveness of the slurry wall called for in the ROD and a determination as to whether to provide for on- or off-site leachate treatment.

Studies conducted from 1989 to 1990 provided information about off-site leachate treatment and updated the construction costs for the site remedy. The studies concluded, however, that before any final decisions related to the slurry wall or leachate treatment could be made, additional testing was needed to resolve several critical issues concerning the site hydrogeology (*i.e.*, possible artesian conditions, ground water flow issues, and no reduction in contaminated leachate collection volume since the 1985 capping of the landfill).

An Administrative Order on Consent was signed in 1993 for the performance of a pre-design study by a group of Potentially Responsible Parties (PRPs). Based upon the results of the pre-design study, which was completed in 1997, EPA determined that there is no definable contaminant ground water plume, only intermittent increases in contaminant concentrations. It was also determined that natural attenuation is occurring in a sizable buffer zone between the landfill and eight downgradient residential wells. This conclusion was based upon the fact that contamination has not been found in the downgradient private wells, with the closest well being located approximately 450 feet from the landfill. In addition, it was determined that the installation of a slurry wall and a more extensive leachate collection drain system would not offer a significant protective benefit when considering its relatively high cost and the relatively low contaminant concentration of the leachate that is generated. Also, off-site treatment and disposal of the leachate would be more cost-effective than on-site treatment and disposal (due to the low concentration of leachate that is generated and the significant cost to construct and operate an on-site treatment facility). Based upon these findings, an ESD was issued by EPA in 1997, which concluded that a slurry wall should not be installed, the intermittent ground water contamination should be extracted on an as-needed-basis, and the collected contaminated ground water should be treated off-site.

Negotiations with 40 PRPs for the performance of the design and construction of the remedy resulted in the PRPs signing a consent decree in May 1998. The design began shortly thereafter, and was completed in September 1999. The construction commenced in the Summer of 2000, and was completed in late September 2001.

The ROD called for an investigation to evaluate the potential for the migration of contaminants in the ground water and to the surface water and sediments of the adjacent Bell Creek and wetlands surrounding the site. This investigation was initiated in 1990 under an Administrative Order on Consent with the PRPs, but was delayed while the pre-design study noted above was

<sup>3</sup> Leachate is the liquid that trickles through or drains from the land filled waste, carrying soluble components from the waste

completed. The investigation was reactivated in 1998 (at the same time as the initiation of the design). The resulting Contamination Pathways Investigation Report and Contamination Pathways Human Health and Ecological Risk Assessments were completed in September 2001.

#### **DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES**

The 1987 ROD for the Volney Landfill site, as modified by the 1989 PDD and 1997 ESD, calls for ground water extraction and treatment, on an as-needed-basis, to address the intermittent ground water contamination located downgradient from the landfill. In addition, institutional controls (*i.e.*, deed restrictions) will be implemented to prevent the installation of drinking water wells immediately downgradient from the landfill. The ROD also called for an investigation to evaluate the potential for the migration of contaminants in the ground water and to the surface water and sediments of the adjacent Bell Creek and wetlands surrounding the site. Based upon the results of that investigation, it has been determined that intermittent ground water extraction and treatment, in combination with natural attenuation, will adequately address the site-related ground water contamination and a supplemental ground water remedy does not need to be implemented.

While the levels of contaminants in the ground water downgradient from the landfill intermittently exceed drinking water standards (*e.g.*, the levels of total volatile organics have varied from 170 to over 2,000 micrograms per liter [ $\mu\text{g/l}$ ])<sup>4</sup> in one well located within 30 feet of the limit of waste and from non-detect to levels marginally above drinking water standards in several wells located within 200 feet of the limit of waste), there are no drinking water wells in this area. However, to avoid future risk to human health, institutional controls will be established to prevent the installation of drinking water wells until ground water standards are met.

Seven surface water samples (five from Bell Creek and an adjacent wetland and one each from tributaries feeding into Bell Creek and Black Creek) and 11 sediment samples (six from Bell Creek and an adjacent wetland, one each from tributaries feeding into Bell Creek and Black Creek and three from other drainage areas) were analyzed for a total of 22 inorganic and 99 organic compounds. There were no site-related organic compounds identified as contaminants of potential ecological concern in the surface water and sediment samples. The levels of inorganic compounds present in the surface water and sediments do not exceed

NYSDEC's inorganic sediment screening values<sup>5</sup>. Based upon these findings and the fact that there is no visible evidence of ecological effects (*e.g.*, no stressed vegetation), it has been concluded that the levels of contaminants that are present in the surface water and sediments in the creeks and wetlands and other areas in the vicinity of the site do not pose an ecological threat. Also, the levels of contaminants that are present in the surface water and sediments do not pose a public health threat. Consequently, the surface water and sediments do not require remediation.

#### **SUPPORT AGENCY COMMENTS**

NYSDEC supports the findings of this ESD.

#### **AFFIRMATION OF STATUTORY DETERMINATIONS**

Considering the results of a supplemental investigation, EPA and NYSDEC believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action or provides justification for a waiver, and is cost-effective. In addition, the remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

#### **PUBLIC PARTICIPATION ACTIVITIES**

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. Toward this end, a public availability session will be held at the Volney Town Hall, Volney, New York on November XX, 2001 at 7:00 p.m. to discuss the ESD. Questions or comments related to this ESD or the planned construction activities can also be directed to:

Jack O'Dell  
Remedial Project Manager  
Central New York Remediation Section  
U.S. Environmental Protection Agency  
290 Broadway, 20<sup>th</sup> Floor  
New York, New York 10007-1866

Telephone: (212) 637-4256  
Telefax: (212) 637-3966  
e-mail: odell.jack@epa.gov

<sup>4</sup> The drinking water standard for individual volatile organic compounds is 5  $\mu\text{g/l}$

<sup>5</sup> Division of Fish and Wildlife, Division of Marine Resources, *Technical Guidance for Screening Contaminated Sediments* November 1999

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION II

DATE: JUL 27 1987

SUBJECT: Record of Decision for the Volney Landfill Site

FROM: Stephen D. Luftig, Acting Director  
Emergency and Remedial Response Division

TO: Christopher J. Daggett  
Regional Administrator

Attached, please find the Volney Landfill site Record of Decision (ROD) prepared by my staff.

The Volney Landfill site, which is located in the Town of Volney, Oswego County, New York, is a fifty-five acre, unlined municipal landfill, where partial closure operations were completed in the fall of 1985 by the current owner, Oswego County.

From 1974 to 1975, allegedly 8,000 drums from the Pollution Abatement Services (PAS) site were approved for burial at the Volney site. Although the drums were believed to be empty, approximately 50 to 200 of these drums allegedly contained unidentified liquid wastes. While contaminants, including benzene, vinyl chloride and arsenic, have been detected in monitoring wells around the site perimeter, these contaminants have not been detected in nearby residential wells at this time.

This ROD reflects the recommendations of the Emergency and Remedial Response Division to address source control measures for the site. Upon completion of a contamination pathways remedial investigation/feasibility study (RI/FS) to further define the extent of contamination in the shallow and bedrock groundwater at the site and the potential contamination of the downgradient stream/wetland ecosystem, a separate ROD will be prepared.

Our recommendations were developed based upon the Administrative Record for this site, which includes an RI/FS prepared by URS Company, Inc., New York State Department of Environmental Conservation's consultant, and a health assessment prepared by the Agency for Toxic Substances and Disease Registry.

The source control remedial action that we are recommending for this site includes supplemental capping of the landfill side slopes in accordance with RCRA 40 CFR § 264.310 (the landfill top has been previously capped with a membrane liner); the installation of a gravel-filled leachate collection drain with an accompanying soil-bentonite slurry wall around the northern and southwestern portions of the landfill; and the treatment of the contaminated leachate in either an on-site or off-site treatment facility. A determination as to the specific treatment method will be made upon completion of treatability studies performed during the remedial design.

The capital and present worth costs for the recommended remedy are estimated to be \$12,754,000 and \$13,636,000, respectively.

The remedial action will be reviewed by EPA or NYSDEC at least once every 5 years as per SARA § 121 (c) requirements, to assure that human health and the environment are being protected.

The State of New York has been consulted, and agrees that the recommended alternative is the most appropriate source control measure for the Volney Landfill site.

The recommended actions, I believe, are consistent with the goals and objectives of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), and the National Contingency Plan, to provide adequate protection of human health and the environment. This remedy satisfies all applicable or relevant and appropriate requirements for this operable unit. 

We intend to send notice to the Potential Responsible Parties in accordance with the Special Notice Procedures outlined in § 122 (e) of CERCLA, after signature of the ROD.

This is a publicly owned and operated site, therefore, the State of New York's cost share associated with this project is 50 percent.

Operation and maintenance requirements (primarily for the treatment of leachate, groundwater monitoring and cap maintenance) are eligible for Superfund monies for a period of up to one year.

Should you have any questions concerning the ROD, do not hesitate to contact me.

Attachment

## DECLARATION FOR THE RECORD OF DECISION

### SITE NAME AND LOCATION

Volney Landfill site, Town of Volney, Oswego County, New York

### STATEMENT OF PURPOSE

This decision document represents the selected remedial action for the Volney Landfill site, developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, November 20, 1985.

### STATEMENT OF BASIS

This decision is based upon the administrative record for the Volney Landfill site. The attached index identifies the items which comprise the administrative record upon which the selection of a remedial action is based.

### DESCRIPTION OF SELECTED REMEDY (Source Control Operable Unit)

- Supplemental capping of the landfill side slopes in accordance with the Resource, Conservation and Recovery Act 40 CFR Section 264.310 requirement of  $1 \times 10^{-7}$  cm/sec permeability for final covers at hazardous waste sites.
- Installation of a leachate collection system consisting of a perimeter gravel-filled leachate collection drain and soil-bentonite slurry wall around the northern and southwestern sections of the landfill, with accompanying collection wells and force mains from the two drain segments.
- Treatment of the contaminated leachate in an on-site treatment plant or transport to an off-site facility for treatment. The specific treatment method will be determined upon completion of the treatability studies performed during the remedial design.
- Operation and maintenance requirements, primarily for treatment of leachate, groundwater monitoring and cap maintenance are required, and are eligible for Superfund monies for a period of up to one year.



New York State Department of Environmental Conservation  
50 Wolf Road, Albany, New York 12233 - 7010

Kaufman



Thomas C. Jorling  
Commissioner

Mr. William J. Muszynski, P.E.  
Regional Administrator  
United States Environmental  
Protection Agency  
Region II  
26 Federal Plaza  
New York, NY 10278

AUG 30 1989

Dear Mr. Muszynski:

Re: Volney Landfill Site  
NYSDEC Site Code: 7-38-003  
Record of Decision Letter  
of Concurrence

The State of New York has previously reviewed and concurred with the final Record of Decision (ROD), dated July 27, 1987, for the Volney Landfill Site. The State of New York has also reviewed the final Post-Decision Document (PDD), dated August 1989, regarding the applicability of the ROD.

The State of New York concurs with the general source control remedy originally set forth in the ROD, which is supported in the PDD and modified by the PDD. The modifications to the ROD are as follows:

1. Flexibility will be reserved to consider alternatives to the proposed slurry wall. During the design, supporting documentation of cost effectiveness, leachate generation and treatment, and the practicality of other alternatives must be used in developing a final remedial design.
2. In accordance with 6 NYCRR Subpart 754.4(g), prior to the acceptance of the landfill leachate, an off-site SPDES permitted wastewater treatment facility must notify the NYSDEC of their intention to accept the waste. This shall include qualitative and quantitative information necessary to characterize the waste. It is at the discretion of the NYSDEC to either prohibit or condition the acceptance of the waste and to modify the SPDES permit in accordance with 6 NYCRR Subpart 754.4(i) to reflect the discharge of the waste.

Additionally, the landfill could be considered a significant industrial user of a designated wastewater treatment facility and, in turn, require the treatment facility to obtain an Industrial Discharge Permit.

These above modifications stated in the PDD will satisfy several concerns raised by the State of New York and the local public officials during the public comment period prior to finalizing the PDD.

If it is determined by the State of New York that a designated wastewater treatment facility is not permitted to accept the landfill leachate, provisions shall be arranged for an acceptable treatment facility.

Please contact Mr. Michael J. O'Toole, Jr. at (518) 457-5861 if you have any questions regarding this matter.

Sincerely,



Edward O. Sullivan  
Deputy Commissioner

MK:slj

bcc: E. Sullivan (2)  
M. O'Toole (2)  
C. Goddard  
J. Slack  
R. Lupe  
M. Kauffman  
R. Heerkens, NYSDOH, Syracuse  
J. Madigan, NYSDOH, Albany  
D. Wazenkewitz, Region 7  
A. Fossa, DAR  
J. Colquhoun, DFW  
J. Kelleher, DOW  
C. Rush, Oswego County Public Administrator  
E. Walsh, Oswego County Health Department

## Explanation of Significant Differences

# VOLNEY LANDFILL SITE

TOWN OF VOLNEY  
Oswego County, New York

EPA  
Region 2

August 1997

### INTRODUCTION

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117(c) and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Contingency Plan, after the adoption of a final remedial action plan, there is a significant change with respect from the final plan, an explanation of the significant differences and the reasons such changes were made must be published.

The 1987 Record of Decision (ROD) for the Volney Landfill site called for, among other things, supplemental capping of the landfill side slopes, installation of a more extensive leachate collection system, installation of a slurry wall, performance of treatability studies to determine if leachate treatment/disposal should be on- or off-site, implementation of the on- or off-site treatment/disposal alternative, and long-term monitoring.

Following a re-sampling of the site in 1988, EPA issued a Post-Decision Document (PDD) in 1988. This document called for a re-evaluation of the slurry wall and a determination as to whether the leachate should be treated/disposed of on- or off-site. Pre-remedial design (pre-ROD) studies were conducted to address these issues, as well as questions that arose concerning the hydrogeology at the site and the finding that a Resource Conservation and Recovery Act (RCRA)-listed hazardous waste sludge had been disposed of at the landfill.

The pre-ROD studies, which were recently completed, concluded that utilizing intermittent ground-water extraction and treatment, on an as-needed-basis (after initial pumping), in combination with the existing leachate collection system, would be more appropriate than expanding the existing leachate collection system and continuously collecting large volumes of relatively dilute leachate. The studies also determined that a slurry wall is not cost-effective in combination with intermittent ground-water extraction, and the collected leachate should be treated off-site. Further, it was determined that the RCRA regulations related to the hazardous waste sludge which was disposed of at the landfill should be waived.

This Explanation of Significant Differences (ESD) will become part of the Administrative Record file for the site. The entire

Administrative Record for the site, which includes the remedial investigation (RI) report, feasibility study (FS) report, ROD, PDD, and other relevant documents are available for public review at the following location:

Fulton Public Library  
160 South First Street  
Fulton, NY 13089

Hours: 10:00 am - 5:00 pm (Monday, Friday, and Saturday)  
10:00 am - 8:00 pm (Tuesday - Thursday)

The Administrative Record file and other relevant reports and documents are also available for public review at the EPA Region II office at the following location:

U.S. Environmental Protection Agency  
290 Broadway, 18<sup>th</sup> floor  
New York, New York 10007

Hours: 9:00 am - 5:00 pm (Monday - Friday)

The change to the selected remedy is not considered by EPA and the New York State Department of Environmental Conservation (NYSDEC) to have fundamentally altered the remedy selected in the ROD. The remedy remains protective of human health and the environment and complies with federal and state requirements that were identified in the ROD.

### SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The 85-acre Volney Landfill, presently owned by Oswego County, is located in a rural area of the Town of Volney, New York. Landfilling operations were conducted in a 56-acre unlined disposal area from 1969 to 1983. (The landfill has been inactive since 1983.) Most of the waste materials disposed of at the landfill consisted of residential, commercial, institutional, and light industrial wastes; however, approximately 8,000 drums from Pollution Abatement Services, a hazardous waste incineration facility located in Oswego, New York, were approved for disposal at the landfill by NYSDEC. While the approval applied only to discarded drums containing known and limited chemical residues, it was later reported that approximately 50 to 200 of these drums

AUG-22-1997 13:11 FROM US EPA ER RD NY/CP  
page 2

TO

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contained liquid waste of unknown volume and composition. The physical condition and locations of these drums in the landfill are unknown.

In March 1979, NYSDEC entered into a consent order with the current owner of the landfill, Oswego County, after ground-water quality standards were contravened in monitoring wells near the site. The consent order required ground-water monitoring, leachate disposal evaluation, and the development of a landfill closure plan. Measures to close the landfill, which included capping the landfill top with a liner and soil, capping the side slopes with compacted soil, installing a gas collection system, and installing a leachate collection system, were undertaken between 1979 and 1985. Off-site leachate disposal and ground-water monitoring have been performed since the completion of the closure activities.

In October 1984, the Volney Landfill site was included on the Superfund National Priorities List.

A source control RIFS was conducted from 1986 to 1987 by NYSDEC, and a ROD was signed by EPA on July 31, 1987. The selected remedy included, among other things, supplemental capping of the landfill side slopes, installation of a more extensive leachate collection system, installation of a soil-bentonite slurry wall, treatment of the collected leachate, treatability studies to evaluate whether the leachate should be treated on- or off-site, implementation of the on- or off-site treatment/disposal alternative and long-term monitoring.

After the signing of the ROD, it was learned that a quality assurance/quality control review of the analytical data associated with the RI had not been performed. EPA re-sampled the site in 1988 and, based upon the sample results, concluded that hazardous substances were present in the ground water, surface water, sediments, and leachate. On September 29, 1989, EPA issued the PDD, which reaffirmed the remedy selected in the ROD. In response to comments received during the public comment period, the PDD also called for a re-evaluation of the cost-effectiveness of the slurry wall called for in the ROD and a concurrent decision concerning on- or off-site leachate treatment. Studies conducted from 1989 to 1990 provided information about off-site leachate disposal and updated the construction costs for the site remedy. The studies concluded, however, that before any final decisions related to the slurry wall or leachate treatment could be made, additional testing was needed to resolve several critical issues concerning the site hydrogeology (i.e., possible artesian conditions, ground water flow issues, and no reduction in leachate collection volume since the 1985 capping of the landfill).

The decision related to selecting a method for leachate treatment and disposal was further complicated by a subsequent EPA finding that a RCRA-listed F019 waste sludge had been disposed of in the landfill by the Miller Brew-

ing Co. (Miller) from 1976 to 1978<sup>1</sup>. RCRA would require that wastes which were derived from RCRA-listed waste (including leachate which had been in contact with listed waste) would also have to be treated as a RCRA-listed hazardous waste, irrespective of the level of hazardous constituents in the leachate. In September 1991, Miller requested that EPA reconsider the RCRA-F019 classification for its sludges that were disposed of in the landfill.

EPA concluded that additional data gathering at the site was necessary to resolve the issues concerning the site hydrogeology and to address the F019 RCRA-listed waste issue, which could significantly affect future leachate disposal requirements and costs.

An Administrative Order on Consent was signed in June 1993 for the performance of a pre-RD study by a group of Potentially Responsible Parties.

The data gathering related to the pre-RD study was conducted from 1994 to 1996, resulting in the completion of a Design Data Evaluation Report in June 1997. The Design Data Evaluation Report presented several new findings related to the hydrogeology and the nature of contamination at the site:

- the ground water at the perimeter of the site is characterized by intermittent increases in contaminant concentrations, with no consistent or definable contaminant plume leaving the perimeter of the landfill, while the leachate is somewhat dilute compared to leachate from other, younger, landfills;
- approximately 50% more leachate (i.e., 6.77 million gallons per year) is generated from the site than was reported in the RI;
- a sand and gravel unit (instead of the low permeability lodgement till reported in the RI) was found in the southeast area of the site, which would necessitate doubling the leachate collection system piping to 7,600 feet;
- the Volney Landfill occupies a topographical high, which makes the site optimally suited for achieving maximum reductions in leachate through capping and through surface water controls;
- a protective separation is present between the bottom of the landfilled waste and the water table (eliminating the waste as a direct source of ground-water contamination once the landfill is capped); and

<sup>1</sup>In November 1980, the wastes from the coating of aluminum cans (such as Miller's process) were regulated as a RCRA-listed hazardous waste.

AUG-22-1997 13:12 FROM US EPA ER RD NY/CP  
page 3

TO 915188693971 P.04

- natural attenuation appears to be occurring between the landfill perimeter and downgradient residential wells, thereby protecting these wells.

#### DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

In an attempt to address the outstanding issues so as to appropriately refine the remedy selected in the ROD, the SPRDS developed and evaluated seventeen remedial alternatives. The alternatives evaluation included comparisons of different combinations of remedial components (i.e., leachate drains versus extraction wells, slurry wall versus no slurry wall, on- versus off-site leachate treatment/disposal, and hazardous versus nonhazardous leachate treatment/disposal). All of the alternatives that were evaluated utilized the same supplemental side slope cap. Based upon this evaluation, it was concluded that

- utilizing intermittent ground-water extraction and treatment, on an as-needed-basis (after initial pumping), in combination with the existing leachate collection system, would be more appropriate than expanding the existing leachate collection system and continuously collecting large volumes of relatively dilute leachate;
- a slurry wall is not cost-effective in combination with intermittent ground-water extraction; and
- the collected leachate should be treated off-site.

Further, it was concluded that the RCRA regulations related to the hazardous waste sludge which was disposed of at the landfill should be waived. Summarized below is the basis for these conclusions.

Since selecting an appropriate method of leachate treatment/disposal would be significantly influenced by whether or not the leachate would have to be handled as a RCRA-listed hazardous waste, the F019 issue is addressed first.

#### F019 ISSUE - RCRA REGULATIONS WAIVER

As noted above, EPA determined that RCRA-listed F019 waste sludges had been disposed of in the landfill by Miller. A review of analytical data related to five different batches of leachate collected from the landfill from 1992 to 1996 (approximately 150,000 gallons/batch) did not, however, show either F019 constituent (hexavalent chromium or cyanide). In addition, based upon information provided to EPA by Miller in 1996, EPA has determined that one of the two F019 hazardous waste constituents, cyanide, was probably never used in the Miller plant process. EPA has also concluded that the other constituent, hexavalent chromium, would likely have been converted to trivalent chromium by Miller's wastewater treatment process. Therefore, trivalent chromium, not the more toxic hexavalent

chromium, would have been the primary chromium component in the sludge delivered to the landfill from 1976 to 1978.

Based on these considerations, EPA determined that the RCRA regulations applying to this matter should be "waived" on the basis of "equivalent standard of performance" pursuant to Section 121(d)(4)(D) of CERCLA, and §300.410(f)(1)(ii)(C)(4) of the National Oil and Hazardous Substances Pollution Contingency Plan. Use of this waiver is intended where the standard of performance can be equaled or exceeded through the use of another standard. Invoking this waiver will also result in a more cost-effective remedy. This waiver will not, however, relieve Oswego County from continued responsibility pursuant to CERCLA to test the leachate as a CERCLA waste and dispose of it as hazardous, if the data so warrant.

#### DESCRIPTION OF THE SIGNIFICANT DIFFERENCES

A review of ground-water data collected from monitoring wells located at the perimeter of the landfill shows a relatively low frequency of organic contamination, characterized by intermittent increases in contaminant concentrations. In addition, there is no definable contaminant plume at the perimeter of the landfill. Further, pre-RO study data indicate that natural attenuation is occurring in a sizable buffer zone between the landfill perimeter and the downgradient residential wells. In addition, natural attenuation appears to have been protecting the residential wells for a significant period of time. Based upon these findings, EPA has concluded that it would be more appropriate to collect the contaminated ground water (in combination with the existing leachate collection system), on an as-needed-basis (based upon criteria established during the design phase), to match the intermittent elevated contaminant concentrations, rather than expanding the existing leachate collection system and continuously collecting large volumes of relatively dilute leachate.

EPA has also determined that the installation of a slurry wall and leachate collection drain system to isolate and collect leachate will not offer a significant protective benefit in comparison to its cost, because once the landfill's side slopes are capped, it is estimated that over 99% of the surface water infiltration will be eliminated. For the same reason, leachate collection by extraction wells which are pumped intermittently would be more cost-effective than a leachate collection drain system.

With respect to leachate treatment and disposal, EPA has concluded that off-site treatment and disposal of nonhazardous leachate is more cost-effective than on-site treatment and disposal.

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page 4

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**DESCRIPTION OF MODIFIED REMEDY**

The selected remedy, as modified by this ESD, includes supplemental capping of the landfill side slopes, continued leachate collection from the existing leachate collection system, intermittent ground water extraction on an as-needed-basis (after initial pumping), off-site leachate and ground-water treatment, and long-term monitoring.

**SUPPORT AGENCY COMMENTS**

NYSDEC supports the modified remedy due to its environmental, public health, and technical advantages over the remedy selected in the 1987 ROD and 1989 PDD.

**AFFIRMATION OF STATUTORY DETERMINATIONS**

Considering the pre-RD study information that has been developed and the changes that have been made to the selected remedy, EPA and NYSDEC believe that the modified remedy remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action or provides justification for a waiver, and is cost-effective. In addition, the modified remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

EPA and NYSDEC also believe that the RCRA regulations related to the hazardous waste sludge which was disposed of at the landfill should be waived.

**PUBLIC PARTICIPATION ACTIVITIES**

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, this ESD is being made available to the public for review and comment. Comments and questions should be directed to:

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### 5.3 Groundwater Quality

Groundwater quality sampling rounds were completed during September 1999 and December 1999, in accordance with the approved Work Plan and Project Operation Plan. The wells sampled included the newly installed CPRI wells, as well as numerous existing monitoring wells. Wells were selected to represent the two groundwater flow regimes (overburden and bedrock) as well as the different groundwater flow paths around the landfill. Samples were submitted to Upstate Laboratories of Syracuse, NY for analysis of the parameter suites identified in the approved plans, including VOCs, SVOCs, metals and a range of conventional water quality parameters. The wells that were sampled for the CPRI are shown on Figure 2. The results of sample analysis are presented in Tables 5-4 through 5-11. These tables also include the respective state water quality standard for each parameter (where applicable), and concentrations that exceed their respective standard are highlighted. Further discussion of the exceedances is provided below. The discussions in this section and subsequent sections excludes trace concentrations of laboratory artifact compounds such as methylene chloride, carbon disulfide, acetone, and phthalic acid esters.

#### 5.3.1 Overburden Water Quality

Water quality in monitoring wells completed in the overburden is provided in Tables 5-4 through 5-7, and is broken down between inorganic parameters, VOCs and SVOCs. With respect to VOCs, the majority of the results were non-detectable; however, there were ten monitoring wells where an individual VOC was detected above its respective standard (6 NYCRR Part 703.5) in one or both of the monitoring events. Figure No. 16 presents the location of each monitoring well and the respective VOC'S detected above its standard. In eight of these ten wells (GW-3C, SHW-1, SHW-2, SHW-4, SHW-5, SHW-8, VBW-4S and VBW-8S), the exceedance was due to a benzene concentration of less than 10 ug/L (most concentrations were less than 5 ug/L; for another well (SHW-3), benzene was detected twice at concentrations between 10 and 20 ug/L. The drinking water standard in New York State is 0.7 ug/L. Also, chloroform was detected in well GW-3C, at a concentration of 10 ug/L in one sample. The highest concentrations of

VOCs were detected in one well, VBW-8D. In the two sampling and analysis events, the following VOCs were detected: acetone (2000 ug/L, 2000 ug/L), 2-butanone (1900 ug/L, 1400 ug/L), and toluene (59 ug/L, 170 ug/L). Two SVOC were also detected in this well in both events: phenol (350 ug/L, 130 ug/L) and methyl phenol (640 ug/L, 320 ug/L). The only other SVOC detected was naphthalene (36 ug/L, 26 ug/L) in well SHW-2.

Exceedances for heavy metals were as follows: well SGW-30B (55 ug/L chromium – standard 50 ug/L), well SHW-2 (arsenic 39 ug/L, 39 ug/L – standard 25 ug/L; chromium 56 ug/L; lead 28 ug/L – standard 25 ug/L), well SHW-4 (arsenic 90 ug/L, 80 ug/L), well VBW-8D (barium 8940 ug/L, 5880 ug/L – standard 1000 ug/L), and well WP-4 (arsenic 155 ug/L, lead 58.7). It is possible that elevated turbidity may account for many of these exceedances, as turbidities in the range of 150 NTU were measured for most of the samples with exceedances despite the use of the low-flow sampling method; also, filtered samples from wells SGW-30B and SHW-2 did not have exceedances for metals. Concentrations of conventional water quality parameters (e.g. – iron, manganese, ammonia) are discussed in Section 6.

### 5.3.2 Bedrock Water Quality

Water quality in monitoring wells completed in the bedrock is provided in Tables 5-8 through 5-11, and is broken down between inorganic parameters, VOCs and SVOCs. With respect to VOCs, the majority of the results were non-detectable; however, there were three monitoring wells where an individual VOC was detected above its respective standard in one or both of the monitoring events. Figure No. 17 presents the location of each monitoring well and the respective VOC's detected above its standard. VOCs were detected in both events in only one well, BRW-6, as follows: cis-1,2-dichloroethene (190 ug/L, 42 ug/L – standard 5 ug/L), trichloroethene (15 ug/L, 8 ug/L – standard 5 ug/L), and m+p xylene (30 ug/L – standard 5 ug/L). The other exceedances were as follows: well MW-7BR (toluene 15 ug/L – standard 5 ug/L), MW-8BR (toluene 22 ug/L, chloroform 10 ug/L – standard 7 ug/L). Only one SVOC was detected, in well MW-6 BR (4-chloro-3-methyl phenol at 7 ug/L, 2 ug/L). With respect to heavy metals, arsenic, barium,

cadmium, and chromium were detected in excess of drinking water standards. Arsenic in excess of the 25 ug/L standard was detected in all of the bedrock wells sampled, except for wells MW-6BR (<10, <10,7) and MW-9BR (23 ug/L, <10 ug/L, 10 ug/L); concentrations ranged from 26 ug/L to 152 ug/L. Several factors indicate that these arsenic concentrations are likely naturally occurring:

- Arsenic was detected in excess of the standard in well BRW-9 and just below the standard in well MW-9BR; these wells are not identified as being impacted by landfill leachate (see Section 6).
- Arsenic was not detected above drinking water standards in landfill leachate (see Section 5.5).
- Naturally-occurring arsenic concentrations have been observed in wells completed in bedrock in upstate New York and in Oswego County (Welch et al, 2000).

The remaining exceedances for heavy metals were as follows: well BRW-3 (barium 123,000 ug/L, 177,000 ug/L – standard 1,000 ug/L), well BRW-4 (barium 29,000 ug/L, 28,200 ug/L), well BRW-8 (barium 3,160 ug/L, 2,450 ug/L), well MW-6BR (barium 10,300 ug/L, 15,300 ug/L, 8,300 ug/L), well MW-7BR (barium 68,700 ug/L, 50,000 ug/L; cadmium 13 ug/L – standard 5 ug/L), well MW-8BR (barium 36,000 ug/L, 183,000 ug/L, 140,000 ug/L; cadmium 49 ug/L; and chromium 80 ug/L – standard 50 ug/L).

Concentrations of conventional water quality parameters (e.g. – iron, manganese, ammonia) are discussed in Section 6.

#### 5.4 Residential Well Water Quality

Water quality in residential wells is presented in Tables 5-12 through 5-14, and is broken down between inorganic parameters, VOCs and SVOCs. Neither individual VOCs nor SVOCs were detected above drinking water standards in residential wells. Heavy metals were not detected

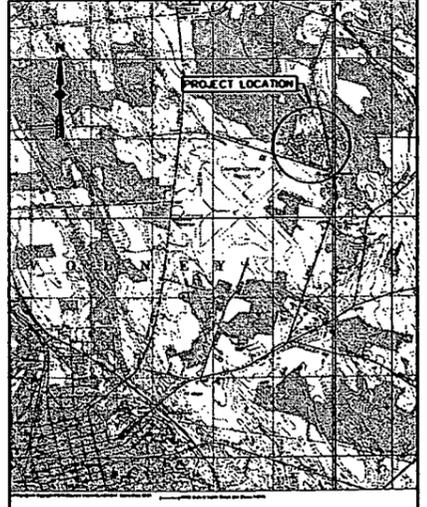
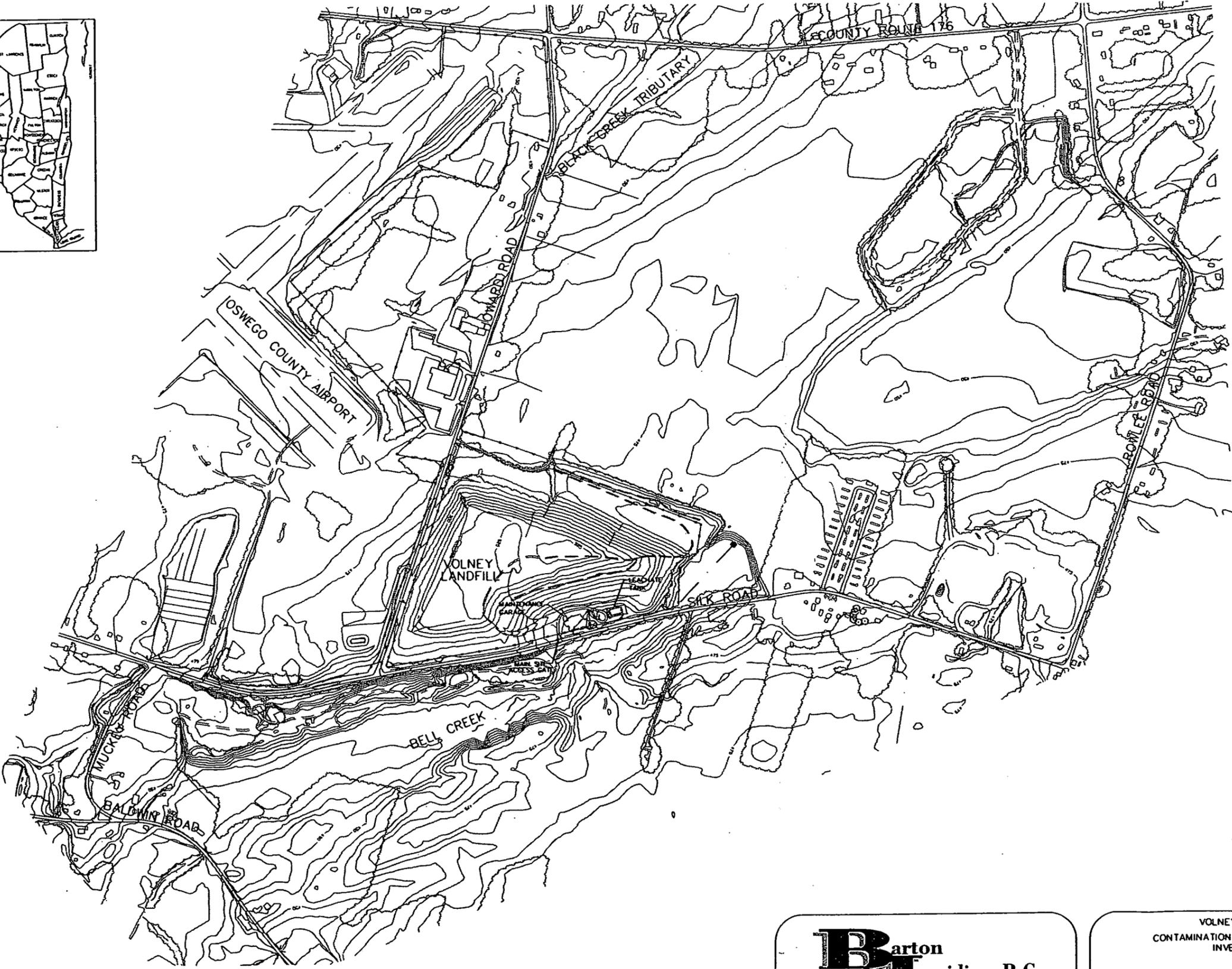
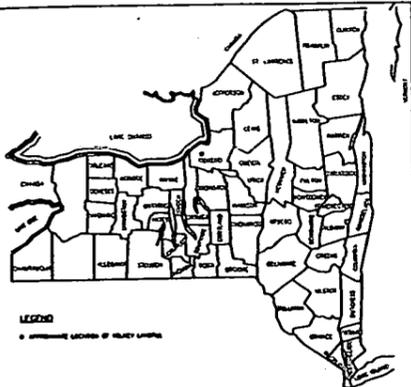
above drinking water standards. These findings are consistent with results generated by the Oswego County Department of Health, which has been monitoring these wells on a quarterly or semi-annual basis for well over 10 years. Exceedances for some conventional water quality parameters were identified: RW-2 (iron), RW-5 (iron, manganese, sodium), and RW-7 (iron).

### 5.5 Leachate Quality

Leachate quality is presented in Tables 5-15 through 5-17, and is broken down between inorganic parameters, VOCs and SVOCs. A total of six VOCs were detected above drinking water standards in leachate samples. Acetone was detected in OVL-3 (93.0 ug/L); Z-butanone was detected in OVL-1 (540 ug/L); 4-methyl-Z-Pentanone was detected in OVL-1 (140 ug/L); Toluene was detected in OVL-1 (12 ug/L); xylene isomers: m+p-xylene was detected in OVL-1 (18 ug/L) and in OVL-3 (14 ug/L and 20 ug/L); o-xylene was detected in OVL-1 (19 ug/L) and in OVL-3 (21 ug/L). With respect to SVOCs, 1,4-dichlorobenzene and naphthalene were detected in OVL-1 and OVL-3, with the highest concentration being 10 ug/L. Two heavy metals were detected above drinking water standards in leachate samples. Cadmium was detected in OVL-1 (9 ug/L) and OVL-3 (6 ug/L) and chromium in OVL-1 (60 ug/L). Concentrations of conventional water quality parameters (e.g. – iron, manganese, ammonia) are discussed in Section 6.

### 5.6 Surface Water Quality

Surface water quality is presented in Tables 5-18 through 5-20, and is broken down between inorganic parameters, VOCs and SVOCs. Neither individual VOCs nor SVOC were detected in surface water samples. With the exception of barium, heavy metals were not detected in surface water samples; barium was detected below surface water and drinking water standards. Concentrations of conventional water quality parameters (e.g. – iron, manganese, ammonia) are discussed in Section 6.



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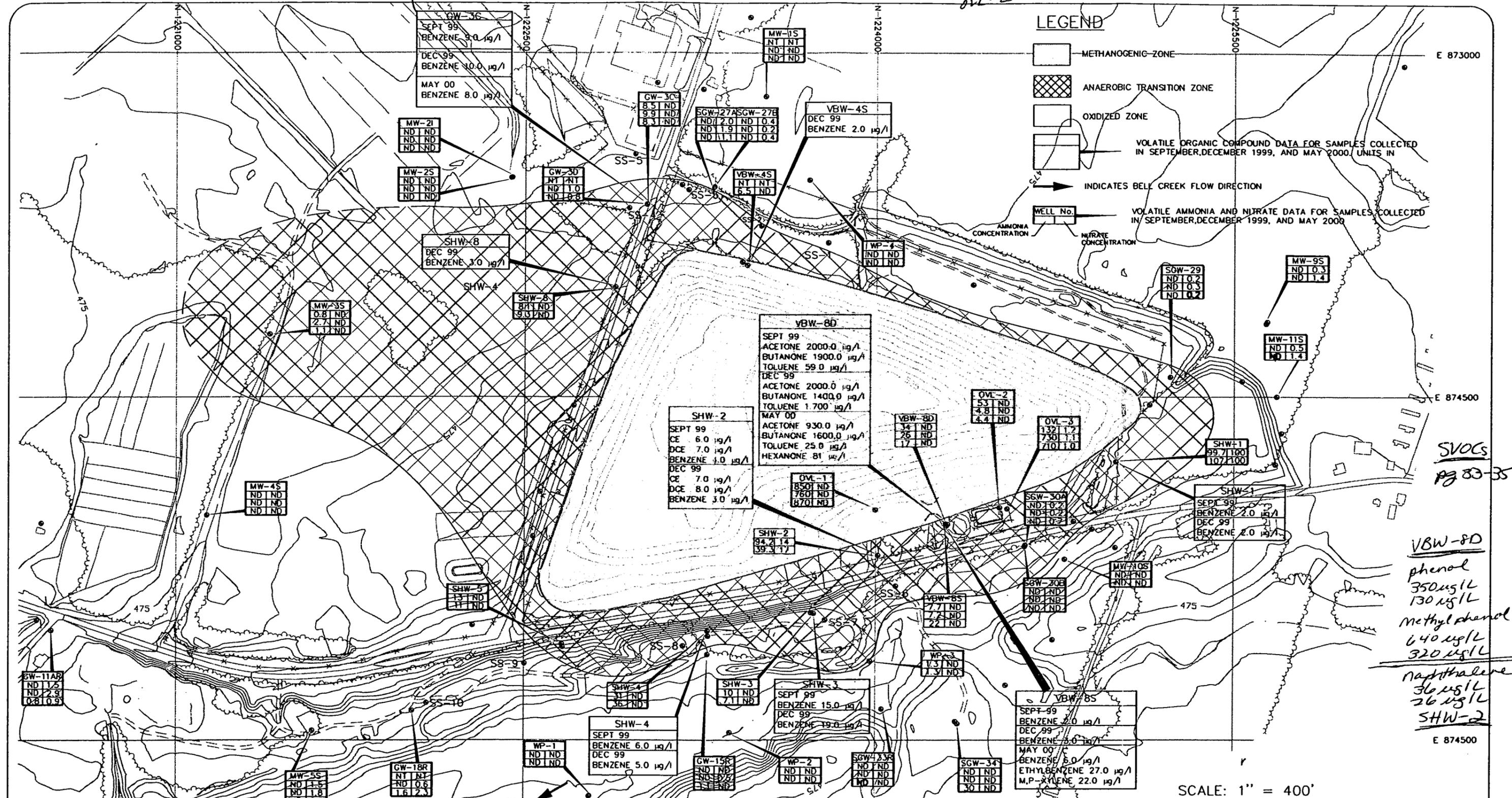
VOLNEY LANDFILL  
 CONTAMINATION PATHWAYS REMEDIAL  
 INVESTIGATION  
**VOLNEY LANDFILL SITE MAP**  
 TOWN OF VOLNEY      OSWEGO COUNTY, NEW YORK

Figure  
 1  
 Project No.  
 132.165

chloroform 10 ug/L

Leachate sample  
OVL-1  
OVL-3 ) page 30  
OVL-2

Metals  
pg 33-35



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CONTAMINATION PATHWAYS REMEDIAL INVESTIGATION  
APPROXIMATE EXTENT OF  
LEACHATE IMPACTS IN THE  
OVERBURDEN GROUNDWATER FLOW  
SYSTEM  
TOWN OF VOLNEY OSWEGO COUNTY, NEW YORK

Figure  
16  
Project No.  
132.165

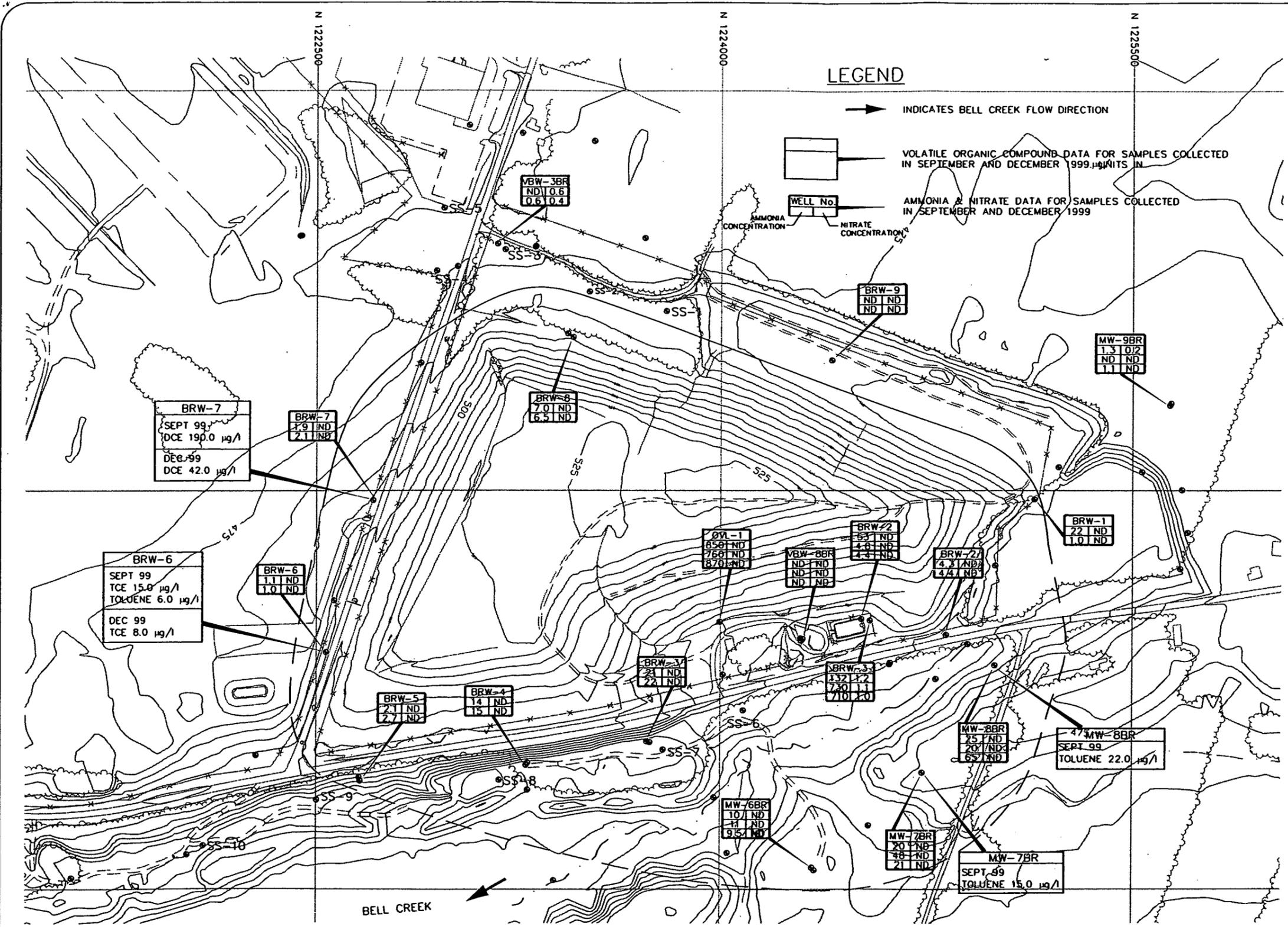
**LEGEND**

→ INDICATES BELL CREEK FLOW DIRECTION

□ VOLATILE ORGANIC COMPOUND DATA FOR SAMPLES COLLECTED IN SEPTEMBER AND DECEMBER 1999. UNITS IN μg/L

WELL No. AMMONIA & NITRATE DATA FOR SAMPLES COLLECTED IN SEPTEMBER AND DECEMBER 1999

AMMONIA CONCENTRATION  
NITRATE CONCENTRATION



E 873000

E 874500

E 874500

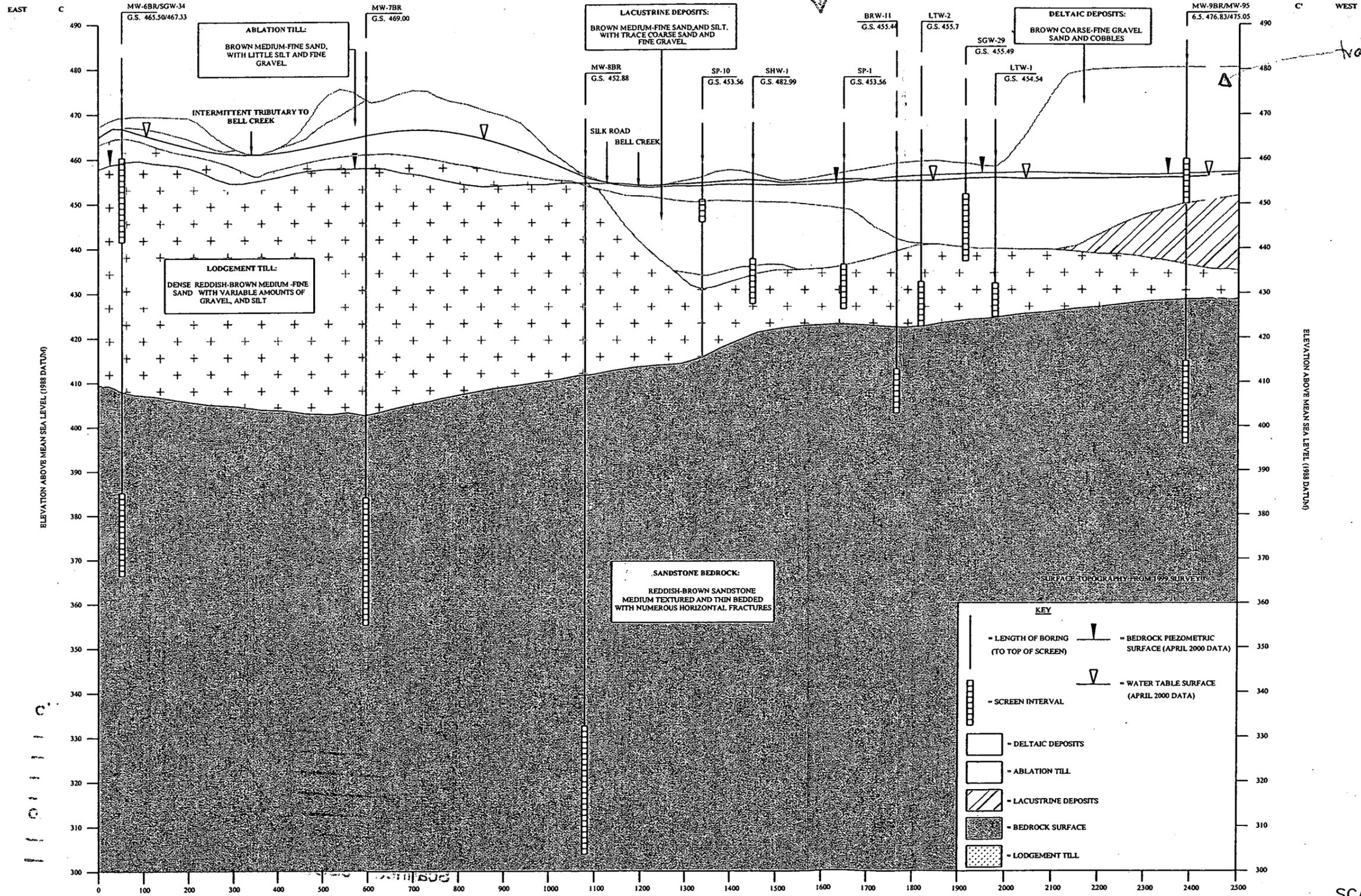
SCALE: 1" = 400'

*SVOC  
MW-6BR  
4-chloro-3-methyl  
phenol  
7ug/L  
2ug/L*

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INVESTIGATION  
APPROXIMATE EXTENT OF  
LEACHATE IMPACTS IN THE BEDROCK  
GROUNDWATER FLOW SYSTEM  
TOWN OF VOLNEY OSWEGO COUNTY, NEW YORK

Figure  
17  
Project No.  
132.165



ELEVATION ABOVE MEAN SEA LEVEL (1988 DATUM)

ELEVATION ABOVE MEAN SEA LEVEL (1988 DATUM)

SCALE: 1" = 240'

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VOLNEY LANDFILL  
 CONTAMINATION PATHWAYS REMEDIAL  
 INVESTIGATION  
 GEOLOGIC CROSS SECTION C-C'  
 TOWN OF VOLNEY      OSWEGO COUNTY, NEW YORK

Figure  
 5  
 Project No.  
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File on eDOCs  Yes \_\_\_\_\_ No \_\_\_\_\_  
Site Name Uoney \_\_\_\_\_  
Site No. 738003 \_\_\_\_\_  
County Oswego \_\_\_\_\_  
Town Uoney \_\_\_\_\_  
Foitable  \_\_\_\_\_  
File Name 2001-11-01 . ESD \_\_\_\_\_  
Scanned & eDOC \_\_\_\_\_