NYSDEC SUPERFUND STANDBY CONTRACT
WORK ASSIGNMENT NO. D002472-23

DRAFT PRELIMINARY SITE ASSESSMENT REPORT
VOLUME I

CARROLL TOWN LANDFILL
CARROLL, NEW YORK

SITE NO. 907017

Submitted to:

New York State Department of Environmental Conservation
Albany, New York

Submitted by:

ABB Environmental Services
Portland, Maine

February 1997

Prepared by:	Submitted by:	Approved by:
Gina L. Gulseth Site Manager ABB Environmental Services	Glenn Daukas Project Manager ABB Environmental Services	Robert E. Handy, Jr., P.E. Program Manager ABB Environmental Services

ABB Environmental Services

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EXECUTIVE SUMMARY

The Carroll Town Landfill site, Site No. 907017, is a suspected inactive hazardous waste site classified by the New York State Department of Environmental Conservation (NYSDEC) as a "P" (i.e., potential) site because insufficient information exists to determine whether wastes disposed of at the site are hazardous wastes and whether the wastes pose a potential significant threat to public health or the environment (NYSDEC, 1992a). ABB Environmental Services (ABB-ES) completed a Preliminary Site Assessment (PSA) Data Records Search and Assessment in May 1995, but did not develop the data necessary to make a reclassification recommendation.

The Carroll Town Landfill site is the location of a former municipal landfill located in the Village of Frewsburg, Town of Carroll, New York. The landfill operated from the early 1960s to 1979. NYSDEC Region 9 files indicate that industrial wastes were allegedly disposed in the landfill during the period of operation, and inspections by NYSDEC conducted in April 1992 reported partially buried 55-gallon containers at the site (NYSDEC, 1992a; Doster, 1993). Sources of industrial waste are alleged to include metal debris and metal turnings by Vac Air Alloys (a metals recycling facility located in Frewsburg [NYSDEC, 1977]) and unpermitted disposal of sludge from the Jamestown Rendering wastewater treatment facility (NYSDEC, 1978).

The site is estimated to occupy 25 acres of a 305-acre property owned by the Town of Carroll (Town of Carroll, 1994). Southwest of the site, on the same lot, is the Town of Carroll Public Works area and Frewsburg Water District Water Supply Well No. 5 and pumping station. The water supply well is located approximately 700 feet southwest of the western landfill boundary. The landfill is composed of two rectangular landfill cell areas separated by a north-south trending drainage swale. The cell areas are roughly similar in shape and size. The eastern cell is currently used by the Town of Carroll for disposal of wood debris, soil, and concrete rubble. On the northern boundary of both cells, a low, flooded area exists which receives discharge from the drainage swales surrounding the landfill cells. The water in the flooded area discharges to a low, wetland area to the northwest (ABB-ES, 1995b).

Previous investigations in the vicinity of the Carroll Town site include NYSDEC leachate and 55-gallon container sampling in 1992, a NYSDEC remedial investigation of the Vac Air Alloys facility in 1994, and a Frewsburg Water District investigation in 1992 and 1993. NYSDEC leachate sampling identified concentrations of vinyl chloride (960 secondary dilution [D] micrograms per liter [µg/L]) and 1,2-dichloroethene (1,2-DCE)(1400D µg/L) well above Contract Required Detection Limits (CRDLs) in leachate seeping from the northwestern portions of the western cell of the landfill. The level of vinyl chloride indicated a potential for the leachate material to be a characteristic hazardous waste based on toxicity (NYSDEC, 1992c).

The Vac Air Alloys remedial investigation indicated that groundwater and soil at the Vac Air Alloys facility is contaminated with the chlorinated solvent trichloroethene (TCE) and its degradation products vinyl chloride and 1,2-DCE, contaminants similar to those detected in Carroll Town Landfill leachate. These same contaminants were also detected sporadically in Frewsburg Water District Water Supply Wells 1 and 2a (Conestoga Rovers and Associates, 1994). The Frewsburg Water District Investigation was performed after the Vac Air Alloys remedial investigation to locate a sand and gravel aquifer of sufficient yield to replace the Water District's operating Supply Well No. 4. The location selected was approximately 700 feet southwest of the Carroll Town Landfill (Moody and Associates, 1993).

ABB-ES conducted a site walkover and records search in May 1995. Because the records search did not develop the data necessary to make a reclassification recommendation, ABB-ES conducted field investigation activities in September and October 1996. These activities included collecting and analyzing two surface water samples, six leachate samples, and two surface soil/waste samples. In addition, nine test pit soil/waste samples were collected from five excavated test pits and three subsurface soil samples were collected from four soil borings that were installed and completed as monitoring wells. ABB-ES also collected groundwater samples from the four new monitoring wells, the water supply well, and two monitoring wells associated with the water supply well. NYTEST Environmental, Inc. (NYTEST) analyzed the samples for Target Compound List (TCL) volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs); pesticides; polychlorinated biphenyls (PCBs); Target Analyte List (TAL) inorganics; Toxicity Characteristics Leaching Procedure (TCLP) VOCs, SVOCs, and inorganics; and/or the characteristics of

ignitability, corrosivity, and reactivity. Only test pit soil/waste samples were analyzed for all parameters. The remaining samples were analyzed for selected parameters (see Section 3.0).

Groundwater levels taken during field activities indicate groundwater flow to the southwest towards the water supply well. Historical information indicated groundwater flow to the north and northwest, towards Conewango Creek. It is likely that groundwater flow direction has been influenced and potentially redirected by initiation of pumping activities in January 1995.

Prior to sampling, surface water and most leachate samples were field screened with a Horiba U-10 Water Quality Meter for the parameters of pH, temperature, conductivity, turbidity, dissolved oxygen content, and salinity. Three leachate samples did not receive field screening due to limited leachate volume. Test pit soil/waste and subsurface soil samples were screened for VOCs with a photoionization detector (PID) and for vinyl chloride and TCE with Draeger tubes. Field screening results are presented on field data records in Volume II of this report.

Laboratory analytical results for surface water and leachate samples were compared to NYSDEC Class C Surface Water Regulations (NYSDEC, 1994a). Surface water samples did not contain VOCs; however, leachate samples did contain TCE, toluene, ethylbenzene, and xylenes above NYSDEC standards. In addition, the concentration of vinyl chloride (630 µg/L) exceeded the TCLP regulatory level (200 µg/L). The concentration of 1,2-DCE was also well above the Contract Required Detection Limit (CRDL). Exceedances of surface water regulations for organic compounds were identified in samples collected from locations in the northwest portion of the western landfill cell.

Analytical results of test pit soil/waste samples and subsurface soil samples were compared to NYSDEC Soil Cleanup Objectives and estimated soil background concentrations (NYSDEC, 1994b). Concentrations of acetone, 2-butanone, xylene, and chrysene exceeded their respective cleanup objectives in at least one sample. The majority of contamination was detected in samples collected from test pits located in the northwestern portion of the western landfill cell.

Groundwater analytical results were compared to NYSDEC Class GA Groundwater Quality Standards (NYSDEC, 1994a) and New York State Department of Health (NYSDOH) Maximum Contaminant Levels (MCLs). The VOCs vinyl chloride and 1,2-DCE were detected in MW-102 at levels exceeding both standards. Acetone was also detected in all wells sampled, including Water Supply Well No. 5; however, concentrations were below standards in each sample.

A solid waste is regulated as a hazardous waste if it exhibits a characteristic of corrosivity, reactivity, ignitability, or toxicity. If the material is specifically referenced in state or federal regulations, it is a "listed hazardous waste". If the material is shown through laboratory testing to exhibit a characteristic of corrosivity, reactivity, ignitability, or toxicity, the material is referred to as a "characteristic hazardous waste". Through the data developed during the PSA investigation at the Carroll Town site, ABB-ES confirmed that listed hazardous wastes as defined by 6 New York Code of Rules and Regulations (NYCRR) Part 371 have been disposed of and remain on-site. The hazardous wastes have also been determined to pose a significant threat to human health and the environment as defined by 6 NYCRR Part 375. VOC contamination detected in monitoring well MW-102 is believed to be migrating toward the Frewsburg Water Supply well. These VOCs pose a significant threat to human health if they contaminate the public water supply. Based on this determination, ABB-ES recommends that the site be reclassified from "P" to Class 2 (see Table 1).

TABLE 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

January 30, 1997

SITE INVESTIGATION INFORMATION

1. SITE NAME	2. SITE NUMBER	3. TOWN/CITY/VILLAGE	4. COUNTY
Carroll Town Landfill	907017	Town of Carroll	Chautauqua

5. REGION

6. CLASSIFICATION

7. LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location)

a. Quadrangle Jamestown

b. Site Latitude 42° 04' 30" Site Longitude 78° 08' 00"

c. Tax Map Numbers Sec 2, Block 1, Lot 55

d. Site Street Address Ivory Road - State Route 62

8. BRIEFLY DESCRIBE THE SITE (Attach site plan showing disposal/sampling locations)

The site occupies approximatley 25 acres of a 305-acre property owned by the Town of Carroll. It consists of two roughly rectangular shaped landfill cells covering approximatly 750 feet north to south and 350 feet east to west. Surface waters at the site flow to and along drianage ditches bordering the tow cells. The drainage ditches come together along the northern boundary of the landfill and form a small stream that flows west to Conewango Creek (3300 feet from site). The site was used as a municipal landfill from the early 1960's to 1979. Sources of waste are alleged to include metal debris from a metals recycling facility and unpermitted diposal of sludge from Jamestown Rendering wastewater treatment facility. Wastes were reportedly disposed on the site in 15- and 55-gallon containers. Several crushed containers were identified during PSA field activities.

a. Area 25 acres b. EPA ID Number None

c. Completed ( )Phase I ( )Phase II (X) PSA ( )RI/FS ( )PA/SI ( )Other

9. Hazardous Waste Disposed (Include EPA Hazardous Waste Numbers)

Unknown

10. ANALYTICAL DATA AVAILABLE

a. ( )Air (X)Groundwater (X)Surface Water ( )Sediment (X)Soil (X)Waste (X)Leachate
( )EPTox (X)TCLP Date Collected: 09/09-13/96 and 10/21-22/96

The following contaminants were detected in significant concentrations in leachate collected from the site: vinyl chloride (630 ug/L) and 1,2-DCE (730 ug/L). In both surface water and leachate samples, concentrations of inorganics were slightly higher than estimated background values. In soil/waste samples, significant concentrations of the VOCs acetone (540J ug/kg), 2-butanone (300J ug/kg), toluene (300J ug/kg), ethylbenzene (1000J ug/kg), and xylenes (3800J ug/kg) were identified. Several SVOCs, three Aroclors, and inorganics were also detected at significant concentrations in test pit soil/waste samples.

b. Contravention of Standards or Guidance Values: Exceedance of Class C Surface Water and Class GA Groundwater Standards and exceedance of NYSDOH MCLs

Compound	Media	Class C Std.	Class GA Std.	NYSDOH MCL	Max. Concentration
Trichloroethene	Leachate	5 ug/L	NA	NA	9 J ug/L
Toluene	Leachate	5 ug/L	NA	NA	30 ug/L
Ethylbenzene	Leachate	5 ug/L	NA	NA	21 ug/L
Xylene	Leachate	5 ug/L	NA	NA	100 ug/L
4-Methylphenol	Leachate	5 ug/L	NA	NA	98 J ug/L
4-Chloro-3-methylphenol	Leachate	1 ug/L	NA	NA	4 J ug/L
bis(2-ethylhexyl)phthalate	Leachate	0.6 ug/L	NA	NA	3 J ug/L
Vinyl Chloride	Groundwater	NA	2 ug/L	2 ug/L	120 ug/L
1,2-dichloroethene	Groundwater	NA	5 ug/L	5 ug/L	39 ug/L

Several inorganics also exceeded NYSDEC standards for surface water and groundwater. This may be due to high levels of naturally occurring inorganics in soils.

11. CONCLUSION

Hazardous wastes were disposed and continue to be present at the Carroll Town Landfill Site. Hazardous wastes (listed and characteristic) were identified in site leachate samples, test pit soil/waste samples, and groundwater samples. A review of site geology and hydrogeology determined waste poses a significant threat to human health and the environment as per 6 NYCRR Part 375 by potentially contaminating the Frewsburg Water Supply Well located 700 feet downgradient of the site.

12. SITE IMPACT DATA

a. Nearest Surface Water: Distance 0 ft. Direction On-Site Classification None Given

b. Nearest Groundwater: Depth 0 ft. Flow Direction Southwest ( )Sole Source ( )Primary (X)Principal

c. Nearest Water Supply: Distance 700 ft. Direction Southwest Active (X)Yes ( )No

d. Nearest Building: Distance 800 ft. Direction Southwest Use Highway Department

e. In State Economic Development Zone? ( )Y (X)N

f. Crops or livestock on site? ( )Y (X)N

g. Documented fish or wildlife mortality? ( )Y (X)N

h. Impact on special status fish or wildlife resource? ( )Y (X)N

i. Controlled Site Access? ( )Y (X)N

j. Exposed hazardous waste? (X)Y ( )N

k. HRS Score NA

l. For Class 2: Priority Category

Town of Carroll	5 West Main Street, Frewsburg, New York 14738	(716) 569-5365

16. PREPARER

Gina L. Gulseth, Environmental Engineer, ABB Environmental Services

Signeture Date

Name, Title, Organization

17. APPROVED

Signature Date

Name, Title, Organization

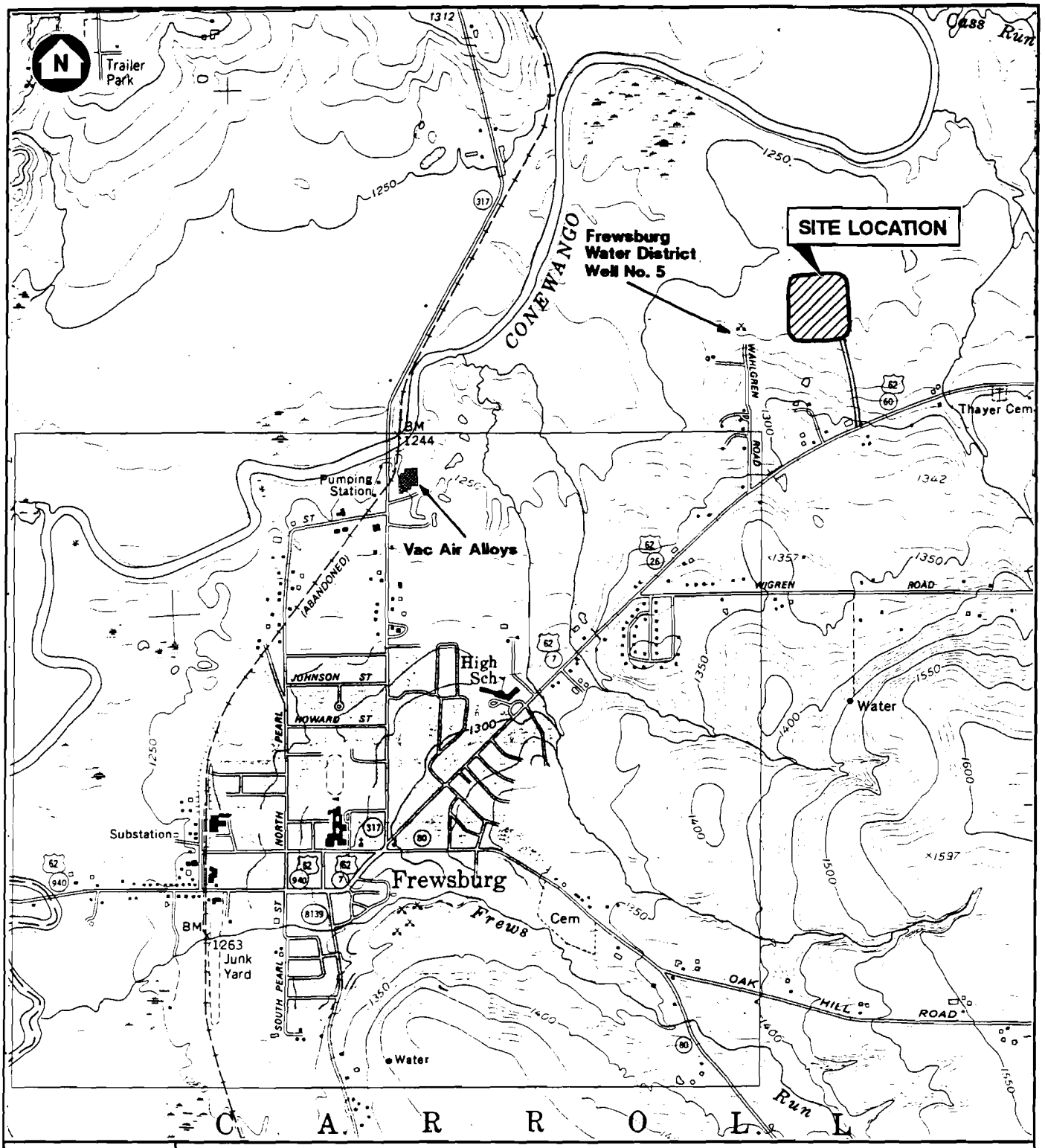
1.0 PURPOSE

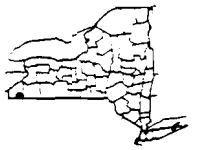
ABB Environmental Services (ABB-ES) is submitting this Preliminary Site Assessment (PSA) Report to the New York State Department of Environmental Conservation (NYSDEC) for work performed at the Carroll Town Landfill site in the Village of Frewsburg, Town of Carroll, New York (Figure 1). This report was prepared in response to Work Assignment No. D002472-23 (NYSDEC, 1995b), and in accordance with the requirements of the November 1989 NYSDEC Superfund Standby Contract No. D002472 and its July 1993 Supplemental Agreement No. 1 between NYSDEC and ABB-ES.

The Carroll Town Landfill site , Site No. 907017, is a suspected inactive hazardous waste site currently classified by NYSDEC as a "P" (i.e., potential) site because there is insufficient information to determine whether wastes disposed of at the site are hazardous wastes and whether the wastes pose a potential significant threat to public health or the environment (NYSDEC, 1992a).

The purpose of this PSA is to provide the information necessary for NYSDEC to reclassify the site according to the following categories:

Class 1	Hazardous waste constitutes a significant threat to public health or the environment and causes, or presents an imminent danger of causing irreversible or irreparable damage to public health or the environment.
Class 2	Hazardous waste sites presenting a significant threat to public health or the environment; defined by NYSDEC as sites that had a release(s) resulting in violation of NYSDEC environmental quality standards and guidelines.
Class 3	Hazardous waste sites not presenting a significant threat to public health or the environment.
Delist	Sites where hazardous waste disposal is not documented.





QUADRANGLE LOCATION

SOURCE: NYS DEPARTMENT OF TRANSPORTATION 7.5-MINUTE SERIES QUADRANGLE; JAMESTOWN, NEW YORK, 1978

SITE NO.: 907017
LOCATION: VILLAGE OF FREWSBURG
TOWN OF CARROLL
CHATAUQUA COUNTY

SCALE IN FEET

0 2000 4000

FIGURE 1
SITE LOCATION MAP
CARROLL TOWN LANDFILL
PRELIMINARY SITE ASSESSMENT
NYSDEC

ABB Environmental Services

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To develop the data necessary to recommend reclassification, environmental sampling and subsurface investigations were performed to:

- confirm the existence of documented on-site hazardous waste disposal as defined in 6 New York Codes, Rules, and Regulations (NYCRR) Part 371; and

- establish whether hazardous waste disposal at the site constitutes a significant threat to public health and the environment as defined in 6 NYCRR Part 375.

The PSA field investigation included the following activities:

- Collecting and analyzing nine subsurface soil/waste samples from five test pits, three subsurface soil samples from four test borings, two surface soil/waste samples, two surface water samples, and six leachate samples to provide data to assess whether materials disposed of at the site are hazardous waste as defined by 6 NYCRR Part 371.

- Installing four groundwater monitoring wells in the test borings, then sampling the new wells, a water supply well, and two associated monitoring wells for comparison of analytical results to New York State (NYS) Class GA groundwater quality standards, set forth under 6 NYCRR Parts 700-705 (NYSDEC, 1994a), to establish whether there has been a contravention of these standards and whether the site poses a significant threat to public health and the environment as defined in 6 NYCRR Part 375.

- Surveying the site and develop a base map to present the location of environmental samples, test borings/monitoring wells, and major site features.

A summary of field investigations and the results of PSA activities are reported in two volumes. Volume I presents the project purpose, a summary of the site background and history, description of the field investigation scope of work, the results of the field investigation activities, and a final recommendation for reclassification of the site. Included in Volume I is Appendix A, U.S. Environmental Protection Agency (USEPA) Site Inspection Form 2070-13. Volume II contains field data records, laboratory analytical results, the data quality evaluation report, and the survey control report.

From: Martin Doster
To: Hampston, Edward
Date: Mon, Feb 9, 2004 4:20 PM
Subject: Re: Carroll Landfill

Here are my thoughts...the PRP issuse is a consideration, but not the over-riding consideration. If DOH declares that emergency action is req'd to keep a water supply going, then SSF should be tapped regardless of PRP issues. In the end, the Town (and any other RPs) will be sought out for settlement by DEE and I would leave it to them to figure it out.

I would however, get DEE in the loop now to ensure we are on target.

mld

>>> Edward Hampston 02/09/04 04:03PM >>>
Thanks Marty.

FYI - It looks like we will have a site visit with the consultant, DOH, Maurice and myself on 3/9. Working on a time now. I will invite Town, Frew.WD, and County DOH and I figured plans for water supply would come up again.

I talked to Tom Fenton from Water District in detail on 12/30 about their plans and I guess the stripper near their well by Vac Air had been in works for a while and they have a design and some drawings on system. They were working on funding at the time as the main stumbling block, but it sounded like they would work it out. I did not talk cost with him.

I thought about funding under SSF for water treatment for Carroll LF well, but was concerned about PRP issues and never followed up to get my questions answered. Since the Town owned the landfill causing contamination, I assumed they could not qualify for funding under SSF for treatment on well. However, maybe the Frewsburg Water District is enough of a separate entity. I don't know the details on the VacAir site, but as Town/Water District probably wasn't involved in that site, maybe the PRP status wouldn't apply. Any thoughts based on previous experience?

Thanks.
>>> Martin Doster 02/09/04 02:45PM >>>
Ed,

Heads Up.... I rec'd a call from an attorney assisting the Carroll Water District - Mike Bolander, 716/753-3333 - He is seeking funding to install an air stripper on one of the water supply wells in the district. He initially said that they would install it on Well #1 which is next to the VacAir site in Frewsburg. (As an aside I questioned why they would put it on that well and not Well #5 -the one next to Carroll Landfill).

Anyway, Bolander said they needed a strong letter from the State saying that this was necessary before he could seek a loan/grant from Rural Development (formerly Farmer's Home). I told him that this letter would have to come from the health agencies, either County or State Health. He will be calling Cameron.

However, we did discuss the possibility, assuming DOH writes the letter, that Superfund would be a source to pay for the well modification if deemed necessary.

Therefore, heads up. Cameron may be calling you to discuss... Greg Sutton is the PM for the Vac Air site and can lend some expertise on the issue if you want.

mld

CC: English, Andrew; Moore, Maurice; o'connor, cameron; Sutton, Gregory

From: "Clare Leary" <LearyCF@obg.com>
To: <exhampst@gw.dec.state.ny.us>
Date: 3/8/04 11:21AM
Subject: Re: Town of Carroll Landfill (#9-07-017) Site Visit

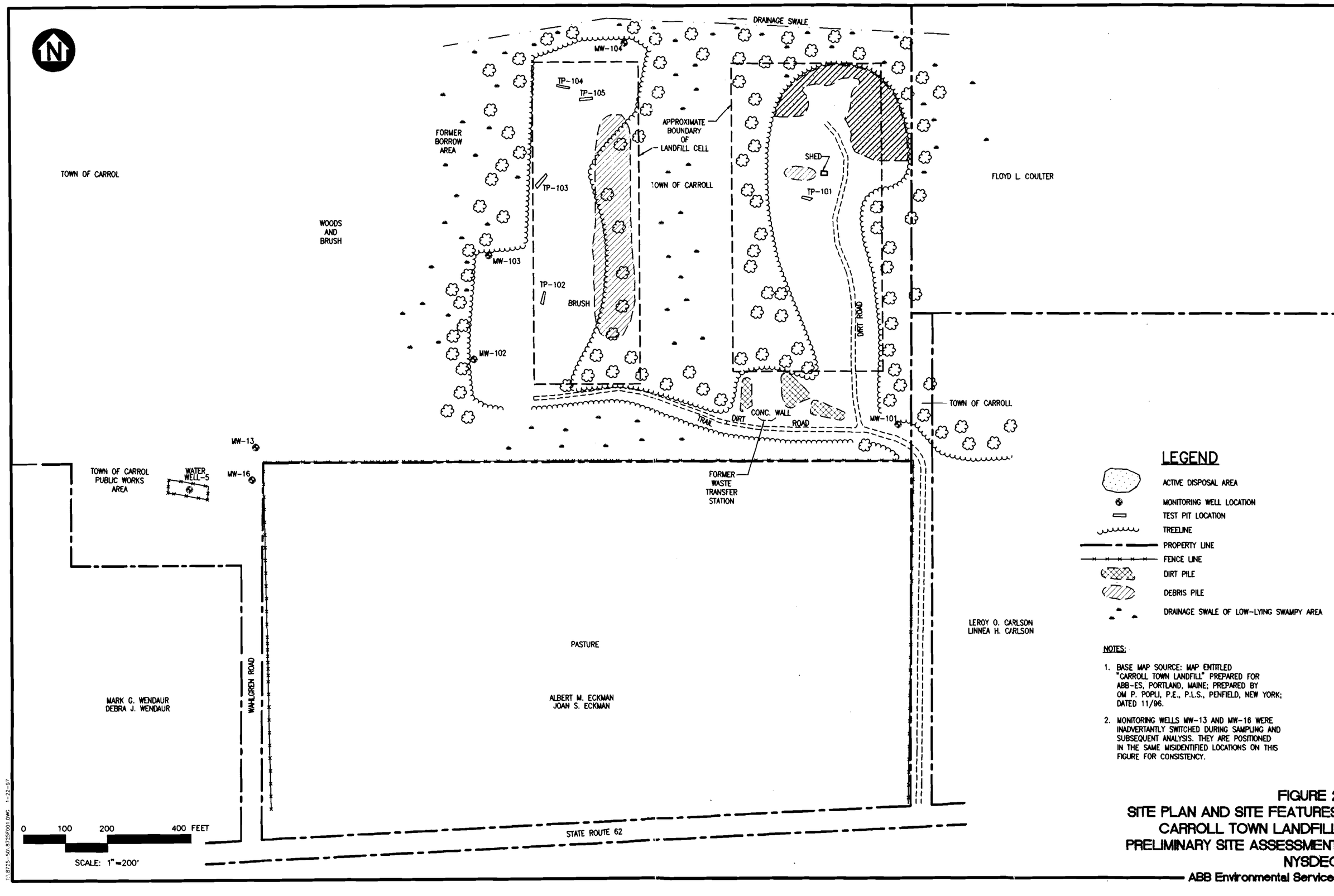
My cell number for tomorrow will be (315) 727-1260. See you then!

Clare F. Leary, P.E.
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
Syracuse, NY 13221
Phone: (315) 437-6100 x2472
Fax: (315) 463-7554
learycf@obg.com

>>> "Edward Hampston" <exhampst@gw.dec.state.ny.us> 03/08/04 10:05AM >>>
My cell phone # is (518) 461-1401. I'll be leaving Albany mid-afternoon today for 10:00 am site visit tomorrow (3/9) at Town Garage adjacent to landfill. Please call me if you need anything or have any questions/problems. Thanks.

Ed Hampston
Division of Environmental Remediation
625 Broadway - 12th Floor
Albany, NY 12233-7013
Phone: (518) 402-9812
Fax: (518) 402-9819
Direct: 2-9827

CC: "David Carnevale" <CarnevDJ@obg.com>



NOTES:

1. BASE MAP SOURCE: MAP ENTITLED "CARROLL TOWN LANDFILL" PREPARED FOR ABB-ES, PORTLAND, MAINE; PREPARED BY OM P. POPLI, P.E., P.L.S., PENFIELD, NEW YORK; DATED 11/96.
2. MONITORING WELLS MW-13 AND MW-16 WERE INADVERTANTLY SWITCHED DURING SAMPLING AND SUBSEQUENT ANALYSIS. THEY ARE POSITIONED IN THE SAME MISIDENTIFIED LOCATIONS ON THIS FIGURE FOR CONSISTENCY.

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FIGURE 2
SITE PLAN AND SITE FEATURES
CARROLL TOWN LANDFILL
PRELIMINARY SITE ASSESSMENT
NYSDEC

ABB Environmental Services

2.0 BACKGROUND INFORMATION

This section contains a description of the site and information gathered during the records search and assessment portion of the PSA. This includes the site histor y and previous investigations, a description of the site walkover, file review information, and a summary of the records search and assessment.

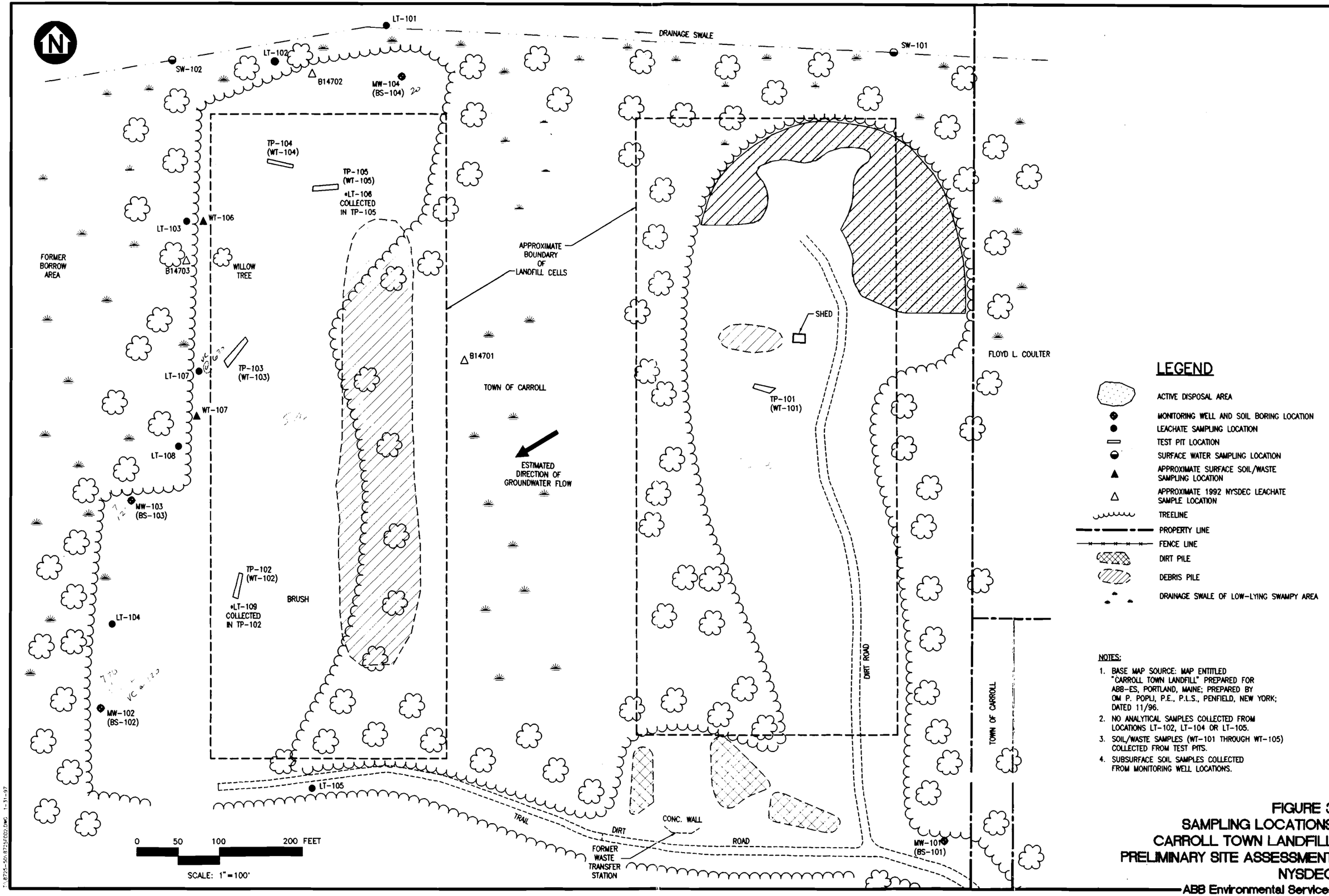
2.1 SITE DESCRIPTION

The Carroll Town Landfill site is located at the end of an unnamed gravel road, approximately 1,700 feet north and downhill of NYS Route 62 (also known as Ivory Road) in the Village of Frewsburg, Town of Carroll, Chautauqua County, New York. The site is located at Section 2, Block 1, Lot 55, a 305-acre property owned by the Town of Carroll (Town of Carroll, 1994). The landfill site is estimated to occupy 25 acres of this property. West of the landfill site, on the same lot but at the northern end of Wahlgren Road, is the Carroll Town Public Works Garage area and Frewsburg Water District water supply well and pumping station. The water supply well site is located approximately 700 feet west of the western landfill boundary.

2.1.1 Site Features

The Carroll Town Landfill is composed of two landfill cell areas separated by a north-south trending drainage swale (Figure 2). The cell areas are roughly rectangular in shape and similar in size, each covering approximately 750 feet from north to south and 300 feet from east to west. Access to the site is by way of an unnamed, gravel road that enters the site at the southeastern corner of the eastern cell. Access to the gravel road is through a locked gate at NYS Route 62.

The western cell and a former waste transfer station located at the southern end of the eastern cell are currently inactive. Disposal activities continue within the northern portion of the eastern cell, where the Town of Carroll disposes wood debris, soil, and concrete rubble. The gravel access roadway enters the cell from the southeast corner and splits into an unused dirt road leading to the former waste transfer station and the western cell, and a dirt road that leads north to the area currently used for disposal. The current disposal area is covered with piles of



NOTES:

1. BASE MAP SOURCE: MAP ENTITLED "CARROLL TOWN LANDFILL" PREPARED FOR ABB-ES, PORTLAND, MAINE; PREPARED BY OM P. POPLI, P.E., P.L.S., PENFIELD, NEW YORK; DATED 11/96.
2. NO ANALYTICAL SAMPLES COLLECTED FROM LOCATIONS LT-102, LT-104 OR LT-105.
3. SOIL/WASTE SAMPLES (WT-101 THROUGH WT-105) COLLECTED FROM TEST PITS.
4. SUBSURFACE SOIL SAMPLES COLLECTED FROM MONITORING WELL LOCATIONS.

FIGURE 3
SAMPLING LOCATIONS
CARROLL TOWN LANDFILL
PRELIMINARY SITE ASSESSMENT
NYSDEC

ABB Environmental Services

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tree stumps, wood chips, grass cuttings, soil, and concrete rubble. Immediately south of this area, in the center of the eastern cell, is a corrugated steel-sided shed (the dump attendants shack), a pile of scrap metal, and the remains of an old tanker truck. The southern and western portions of the eastern cell are covered with grass and small trees.

Except for the current disposal area and former waste transfer station, the eastern cell is fairly even, sloping gently to the north. The topography of the site rises up to the former waste transfer station. The former waste transfer station is constructed of a concrete bulkhead and earthen ramp.

Vehicles bringing in wastes to be dumped drove up to the top of the ramp (approximately 6 feet higher than the surrounding terrain) to discharge wastes into roll-off containers at the base of the concrete bulkhead. Several large soil piles and a removed underground storage tank (UST) were identified near the waste transfer station during PSA field activities. The soil piles and UST were covered with plastic and emanated a fuel-like odor. One of the soil piles was blocking access to the western cell and was relocated by Town of Frewsburg personnel prior to initiating of PSA field activities.

The eastern cell is bounded by drainage swales on the east, north, and west. The eastern and western swales join the northern swale at the boundary of the landfill cell. Water in the swales on the east and north were generally clear and slow moving to stagnant. Water in the swale located along the boundary between the eastern cell and the western cell, was clear to orange in color and stagnant. Approximately three empty, open, 55-gallon containers were observed along the northern and western boundaries of the eastern cell during the site walkover. The drums were not observed during PSA field activities.

The western cell is accessed via an unused dirt road leading from the southwestern corner of the eastern cell and past the former waste transfer station. A line of discarded brush is located in the southern half of the western cell, the remains of a steam boiler are located near the center of the cell, and approximately ten, empty 55-gallon containers were observed on the ground surface along the edges of the landfill cell. Several animal burrows were found in the cell area extending downward into the landfill material. Metal debris was observed in these burrows.

The topography of the western cell is irregular with several flat areas or subcells of differing elevations. The southwestern part of the cell is bounded by a low area which was used as a

borrow pit for the landfill cover soil and the northwestern boundary is a wooded drainage swale and low, wetland area. The eastern boundary of the cell is the drainage swale separating the western cell from the adjacent eastern cell. On the northern limit of the cell is a low, flooded area and drainage swale that receives discharge from the drainage swales surrounding the eastern cell (including the swale between the two cells). This area discharges to the wetland area to the northwest. The southern boundary of the western cell is a wooded swale or low area, with poor drainage, and is sloped to the west toward the town public works area. Water in the low area along the southern boundary of the swale was generally clear to muddy and stagnant. Water in the swale along the northwestern boundary and in the northern flooded area was clear to orange in color and stagnant.

2.1.2 Surrounding Land Use

The Carroll Town Landfill is surrounded by active and inactive farmland, wooded areas, wetlands, and private homes. The Town of Carroll Public Works area and Frewsburg Water District well field is located approximately 700 feet west of the site (see Figure 2). A review of aerial photos showed that the nearest private homes are located 1,200 feet south and uphill of the site and 1,200 feet west and uphill of the site. The nearest city with a population greater than 1,000 is Jamestown, New York, located approximately 5 miles northwest of the site.

2.1.3 Topography

The Carroll Town Landfill site is located on a northwest-facing, gently sloping hillside. The site is in the Allegheny Plateau physiographic province of NYS (U.S. Department of Agriculture [USDA], 1994) and lies approximately 1,250 feet above mean sea level, approximately 40 to 50 feet lower than NYS Route 62 to the south (New York State Department of Transportation [NYSDOT], 1978). The site is composed of two roughly rectangular disposal areas, each surrounded by drainage swales or ditches. The ground surface of the eastern cell is estimated to range from 1 to 4 feet above the surrounding drainages. The topography of the western cell is more uneven, ranging from approximately 1 to 10 feet above the surrounding drainages. The cell areas are generally flat-topped or irregular with no engineered grading to promote drainage. The topography of the cells is broken by surficial wood debris piles and occasional concrete rubble and metal debris piles. An area west of the western landfill cell is reported to have been used as a borrow area for cover soil and its topography slopes downward and away from the landfill.

The drainage swales surrounding the cells join along the northern boundary of the landfill and generally continue in a northwesterly direction toward Conewango Creek. The drainage swale along the southern boundary of the western cell appears to continue westward toward the nearby town public works area before turning northward on the west side of the borrow area. The town public works area is located at approximately 1,260 feet above mean sea level, only 10 feet higher than the site (see Figure 1).

Northwest of the landfill, the slope of the topography decreases toward Conewango Creek to form a broad floodplain. The elevation of Conewango Creek is approximately 1,235 feet above mean sea level.

2.1.4 Climate

The site area has a humid-continental climate; the mean annual air temperature is about 49 degrees Fahrenheit (°F) and the total annual precipitation is about 39 inches (USDA, 1994). Approximately one-half of the precipitation is used to meet evapo-transpiration demands; the remainder is available for groundwater recharge and overland runoff (U.S. Geological Survey [USGS], 1966). In 1992, the annual precipitation and temperature for Jamestown, New York was 50.14 inches and 44.4° F, respectively (Conestoga Rovers and Associates, 1994).

2.1.5 Surface Water Hydrology

The surface waters at the Carroll Town Landfill site flow to and along drainage swales bordering the two landfill cells. The drainage swales come together along the northern boundary of the landfill to form a small meandering stream that flows west to Conewango Creek approximately 3,300 feet from the site (USDA, 1994). The drainage of Conewango Creek is southward into the Allegheny-Ohio-Mississippi River System (USGS, 1966). The Conewango Creek valley is relatively flat, with a gradient of less than two feet per mile. The creek meanders because of this low gradient (USDA, 1994). Conewango Creek is the principal drainage system for Chautauqua County.

Conewango Creek is classified as a NYS Class C surface water body (NYSDEC, 1992d). It is not known to be used for water supply or any other purpose. The creek exits NYS approximately 6 miles south of the site, entering Warren County of Pennsylvania. The Carroll

Town Landfill site is not located in a 100- or 500-year flood plain (Federal Emergency Management Agency [FEMA], 1982).

2.1.6 Critical Habitats and Endangered Species

There are five freshwater wetlands within 2 miles of the site located along drainageways of Conewango Creek (NYS Natural Heritage Program, 1995). Wetlands are classified in NYS into four separate classes according to their ability to perform wetlands functions and provide wetlands benefits as detailed in 6 NYCRR Part 364 (Wart, 1995). Class I wetlands have the highest rank and ranking descends through Class II, Class III, and Class IV. The five wetlands and their classification are summarized in the following table.

NYS WETLANDS IN VICINITY OF SITE

WETLAND ID	WETLAND NAME	WETLAND CLASS	COMMENTS
JA-1	Doloff Road I Wetland	I	Upstream of site
JA-6	Frewsburg I Wetland	I	Adjacent and downstream of site
JA-9	Peck Settlement Swamp	I	Upstream of site
JA-10	Frewsburg II Wetland	II	Downstream of site
IV-3	Cass Run Swamp	I	Upstream of site

Of the wetlands located within 1 mile of the site, only wetland JA-6, a Class I wetland, is adjacent to the site. The wetland is located directly northwest of the Carroll Town Landfill. Surface water draining from the site discharges to this wetland before ultimately draining into Conewango Creek. This wetland is described as habitat for several animal species including woodcock, mallards, redwings, great blue heron, ruffed grouse, green heron, chickadee, beaver, muskrat, gray fox, mink, raccoon, opossum, skunk, white tail deer, cotton tail rabbit, fox squirrel, gray squirrel, and red squirrel. The NYSDEC description for this wetland noted the discharge of landfill leachate to this habitat (NYSDEC, 1983).

The only threatened wildlife species identified by NYS in the vicinity of the site is the osprey (Conestoga Rovers and Associates, 1994).

There are no known sensitive habitats within 3 miles of the site. The closest sensitive habitat to the site is on the Stillwater Creek near Spencer Road (more than 3 miles from landfill), containing the species silver shiner (*notropis photogenis*), an unprotected, NYS S-2 ranked

species (NYS Natural Heritage Program, 1995). The Stillwater Creek enters Conewango Creek approximately 2.7 miles downstream of the site. Two additional sensitive areas are located along Conewango Creek between Frewsburg and the Pennsylvania Border. One area is located 4.3 miles from the site and is a shrub swamp (NYS Rank S-5), and the other area is a Floodplain Forrest Community site 4.7 miles from the site (NYS Rank S-2/S-3).

2.2 SITE HISTORY

The Carroll Town Landfill site is the location of a former municipal landfill located in the Village of Frewsburg, Town of Carroll, New York. The landfill operated from the early 1960s to 1979. NYSDEC Region 9 files indicate that industrial wastes were allegedly disposed in the landfill during the period of operation. Inspections by NYSDEC conducted in April 1992 reported partially buried 55-gallon containers at the site (NYSDEC, 1992a; Doster, 1993). Sources of industrial waste are alleged to include metal debris and metal turnings by Vac Air Alloys, a metals recycling facility located in Frewsburg (NYSDEC, 1977) and unpermitted disposal of sludge from the Jamestown Rendering wastewater treatment facility (NYSDEC, 1978).

Records show that the landfill was a source of concern to NYS as early as 1973 (Chautauqua County, 1973) due to evidence of open burning, waste disposal in trenches containing water, inadequate cover, and off-site migration of leachate. The 1973 Chautauqua County inspection report noted that an area of the landfill was designated for disposal of industrial waste. During a review of aerial photographs, it was noted that the western landfill cell was the only developed part of the landfill during this period of operation. A Part 360 Solid Waste Disposal Permit for landfill operation expired in 1976 (NYSDEC, 1977). Records indicate that disposal activities continued at the landfill unpermitted until the landfill was closed in 1979 after failure to meet NYS Part 360 solid waste regulations (Doster, 1993; NYSDEC, 1992f).

Alleged failures to meet Part 360 regulations from 1977 to 1979 include:

- Inspections by Chautauqua County Board of Health in approximately December 1976, reported refuse dumped in water pooled at the site; leachate from refuse was observed entering Conewango Creek; refuse was not receiving required daily cover; and the landfill was operating without a valid County Permit (Chautauqua County, 1976).

- Inspections by Chautauqua County Board of Health from January 1977 to March 1977 noted failure to level, compact, and cover wastes as required. In August 1977, the burning of a tire pile (in violation of the County Sanitary Code) and the dumping of wastes in water was observed (State of New York, 1978).

- An inspection report by NYSDEC dated June 24, 1977 notes evidence of on-site burning of refuse, unsatisfactory daily cover, and improper spreading and compaction of refuse (NYSDEC, 1977).

- An inspection report by NYSDEC dated September 7, 1979 notes the presence of leachate, the lack of use of cover material, lack of proper grading, and lack of pest control (NYSDEC, 1979b). The inspection report finds ten separate Part 360 operation permit violations (NYSDEC, 1979c).

On October 2, 1979, NYSDEC issued to the Town of Carroll a consent order stating the landfill was in violation of Article 27 of the New York State Environmental Conservation Law and 6 NYCRR Part 360 (NYSDEC, 1979e). The following specific violations were noted:

- leachate entering drainage ditches and leaving the site;

- refuse protruding from the cover in the former landfill areas and uneven cover with water pooling and ponding in places;

- excessive slopes around the landfill;

- paper blowing around the landfill;

- cover not being placed on all solid waste prior to the end of each day's operation; and

- construction and operation of a solid waste management facility without submitting a complete application as of October 2, 1979.

The Consent Order established a fine of $2,000 with a further potential liability of $20,000 if conditions in the consent order were not met, and included a timetable for addressing the violations (NYSDEC, 1979d).

In June 1979, the Town of Carroll filed a permit to operate a waste transfer station at the site (NYSDEC, 1979a). In December 1979, the town received a permit to operate the landfill as a construction and demolition debris disposal site (Permit No. 07D31) (NYSDEC, 1979f). This permit specifically required that the landfill would not accept wastes from Vac Air Alloys, would not place wastes within five feet of the water table, and would cover completed areas of the landfill with two feet of soil.

The Town of Carroll began waste transfer station operation on October 6, 1979 (Town of Carroll, 1979a), and the landfill remained open for disposal of construction and demolition debris. The former, western landfill cell was closed in May 1980. A letter from the Town of Carroll states that requirements of the Consent Order were being met (Town of Carroll, 1979b).

On April 10, 1990, NYSDEC asked that the Town of Carroll provide written notification that the waste transfer facility had closed (NYSDEC, 1990). The town replied that the facility had closed on March 29, 1986 (Town of Carroll, 1990).

During public meetings for the remedial investigation of the Vac Air Alloys site (Site No. 907016; a Class 2 site) in Frewsburg, citizens attending the meeting alleged that Vac Air Alloys disposed of industrial waste at the Town of Carroll Landfill (NYSDEC, 1992b). Allegations include citizen's reports of having witnessed drums of waste labeled as "trichloroethene" being disposed at the landfill. On June 9, 1992, after NYSDEC sampling detected volatile organic compounds (VOCs) in leachate migrating from the landfill (see Subsection 2.3), NYSDEC notified the Town of Carroll that the landfill was a suspected inactive hazardous waste disposal site.

2.3 PREVIOUS INVESTIGATIONS

Several previous investigations and response actions, described in the following paragraphs, have occurred at or in the immediate vicinity of the Carroll Town Landfill site.

2.3.1 NYSDEC Leachate and 55-Gallon Container Sampling

NYSDEC collected three samples of leachate on April 8, 1992 and one sample of brown, granular solids from a 55-gallon container on April 14, 1992 (NYSDEC, 1992c). Leachate sample locations are shown on Figure 3. The location of the drum that was sampled is not documented. The leachate samples were analyzed for VOCs; the drum sample was analyzed for total cyanide and Toxicity Characteristics Leaching Procedure (TCLP) metals.

Results of the leachate samples are summarized in Table 2. Leachate sample B14703 collected from the northwest corner of the western landfill cell showed the highest concentrations of VOCs. VOCs detected in the samples that are used to assess whether a material is a toxicity characteristic hazardous waste through TCLP analyses include vinyl chloride; 1,2-dichloroethane (1,2-DCA); 1,1-dichloroethene (1,1-DCE); 1,4-dichlorobenzene; chlorobenzene; trichloroethene (TCE); benzene; and tetrachloroethene. Of these VOCs, the concentration of vinyl chloride (960D micrograms per liter [µg/L]) in sample B14703 exceeds the TCLP regulatory limit of 200 µg/L, indicating the potential for this material to be a characteristic hazardous waste based on toxicity. The metal barium (3.24 milligrams per liter [mg/L]) was the only analyte detected in the TCLP extract of the 55-gallon container sample. This barium concentration is less than the TCLP toxicity characteristic hazardous waste regulatory limit of 100 mg/L.

2.3.2 Vac Air Alloys Remedial Investigation

A remedial investigation/feasibility study has been completed for NYSDEC at the Vac Air Alloys site located 6,000 feet west of the Carroll Town Landfill (Conestoga Rovers and Associates, 1994). The Vac Air Alloys Corporation allegedly disposed of industrial wastes at the Carroll Town Landfill (NYSDEC, 1992b). Results of the remedial investigation indicate groundwater and soil at the Vac Air Alloys facility is contaminated with chlorinated solvents, primarily the VOC TCE and its associated degradation products 1,2-dichloroethene (1,2-DCE), vinyl chloride, and 1,1-DCE. Some of the same chlorinated solvents were detected sporadically in Frewsburg Water District Water Supply Wells (Wells 1 and 2a) located within

TABLE 2
PREVIOUS LEACHATE SAMPLE ANALYTICAL RESULTS

CARROLL TOWN LANDFILL
PRELIMINARY SITE ASSESSMENT

PARAMETER (µg/L)	SAMPLE B14701	SAMPLE B14702	SAMPLE B14703	TCLP REGULATORY LIMIT[1]
Vinyl Chloride	--	61D	960D	200
Chloroethane	2	0.3J	5	NR
Methylene Chloride	--	--	0.1J	NR
1,1-Dichloroethene	--	--	4	700
1,1-Dichloroethane	--	1	1	NR
cis-1,2-Dichloroethene	--	380D	1,400D	NR
trans-1,2-Dichloroethene	--	1	3	NR
1,2-Dichloroethane	--	--	1	500
1,2-Dichloropropane	--	--	0.1J	NR
Trichloroethene	--	4	2	500
Benzene	7	0.2J	2	500
Tetrachloroethene	--	--	0.3J	730
Chlorobenzene	4	0.2J	23	100,000
Ethylbenzene	6	0.5J	0.3J	NR
Xylenes (total)	5	0.1J	5	NR
1,4-Dichlorobenzene	10	0.4J	--	7,500
1,2-Dichlorobenzene	3	--	0.5J	NR

Notes:

D = Results determined by secondary dilution
J = Estimated concentration
µg/L = micrograms per liter
-- = not detected
NR = no regulatory limit
[1] TCLP regulatory limits (NYSDEC, 1995a) are shown for comparison purposes only.

300 feet of the Vac Air Alloys facility. In 1991, TCE was detected in these water supply wells above the federal and state Maximum Contaminant Level (MCL) of 5 µg/L. As a result of TCE contamination from approximately 1991 to December 1994, the Water District received water from Water Supply Well No. 4 located 1.5 miles southwest of the Vac Air Alloys Facility.

2.3.3 Frewsburg Water District Investigation

Between December 1992 and March 1993, Moody and Associates, Inc. of Meadville, Pennsylvania performed a hydrogeologic investigation for the Frewsburg Water District to locate a sand and gravel aquifer of sufficient yield to replace the Water District's operating Water Supply Well No. 4 (Moody and Associates, Inc., 1993). The location selected for a replacement water supply well, based on results of 17 test borings (TBs) (TB-1 through TB-17) drilled throughout the Village of Frewsburg, was the Town of Carroll Public Works Garage off Wahlgren Road and immediately southwest of the Carroll Town Landfill. The test borings, drilled with 4.25-inch inside diameter (ID) hollow stem augers, found water-bearing sand and gravel from 29 to 79 feet below ground surface (bgs), with gray weathered shale bedrock below that depth. Four 2-inch ID polyvinyl chloride (PVC) monitoring wells (MWs) (MW-12, MW-13, MW-15, and MW-16) were installed at the selected site, followed by installation of Test Well No. 1, a 6-inch ID aquifer pumping test well screened from 68 to 81 feet bgs. The results of the aquifer pumping test concluded that an 8-inch ID water supply well with a 10-foot slotted screen could be installed at the site and would yield in excess of 200,000 gallons of potable water per day. Analysis of pumping test results yielded an average aquifer transmissivity of 77,969 gallons per day per foot and storativity of 0.00627.

Water quality testing was performed during the hydrogeologic investigation to characterize the aquifer. Groundwater samples were collected from TB-13 during drilling and from the aquifer pumping test well after 95 minutes of pumping and after 25 hours of pumping. Groundwater samples were analyzed for NYS Drinking Water Halocarbons (i.e., VOCs), NYS Drinking Water Aromatics (i.e., VOCs and Semivolatile Organic Compounds [SVOCs]), NYS microextractables (i.e., VOCs), iron, manganese, dissolved solids, hardness, and chloride. VOCs, SVOCs, and iron were not detected. Manganese concentrations ranged from 0.01 to 0.02 mg/L. Dissolved solids, hardness, and chloride concentrations were as high as 539 mg/L, 262 mg/L, and 158 mg/L, respectively. Except for chloride, all test parameters indicated the water quality was good (Moody and Associates, Inc., 1993). The chloride concentrations

were attributed to runoff from the nearby road salt storage pile and/or the brine storage tank maintained at the Public Works Garage.

After completion of the hydrogeologic investigation, the Frewsburg Water District completed Test Well No. 1 as Water Supply Well No. 5. The well screen remained at the interval from 68 to 81 feet bgs. This well began operation in January 1995 and is pumped approximately 11 hours per day at 300 gallons per minute to supply water for the water district.

2.4 SITE WALKOVER

On May 19, 1995, ABB-ES, NYSDEC, New York State Department of Health (NYSDOH), Chautauqua County, and Town of Carroll personnel conducted a site walkover of the Carroll Town Landfill site.

SITE WALKOVER ATTENDEES

NAME	TITLE	AFFILIATION/TELEPHONE
Cornelia B. Morin	Project Manager	ABB Environmental Services (207) 775-5401
Brian K. Butler	Site Manager	ABB Environmental Services (207) 775-5401
Cynthia Whitfield	Environmental Engineer	NYSDEC - Division of Hazardous Waste Remediation (518) 457-9538
Gregory Sutton	Environmental Engineer	NYSDEC - Region 9 Division of Hazardous Waste Remediation (716) 851-7220
Cameron O'Connor	Environmental Health Specialist	NYSDOH - Region 9 Department of Health (716) 847-5500
Steve Johnson	Environmental Health Specialist	Chautauqua County Department of Health (716) 753-4481
Garry Waid	Highway Superintendent	Town of Carroll (716) 569-6161
Tom Fenton	Operator	Frewsburg Water District (716) 569-5365
Dan Sisson	Assistant Operator	Frewsburg Water District (716) 569-5365

The site walkover consisted of viewing the landfill for the purposes of identifying potential monitoring well locations, and viewing groundwater seeps and exposed 55-gallon containers surrounding the landfill. A photoionization detector (PID) brought to the site by ABB-ES for air monitoring showed no levels above background.

The walkover identified that the ditches surrounding the western landfill cell receive landfill leachate observed as orange-colored water and sediment. Visual inspection of the western landfill cell found approximately 10 empty, partially buried or completely exposed 55-gallon containers; most were located at the margins of the cell in the drainage ditches. The cover of the landfill cell is well vegetated; however, the cover is thin and in places has holes or animal burrows extending into the landfilled waste. Approximately three empty, 55-gallon containers were found along the northern and western edges of the eastern landfill cell. The northern half of the eastern landfill cell contained numerous piles of brush, tree stumps, and some concrete blocks. Water was ponding on the eastern cell in the area of these materials. The eastern cell of the landfill remains open for the disposal of construction and demolition debris seven days per month (ABB-ES, 1995b).

2.5 FILE REVIEW

ABB-ES reviewed files at various local, state, and federal agencies and offices to develop information to support a reclassification or delisting and to help prepare the scope of work for PSA field investigations.

On May 18, 1995, Cornelia Morin and Brian Butler of ABB-ES met Mr. Gregory Sutton of NYSDEC Region 9 Division of Hazardous Waste Remediation, to review Region 9 files for the Carroll Town Landfill site. Information regarding the landfill and the surrounding area was obtained from the following offices in the City of Buffalo and in Chautauqua County:

- NYSDEC Region 9 Division of Fish and Wildlife
- Carroll Town Office
- Chautauqua County Soil and Water Conservation District Office

- Frewsburg Water District Office
- Chautauqua County Department of Health

Between May 15 and 17, 1995, Cornelia Morin and Sharon Secovich of ABB-ES reviewed available records at the following offices in Albany, New York:

- Mapping Services Bureau, NYSDOT
- NYSDEC Division of Hazardous Waste Remediation
- NYSDEC Division of Water Resources
- NYSDEC Division of Solid and Hazardous Waste
- NYSDEC Division of Fish and Wildlife, Natural Heritage Program Office

The information collected at these sources is summarized in the site history, site description, and previous investigations sections presented earlier.

2.6 SUMMARY OF DATA RECORDS SEARCH AND ASSESSMENT FINDINGS

Under federal and state regulations for identifying and listing hazardous wastes, a solid waste is regulated as a hazardous waste if it exhibits a characteristic of corrosivity, reactivity, ignitability, or toxicity or is otherwise listed. Federal and state regulations set forth specific criteria for determining if a material exhibits one or more of these characteristics. If a material does exhibit the characteristics, it is commonly referred to as a "characteristic hazardous waste." A solid waste may also be regulated as a hazardous waste if it is a material included on USEPA's or NYSDEC's lists of hazardous waste (6 NYCRR Part 371.4(a)(1))(NYSDEC 1995a). If a material is regulated because of its inclusion on a federal or state list, it is commonly referred to as a "listed hazardous waste."

Previous investigations (Subsection 2.3) identified VOCs in leachate seep samples collected by NYSDEC. The concentration of vinyl chloride in one sample (960D µg/L) showed the potential for leachate from the landfill to meet the definition of a characteristic hazardous waste

based on toxicity; however, actual disposal of spent chlorinated solvents or other VOCs had not been confirmed by available documentation. An alleged source of industrial waste disposed of at the Carroll Town Landfill is the Vac Air Alloys facility located in Frewsburg (NYSDEC, 1992b). Results of the remedial investigation at the Vac Air Alloys site indicated a primary source of soil and groundwater contamination was the disposal of TCE (Conestoga Rovers and Associates, 1994). TCE is a F001 listed hazardous waste, defined as a spent solvent mixture/blend used for degreasing. It contains, before use, a total of 10 percent or more (by volume) of specified chlorinated solvents (NYSDEC, 1995a).

A number of criteria are defined in 6 NYCRR Part 375 for determining whether hazardous waste disposed at a site constitutes significant threat (NYSDEC, 1992e). For purposes of the PSA, significant threat is established by contravention of surface water and groundwater standards.

In the data records search and assessment phase, ABB-ES did not identify sufficient data to make a significant threat determination. However, groundwater and surface water may be affected by wastes disposed in the landfill (ABB-ES, 1995b). Although VOCs were detected in samples collected in drainage ditches around the landfill, the sampling results are insufficient to base a significant threat determination in accordance with 6 NYCRR Part 375 because they do not provide information on media for which there are promulgated standards (i.e, groundwater and a classified surface water body). Groundwater and surface water data collected during PSA field activities are compared to NYS Water Quality Regulations (6 NYCRR Parts 701-705) to establish whether the site poses a significant threat to public health and the environment (NYSDEC; 1992e; 1993b; 1994a).

3.0 SCOPE OF WORK

The site investigation and subsurface investigation programs were designed to collect adequate data to allow a recommendation to delist or reclassify the site. Reclassification of the site requires data documenting evidence of hazardous waste disposal (or no disposal) as per 6 NYCRR Part 371, and data allowing the assessment of the potential threat to human health and the environment as per 6 NYCRR Part 375. Because the data necessary to determine the potential threat to human health and the environment was not available in federal, state, or local files reviewed during Task 1, field investigations were performed as Tasks 3 and 4 of this PSA.

Task 3, Site Investigation, and Task 4, Subsurface Investigation, were performed concurrently at the site. Task 3 consisted of sampling and laboratory analysis of two surface water samples, six leachate samples, and two surface soil/waste samples. In addition, five test pits were excavated and nine test pit soil/waste samples were collected from the test pits. The subsurface investigation involved drilling four soil borings and completing them as monitoring wells. It also included collecting and analyzing three subsurface soil samples from the test borings, four groundwater samples from the new monitoring wells, a groundwater sample from the Frewsburg Water District water supply well, and two groundwater samples from monitoring wells associated with the water Supply Well No. 5. Table 3 presents the sampling and laboratory analysis summary including the number of samples collected from each media, the collection method and location, and the analysis performed for the samples. Surface water, leachate, and surface soil/waste sampling record data sheets; test pit logs; test boring logs; well construction diagrams; monitoring well development logs; and groundwater sampling record data sheets are presented in Volume II.

ABB-ES performed the field investigation in accordance with the scope of work set forth in the Site Work Plan (ABB-ES, 1995b), specifications presented in the Quality Assurance Program Plan (QAPP) (ABB-ES, 1995a), and the site-specific Quality Assurance Project Plan (QAPjP) (ABB-ES, 1995b). The test pits were completed by Marcor of New York, Inc. (Marcor) of Rochester, NY and the test borings and monitoring wells were installed by American Auger and Ditching Co., Inc. (American Auger), of Constantia, NY, subcontracted to, and supervised by, ABB-ES. Analytical samples were submitted to ABB-ES' Environmental Laboratory Approval Program (ELAP)-approved analytical laboratory subcontractor, NYTEST Environmental, Inc. (NYTEST), of Port Washington, NY. Health and safety procedures for

TABLE 3
SAMPLING AND LABORATORY ANALYSIS SUMMARY

CARROLL TOWN LANDFILL
PRELIMINARY SITE ASSESSMENT

MEDIA	NUMBER OF SAMPLES	FIELD SCREENING PARAMETERS/EQUIPMENT	COLLECTION METHOD/LOCATION	ANALYSIS PERFORMED
Surface Water (SW-101 and SW-102)	2	pH, temperature, conductivity, turbidity, and dissolved oxygen content/Horiba U-10 Water Quality Meter; VOCs/PID; vinyl chloride and TCE/Draeger Tubes	Directly into sample container/northern drainage swale.	TCL VOCs and TAL Inorgani
Leachate (LT-101, LT-103, LT-106, LT-107, LT-108, and LT-109)[1]	6	pH, temperature, conductivity, turbidity, and dissolved oxygen content/Horiba U-10 Water Quality Meter; VOCs/PID; vinyl chloride and TCE/Draeger Tubes	Directly into sample container/various locations surrounding and within the boundary of landfill.	TCL VOCs and TAL Inorgani One sample also anayzed f TCL SVOCs and Pesticides/PCBs
Test Pit Soil/Waste (WT-101 and two samples from each location: WT-102 through WT-105)	9	VOCs/PID; vinyl chloride and TCE/Draeger Tubes	Disposable stainless steel spatulas/from test pits excavated within the boundary of landfill.	TCL VOCs, SVOCs, Pesticides/PCBs, and TAL Inorganics; TCLP VOCs, SVOCs, and Inorganics; corrosivity, ignitability, and reactivity
Surface Soil/Waste (WT-106 and WT-107)	2	None	Disposable stainless steel spatulas/from western edge of western cell.	TCLP VOCs, SVOCs, and Inorganics; and corrosivity, ignitability, and reactivity
Subsurface Soil (BS-101, BS-102, and BS-103)	3	VOCs/PID	Split-spoon sampler/soil borings.	TCL VOCs and TAL Inorgani
Groundwater (MW-101 through MW-104 and WW-5, MW-13, and MW-16.	7	pH, temperature, conductivity, turbidity, and dissolved oxygen content/horiba U-10 Water Quality Meter	Bailer or peristaltic pump/monitoring wells. The sample from WW-5 was collected from a tap.	TCL VOCs and TAL Inorgani One sample also analyzed f TCL SVOCs and Pesticides/PCBs.

Notes:

[1] Leachate samples LT-102, and LT-104 collected for field parameters, but not submitted for laboratory analysis. No sample collected from LT-105.

TCL = Target Compound List
TAL = Target Analyte List
VOCs = volatile organic compounds
SVOCs = semivolatile organic compounds
PCBs = polychlorinated biphenyls
TCLP = Toxicity Characteristics Leaching Procedure
PID = photoionization detector
TCE = trichloroethene

all on-site activities are presented in the Health and Safety Plan (HASP) (ABB-ES, 1994) and the site-specific HASP (ABB-ES, 1995b).

The following subsections describe the investigation activities.

3.1 SITE INVESTIGATION

Task 3 consisted of collecting and analyzing two surface water samples, six leachate samples, two surface soil/waste samples, and nine test pit soil/waste samples. Samples were collected during the week of September 9, 1996, except the two surface soil/waste samples (WT-106 and WT-107) which were collected on October 22, 1996. Samples collected were submitted to NYTEST for analysis. Sample locations are identified on Figure 3.

3.1.1 Surface Water Sampling

Surface water sampling was performed to assess the presence or absence of contamination within the northern drainage swale and to compare data to NYS Surface Water Quality Standards, set forth under 6 NYCRR Parts 700-705 (NYSDEC, 1994a). Surface water sample SW-101 was collected from the northern drainage swale northeast and upgradient of the landfill. The second sample, SW-102, was also collected from the northern drainage swale, but northwest and downgradient of the landfill (see Figure 3). At the time of sampling, water in the drainage swale was stagnant. Samples were analyzed at the NYTEST laboratory for Target Compound List (TCL) VOCs and Target Analyte List (TAL) inorganics.

Prior to collecting each sample, field readings for pH, temperature, conductivity, turbidity, and dissolved oxygen content were taken with a Horiba U-10 water quality meter. In addition, the samples were screened for VOCs with a PID and for vinyl chloride and TCE with Draeger tubes. Sample description, location, and additional observations were recorded on surface water/sediment record sheets and are presented in Volume II. Analytical results are presented in Subsection 4.2.1.

3.1.2 Leachate Sampling

Six leachate samples, plus a duplicate sample, were collected for laboratory analysis during PSA field activities to characterize potential contamination. Approximate locations of the leachate samples are shown on Figure 3. Leachate sample LT-101, more representative of a surface water sample than a leachate sample, was collected from the northeast corner of the western cell, in the northern drainage swale. Sample LT-103 and the duplicate, were collected from the swampy area west of the western cell where orange-colored leachate was observed seeping from the surface. Sample LT-107 was collected from a small pit excavated on the western margin of the western cell during field activities. Sample LT-108 was collected from the western swampy area where orange-stained sediment was noted. This sample may be more representative of a surface water sample than a leachate sample. Two of the samples, LT-106 and LT-109 were collected from leachate that accumulated in test pits TP-105 and TP-102, respectively, during excavation. Prior to collecting leachate samples, field readings for pH, temperature, conductivity, turbidity, and dissolved oxygen content were taken with a Horiba U-10 water quality meter. The samples were also screened for VOCs with a PID and for vinyl chloride and TCE with Draeger tubes. No field readings were taken for samples LT-105, LT-106, and LT-109 due to limited leachate volume or an excessive amount of debris in the leachate. Field readings are included on the leachate field data record sheets presented in Volume II.

Sample locations LT-102, LT-104, and LT-105, did not provide adequate volume for collection of a laboratory analytical sample.

Leachate samples were sent to NYTEST for analysis of TCL VOCs and TAL inorganics. Leachate sample LT-106 was also analyzed for TCL SVOCs, pesticides, and polychlorinated biphenyls (PCBs).

Analytical results from the six leachate samples collected and the duplicate are presented in Subsection 4.2.2.

3.1.3 Surface Soil/Waste Sampling

Two surface soil/waste samples (WT-106 and WT-107) were collected to assess the potential for human and ecological exposure to contaminants by contacting on-site surface materials. The samples were collected from the approximate locations shown on Figure 3 using a

stainless steel spatula, and were submitted to NYTEST for TCLP analysis. The sample locations were added by NYSDEC personnel after environmental sampling activities were completed, to characterize waste found at the surface at the landfill.

Sample WT-106 was collected from below an exposed drum of metal turnings and was composed of a brown, gravelly sand. Sample WT-107, consisting primarily of a white, greasy, lubricant-type material, was collected from an area of surface debris that included rusted nails, glass, and residential waste. Sample description, location, and additional observations were recorded on surface soil sample record data sheets (Volume II). Analytical results are presented in Subsection 4.2.3.

3.1.4 Test Pit Soil/Waste Sampling

Five test pits were excavated by Marcor during PSA field activities to characterize waste and determine if previous disposal activities impacted soils at the landfill. Two soil/waste samples were collected from each test pit with the exception of test pit (TP)-101 where only one sample was collected due to a lack of obvious visual contamination. Samples were collected from areas in the test pits that appeared to be the most contaminated based on visual observation and field screening. Prior to sampling, each location was screened for VOCs with a PID and for vinyl chloride and TCE with Draeger tubes. The samples were then collected with a disposable stainless steel spatula and sent to NYTEST for analysis of TCL VOCs and SVOCs, pesticides, PCBs, TAL inorganics, TCLP (VOCs, SVOCs, and inorganics), ignitability, corrosivity, and reactivity.

In general, test pits contained items such as old kitchen appliances, bottles and cans, and several crushed 55-gallon and 15-gallon drums. Most of the drums were found in test pits excavated in the western landfill cell and contained machine cuttings and metal turnings. A drum excavated in TP-103 contained black, toner-like ash material, but had a PID headspace of 0 parts per million (ppm). Drum contents with PID headspaces above background were sampled for off-site laboratory analysis.

Test pit locations are shown in Figure 3, and the location of soil/waste samples within the test pits are shown on test pit records included in Volume II. Analytical results are presented in Subsection 4.2.3.

3.2 SUBSURFACE INVESTIGATION

Subsurface investigations at the Carroll Town Landfill consisted of drilling and sampling four test borings and completing them as monitoring wells, developing and sampling the four new monitoring wells, and collecting groundwater samples from three other nearby wells. Test boring and monitoring well installation were completed the week of September 9, 1996. Well development occurred on September 12 through 14, and September 30, 1996. Groundwater sampling was completed on October 21 and 22, 1996. All samples were submitted to NYTEST for analysis.

3.2.1 Test Boring Installation

Four test borings were completed at the site to sample subsurface soils outside of the physical boundary of the landfill and to install monitoring wells. Soil borings were drilled and sampled, then completed as monitoring wells. Soil boring BS-101 was completed as monitoring well MW-101 near the southeast corner of the site; soil boring BS-102 was completed as MW-102 near the southwest corner of the western landfill cell; soil boring BS-103 was completed as MW-103 west of the western cell; and soil borings BS-104 was completed as MW-104 at the northeastern corner of the western cell. Figure 3 shows the locations of the soil borings/monitoring wells.

Soil borings were advance by American Auger using 4.25-inch ID hollow-stem augers. The borings were sampled continuously at 2-foot intervals to completion using a 2-inch outside diameter, split-spoon sampler driven by a 140-pound hammer dropped 30 inches. This procedure follows the American Standard for Testing and Materials (ASTM) Standard D-1586. Each boring was advanced 30 feet bgs as per the Work Plan, with the exception of BS-103 which was advanced 32 feet bgs in order to set the screen for this well completely in the sand and gravel formation.

ABB-ES personnel visually examined the soil as each split-spoon sampler was opened. A PID was used to screen the soil samples for the presence of VOCs and samples were described using the Unified Soil Classification System (USCS). Sample description and classification, PID readings, split-spoon sampler blow counts, and drilling observations were recorded on the exploration boring logs which are in Volume II.

In general, soils encountered at the site consisted of dense, sandy silts underlain by fine to medium sands and gravels. Sands and gravels were identified below the silt in BS-102 and BS-103, but not in BS-101 or BS-104. The two latter locations were composed of very dense sandy silt to completion at 30 feet bgs. There was no unusual soil staining or odors noted while drilling at any of the locations. Samples were collected at BS-101, BS-102, and BS-103 for off-site laboratory analysis of VOCs and inorganics. A duplicate sample was collected from BS-101. The samples at BS-101 (from 10-12 feet bgs) were collected from near the top of the silt layer water table. The samples at BS-102 (from 24-26 feet bgs) and BS-103 (from 14-16 feet bgs) were collected from near the top of the sand and gravel aquifer. No sample was collected from BS-104 due to a lack of obvious contamination (visual and field screening). Analytical samples were taken from split-spoon intervals collected directly below the silt and clay or sand and gravel water tables, as per the work plan. Subsection 4.2.3 presents subsurface soil sampling analytical results.

3.2.2 Monitoring Well Installation and Groundwater Sampling

Four monitoring wells (MW-101 through MW-104) were installed in the respectively numbered soil borings and sampled to provide groundwater data for comparison to NYS Groundwater Quality Standards, set forth under 6 NYCRR Parts 700-705 (NYSDEC, 1994a), and evaluation of significant threat to public health or the environment as defined by 6 NYCRR Part 375.

Monitoring Well Installation. Four test borings were installed at the Carroll Town Site and completed as monitoring wells. The following table presents the completed well installation details.

MONITORING WELL INSTALLATION DETAILS

MONITORING WELL	TOTAL DEPTH OF BORING[1]	TOTAL DEPTH OF WELL[1]	SCREENED INTERVAL[1]	RATIONALE
MW-101	30	16	6-16	Installed to assess groundwater quality upgradient of the site. Well is cross-gradient of the site.
MW-102	30	30	20-30	Installed to assess groundwater quality between the site and the Frewsburg water supply well. Well is downgradient

MONITORING WELL INSTALLATION DETAILS

MONITORING WELL	TOTAL DEPTH OF BORING[1]	TOTAL DEPTH OF WELL[1]	SCREENED INTERVAL[1]	RATIONALE
				of the western cell.
MW-103	32	31.7	21.7-31.7	Intended to assess groundwater quality downgradient of the western cell. Location changed by NYSDEC and ABB personnel. Well is downgradient of the western cell and between the site and the Fewsburg water supply well.
MW-104	30	19	9-19	Installed to assess groundwater quality downgradient of the eastern cell. Well is upgradient of the western cell.

Note:

[1] feet bgs

Monitoring wells were constructed with 2-inch ID, threaded, flush-joint, Schedule 40 PVC and 10-foot lengths of 0.010-inch slotted Schedule 40 PVC well screens. The well screens at MW-101 and MW-104 were placed to intercept the upper water table identified in the sandy silt formation. The well screens at MW-102 and MW-103 were placed entirely within the sand and gravel formation encountered below the silt layer to prevent cross-contamination between the two formations. A silica sand filter pack was placed around the well screen to 2 feet above the top of the screen. A 2-foot bentonite slurry seal was placed above the sand filter pack, followed by bentonite-cement grout to fill the remaining annular space. The wells were completed with 2.5-foot protective steel casings with locking covers. Well construction details are provided on well construction diagrams included in Volume II. Monitoring wells were installed following the procedures described in Subsection 4.7 of the Program QAPP (ABB-ES, 1994).

Monitoring Well Development. Monitoring wells were developed by ABB-ES, American Auger, and NYSDEC personnel using pump and surge techniques and/or bailing. Well development purge water was discharged to the ground surface. Well development was considered complete when the parameters of temperature, pH, and specific conductivity were within ten percent of the previous measurement and turbidity measurements were less than 50 nephelometric turbidity units (NTUs). At locations MW-101 and MW-104, although the wells were pumped and/or bailed and surged for several hours, turbidity measurements of less than

50 NTUs were not verified as monitored by NYSDEC personnel. Monitoring well development records are presented in Volume II of this report.

Groundwater Sampling. The groundwater sampling and analysis program consisted of collecting samples from the four new monitoring wells in addition to the collection of samples from Water Supply Well No. 5 (WW-5) and two associated monitoring wells (MW-13 and MW-16). Sampling activities followed the QC procedures for sample handling, tracking, and shipping presented in Section 5.0 of the QAPP (ABB-ES, 1995a). The monitoring wells were purged with a dedicated Teflon bailer or a peristaltic pump prior to sampling until field measurements of pH, temperature, specific conductivity, and turbidity stabilized. At least three well volumes were purged from each well. Wells MW-101 and MW-104 were allowed to settle following purging and prior to sampling. Turbidities of less than 50 NTUs were achieved at each location during sampling. Groundwater samples were collected for analysis of TCL VOCs, and TAL inorganics using a dedicated Teflon bailer or a peristaltic pump and dedicated silicon tubing. Samples collected at WW-5, MW-13, and MW-16 were analyzed for VOCs using low-level analysis methods and at MW-102, samples were also collected for TCL SVOC and pesticide/PCB analysis.

Well and water level measurements were taken before purging and groundwater sampling. The depth from the top of casing to water was measured to the nearest 0.01 foot using an electronic water level indicator, and recorded following procedures described in Subsection 4.6.1 of the QAPP (ABB-ES, 1995a). Groundwater purging and sampling records are presented in Volume II of this report. Analytical results are presented in Subsection 4.2.4.

3.3 Laboratory Analysis and Data Validation

The laboratory analytical program, described in detail in the Site Work Plan (ABB-ES, 1995b), was designed to provide the data necessary to establish whether hazardous wastes, as defined by 6 NYCRR Part 371, are present at the site. In addition, collecting and analyzing surface water and groundwater samples provides the necessary data to evaluate whether the wastes disposed on site pose a significant threat to human health or the environment, as defined by 6 NYCRR Parts 700-705 and 6 NYCRR Part 375. The analytical procedures comply with the NYSDEC Analytical Services Protocols (ASP) (NYSDEC, 1993a).

Surface water, leachate, subsurface soil, test pit soil/waste, and groundwater samples were analyzed for TCL VOCs and TAL inorganics. In addition, one leachate sample (LT-106), one groundwater sample (MW-102), and the test pit soil/waste samples were analyzed for TCL SVOCs and pesticides/PCBs. The test pit soil/waste samples and two surface soil/waste samples were analyzed for TCLP VOCs, SVOCs, and metals and the characteristics of ignitability, corrosivity, and reactivity. Quality control (QC) samples collected included field duplicates and trip blanks. NYTEST generated analytical results in accordance with protocols specified by NYSDEC for the NYS Superfund Program. The QC procedure outlined in the NYSDEC ASP provided a preliminary level of data quality assurance.

Analytical data were validated following procedures set forth in Section 8.0 of the QAPP (ABB-ES, 1995b). Validation was performed on the laboratory deliverables by the project chemist. The analytical protocols generated data of USEPA Contract Laboratory Program Level IV data quality, adequate to support risk assessment, site characterization, evaluations of remediation alternatives, and engineering design.

Analytical results are included in Volume II in three tables:

- Table 1 Laboratory Report of Analysis - presents analytical results and qualifiers as reported by the laboratory
- Table 2 Validation Summary Table - presents analytical results with the appropriate data validation qualifiers
- Tentatively Identified Compounds (TIC) Tables - presents additional compounds not included on the TCL, with the appropriate data validation qualifiers

Analytical data qualifiers appear on each data table in Volume II, as appropriate, and have been applied by the laboratory or data validator. Data Evaluation and Data Usability reports are included in Volume II. Analytical data developed by ABB-ES during the PSA field investigation meet the data quality objectives set forth in the QAPjP (ABB-ES, 1995b) and are suitable for site reclassification.

3.4 ELEVATION SURVEY AND BASE MAP PREPARATION

ABB-ES' survey subcontractor, Om Popli P.E., P.L.S., surveyed the site and exploration locations at the Carroll Town Landfill after field activities were completed. A map of the site was prepared showing the locations of monitoring wells, test pits, and sampling locations and major site features such as access roads and property boundaries. Vertical elevations were surveyed to the nearest 0.01 foot and horizontal locations were surveyed to the nearest 0.1 foot. Horizontal positions were tied to the NYS Plane Coordinate System and vertical elevations were tied to mean sea level, 1929 General Adjustment. (see Volume II).

Surveyed items included the following features:

- horizontal locations and vertical elevations of the four new monitoring wells including top of well riser, top of the protective casing, and the ground surface of the monitoring wells;
- horizontal locations of the two associated monitoring wells of the water supply well and the two associated monitoring wells and vertical elevations;
- horizontal locations and vertical elevations of five test pits;
- horizontal locations and vertical elevations of two surface water and six leachate sample locations established by ABB-ES; and
- location of site features including access roads and property boundaries based on tax map data.

The survey map and accompanying Survey Control Report are included in Volume II.

4.0 SITE ASSESSMENT

The following subsections describe the geology and hydrogeology of the site, present the laboratory analytical results, and provide a contamination assessment summary.

4.1 SITE GEOLOGY AND HYDROGEOLOGY

The geology and hydrogeology of the Carroll Town Landfill site has been characterized from existing sources reviewed in Subsection 2.5 and from site conditions encountered during PSA field activities.

4.1.1 Geology

The Carroll Town Landfill site is located in the Allegheny Plateau physiographic province of NYS near the Village of Frewsburg (USDA, 1994). Overburden at the site is composed, from shallowest to deepest, of glacio-lacustrine silt and silty clay, glacial outwash sand and gravel, and glacial till. Split-spoon samples collected during drilling of test borings confirmed the presence of these formations. Greenish-gray silts and clays were identified at all boring locations. In borings BS-102 and BS-103, the silts and clays were found overlying grayish- to yellowish-brown, well-graded sands and gravels. Locations BS-101 and BS-104 encountered only silts and clays.

Bedrock was not encountered at the site during PSA field activities, but records indicate that the uppermost bedrock formations consist of gray shales with some interbedded siltstone. The formations are also believed to contain a few beds of sandstone and conglomerate and are Devonian in age (Richard and Fisher, 1970). Previous borings near the Carroll Town Landfill site encountered bedrock (weathered shale) at 76 to 81 feet bgs (Moody and Associates, Inc., 1993).

4.1.2 Groundwater Hydrogeology

Groundwater is present in both overburden and bedrock in the vicinity of the site. The main source of water in the overburden beneath the site is a discontinuous sand and gravel

aquifer encountered form approximately 15 feet bgs to the top of the bedrock, often referred to as the Frewsburg Aquifer (USGS, 1966). Groundwater from the Frewsburg Aquifer is used as a private and public drinking water source within 3 miles of the site (Moody and Associates, Inc., 1993). The Frewsburg Water Supply Well No. 5 is screened in this sand and gravel formation from 68 to 81 feet bgs. The well is located 700 feet west of the site at the Town of Carroll Public Works area and serves approximately 750 homes and businesses. An additional 10 private water supply wells are estimated to be within 1 mile of the site and drawing from the Frewsburg Aquifer (ABB-ES, 1995b).

The sand and gravel layer is discontinuous throughout the area and is approximately 5 feet to 60 feet thick where present. It is overlain by thinly interbedded, brown silt and clay, and fine sand. Based on an aquifer pumping test performed on the Frewsburg wells, the Frewsburg Aquifer has been classified by the USGS as a leaky artesian aquifer. The aquifer test suggested that the aquifer is recharged by slow movement of water through the upper confining bed from Conewango Creek and the nearby swampy areas (USGS, 1966).

Historical information obtained during the file review indicated the depth to groundwater in overburden to be 7 to 15 feet bgs, and groundwater flow to the north and northwest, in the direction of Conewango Creek (Moody and Associates, Inc., 1993). Water level measurements taken from on-site monitoring wells during the PSA show groundwater at approximately 2 feet bgs in MW-101 and MW-104, at approximately 5 feet bgs in MW-103, and at 10 feet bgs in MW-102. Water table elevations from MW-101 through MW-104 are presented in the following table.

MONITORING WELL WATER LEVEL DATA

MONITORING WELL	RISER ELEVATION	DEPTH TO WATER (TOR)[1]	RELATIVE WATER ELEVATION	SCREENED LOCATION
MW-101	1261.42	4.04	1257.38	Silt and Clay
MW-102	1256.73	11.96	1244.77	Sand and Gravel
MW-103	1253.36	6.93	1246.43	Sand and Gravel
MW-104	1254.79	4.19	1250.60	Silt and Clay
MW-13	1262.12	17.69	1244.43	Sand and Gravel
MW-16	1265.21	20.95	1244.26	Sand and Gravel

Notes:
TOR = measured in feet from the top of well riser

Based on elevation data above, the water table elevation decreases from northeast to southwest, towards Water Supply Well No. 5. It is highly likely that water table elevations are influenced by pumping of the supply well and the direction of groundwater flow was changed by initiation of pumping in January 1995. The water supply well was not pumping when water level measurements were taken. Results of the water level measurements may be inconclusive because MW-101 and MW-104 are screened in the silt and clay layer, while MW-102 and MW-103 are screened in the sand and gravel layer. The degree of hydraulic connection between these two formations has not been determined.

4.2 ANALYTICAL RESULTS

The following sections summarize the results of the sampling and analysis performed by ABB-ES for the Carroll Town Landfill PSA. Samples collected and submitted for laboratory analysis were analyzed for TCL VOCs, and SVOCs; pesticides; PCBs; TAL inorganics; TCLP VOCs, SVOCs, and metals; and/or the characteristics of ignitability, corrosivity, and reactivity. Volatile and semi-volatile TICs were also reported by the laboratory. Complete analytical data tables, validation information, and the data usability evaluation are presented in Volume II.

4.2.1 Surface Water Analytical Results

Two surface water samples were collected during PSA field activities and analyzed for TCL VOCs and TAL inorganics. Sample SW-101 was collected from the northern drainage swale, northeast or upstream of the site. The second sample, SW-102, was also collected from the northern drainage swale, but northwest or downstream of the site (see Figure 3).

VOCs were not detected in either of the surface water samples. Nineteen inorganic compounds were detected in sample SW-101, and 13 inorganic compounds were identified in sample SW-102. Analytical results for surface water samples are presented in Table 4 along with the NYSDEC Class C Surface Water Standards for comparison.

TABLE 4
SURFACE WATER SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	NYSDEC CLASS C STANDARD	CRDL	SW101	SW102
TCL Volatile Organic Comounds – Medium Level Analysis (µg/L)				
No organic compounds detected				
TAL Inorganic Analytes (µg/L)				
Aluminum	100	200	**2100**	**325**
Arsenic	190	10	12	--
Barium	NS	200	131 J	189 J
Cadmium	**	5	0.56 J	--
Calcium	NS	5000	32500 J	52200 J
Chromium	**	10	8.3 J	--
Cobalt	5	50	4.2 J	**15.6 J**
Copper	**	25	12.5 J	6.9 J
Iron	NS	100	4240 J	18300 J
Lead	**	3	**7.8 J**	--
Magnesium	NS	5000	6510 J	7540 J
Manganese	NS	15	228	1980
Nickel	**	40	7 J	23 J
Potassium	NS	5000	6520 J	6650 J
Selenium	1	5	**9.4 J**	**4.3 J**
Sodium	NS	5000	29500 J	10700 J
Vanadium	14	50	5.4 J	--
Zinc	**	20	24.7	21.9
Cyanide	5.2	10	**11**	--

Notes:

**	=	The standard is calculated for each sample using a formula dependent upon the hardnesss of the sample.
CRDL	=	Contract Required Detection Limit
NS	=	no standard
TAL	=	Target Analyte List
TCL	=	Target Compound List
µg/L	=	micrograms per liter
J	=	estimated value
--	=	not detected

4.2.2 Leachate Analytical Results

Six leachate samples and one duplicate were collected during PSA field activities and submitted for laboratory analysis for TCL VOCs and TAL inorganics. Sample LT-106 was also analyzed for TCL SVOCs, pesticides, and PCBs. Approximate locations of the leachate samples are shown on Figure 3.

Laboratory analysis showed the presence of twelve VOCs: vinyl chloride; 1,1-DCE; 1,2-DCE; 2-butanone; TCE; benzene; 4-methyl-2-pentanone; 2-hexanone; toluene; chlorobenzene; ethylbenzene; and xylenes. The majority of the VOC contamination was identified in samples LT-106, LT-107, and LT-109. Samples LT-101 and LT-103 did not contain the organic compounds mentioned above CRDLs.

Laboratory analysis identified eight TCL SVOCs and one pesticide in sample LT-106. No PCBs were detected. Twenty-two inorganic analytes were detected in the leachate samples; several of the concentrations were above CRDLs. Table 5 presents the results of leachate sample laboratory analysis and the NYSDEC Class C Surface Water Standards for detected contaminants.

4.2.3 Surface and Subsurface Soil/Waste Analytical Results

Nine test pit soil/waste samples and a duplicate, two surface soil/waste samples, and three subsurface soil samples and a duplicate were collected during PSA field activities. The analytical results for these samples are presented in Table 6. TCLP Regulatory Levels are also presented for comparison.

Test Pit Soil/Waste Sampling Results. Test pit soil/waste samples were collected from excavated test pits and analyzed for TCL VOCs and SVOCs; pesticides; PCBs; TAL inorganics; TCLP VOCs, SVOCs, and inorganics; and the characteristics ignitability, corrosivity, and reactivity. The locations of the five test pits are shown on Figure 3.

TABLE 5
LEACHATE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	NYSDEC CLASS C STANDARD	CRDL	LT101	LT103	LT103D	LT106	LT107	LT108	LT109
Cobalt	5	50	--	**13.8 J**	**13.6 J**	**39.1 J**	**8.7 J**	**33.9 J**	**80.2**
Copper	**	25	7.1 J	16.9 J	15 J	**455**	**75.7**	20.4 J	28.5
Iron	NS	100	2050	54900	54400	86400	17400	173000	93400
Lead	**	3	--	15.4	14.7	**371**	**30.7**	**29.1**	**166**
Magnesium	NS	5000	7690	13400	13800	26600	17800	10100	20500
Manganese	NS	15	576	2050	2010	5400	3330	1680	1770
Mercury	NS	0.2	--	--	--	0.62	--	--	0.23
Nickel	**	40	--	106	113	167	29 J	113	96.5
Potassium	NS	5000	6810	7450	8050	11100	12500	8920	13300
Selenium	1	5	--	--	--	--	**5.1**	--	--
Sodium	NS	5000	11700	6390	6340	10100	6070		9900
Thallium	8	10	--	**9.7 J**	--	**14.1**	**11**	**10.2**	--
Vanadium	14	50	--	9.6 J	9.8 J	**27.6 J**	3.6 J	8.4 J	11.5 J
Zinc	**	20	49.3	196	207	**801**	**316**	**248**	**888**
Cyanide	5.2	10	--	--	--	--	--	**285**	--

Notes:

[1]A standard of 5 µg/L is for total non-chlorinated phenolic compounds.
[2]A standard of 1 µg/L is for total chlorinated phenolic compounds.
** = The standard is calculated for each sample using a formula dependent upon the hardness of the sample.
CRDL = Contract Required Detection Limit
G = guidance value
NS = no standard
TAL = Target Analyte List
TCL = Target Compound List
µg/L = micrograms per liter
NA = not analyzed
-- = not detected
J = estimated value
PCBs = polychlorinated biphenyls

TABLE 5
LEACHATE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	NYSDEC CLASS C STANDARD	CRDL	LT101	LT103	LT103D	LT106	LT107	LT108	LT109
TCL Volatile Organic Comounds – Medium Level Analysis (µg/L)									
Vinyl Chloride	NS	10	--	--	--	7 J	630	--	--
1,1-Dichloroethene	NS	10	--	--	--	--	3 J	--	--
1,2-Dichloroethene (total)	NS	10	--	--	2 J	6 J	730	6 J	--
2-Butanone	50	10	--	--	--	11	--	--	--
Trichloroethene	5	10	--	--	--	--	**9 J**	--	--
Benzene	6G	10	--	--	--	2 J	--	--	2 J
4-methyl-2-Pentanone	50	10	--	--	--	3 J	--	--	--
2-Hexanone	50	10	--	--	--	2 J	--	--	--
Toluene	5	10	--	--	--	**30**	4 J	--	4 J
Chlorobenzene	5	10	--	--	--	--	--	--	4 J
Ethylbenzene	5	10	--	--	--	**21**	**9 J**	--	**17**
Total Xylenes	5	10	--	--	--	**100**	**11**	--	**27**
TCL Semivolatile Organic Comounds (µg/L)									
4-Methylphenol	5[1]	10	NA	NA	NA	**98 J**	NA	NA	NA
Naphthalene	50	10	NA	NA	NA	10 J	NA	NA	NA
4-Chloro-3-Methylphenol	1[2]	10	NA	NA	NA	**4 J**	NA	NA	NA
2-Methylnaphthalene	50	10	NA	NA	NA	11 J	NA	NA	NA
Diethylphthalate	50	10	NA	NA	NA	7 J	NA	NA	NA
Di-n-butylphthalate	NS	10	NA	NA	NA	2 J	NA	NA	NA
Butylbenzylphthalate	50	10	NA	NA	NA	3 J	NA	NA	NA
bis(2-ethylhexyl)phthalate	0.6	10	NA	NA	NA	**3 J**	NA	NA	NA
Pesticides and PCBs (µg/L)									
Endrin Aldehyde	0.2	0.1	NA	NA	NA	0.1	NA	NA	NA
TAL Inorganic Analytes (µg/L)									
Aluminum	100	200	--	**5090**	**5340**	**17400**	**2130**	**2980**	**5530**
Arsenic	190	10	--	7.9 J	9.2 J	20.8	--	11.8	37
Barium	NS	200	186 J	576	576	942	515	736	871
Beryllium	1100	5	--	0.26 J	--	--	0.44 J	0.26 J	0.28 J
Cadmium	**	5	0.51 J	0.62 J	0.72 J	**5.3**	0.97 J	--	2.1 J
Calcium	NS	5000	43700	173000	170000	183000	149000	88500	130000
Chromium	**	10	--	--	9 J	47.2	--	--	10

TABLE 6
SURFACE AND SUBSURFACE SOIL/WASTE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	TCLP REGULATORY LEVEL (mg/L)[1]	CRDL	WT101 (3')	WT102 (3')	WT102 (7')	WT103 (3')	WT103 (4')	WT104 (4')	WT104 (6')	WT105 (4')
Pesticides and PCBs (µg/kg)										
delta – BHC	NRL	1.7	--	--	--	--	--	5.6	1.1 J	--
Heptachlor	NRL	1.7	--	--	--	--	--	--	1.1 J	--
Aldrin	NRL	1.7	--	3.1 J	--	--	--	--	--	22
Heptachlor Epoxide	NRL	1.7	--	6.3 J	--	--	--	--	--	1 J
Endosulfan I	NRL	1.7	--	--	--	--	15 J	1.3	4.6	--
Dieldrin	NRL	3.4	--	--	--	--	--	--	3.5 J	25
4,4' – DDE	NRL	3.4	--	--	--	--	--	--	11 J	--
Endosulfan II	NRL	3.4	2.6 J	--	--	--	--	--	5.5 J	--
4,4' – DDD	NRL	3.4	--	--	--	--	--	5.6	6.3 J	--
4,4' – DDT	NRL	3.4	--	--	--	--	--	2.9 J	--	60
Methoxychlor	NRL	17	23	--	--	--	--	--	--	--
alpha – Chlordane	NRL	1.7	--	--	--	--	--	1.3	--	--
gamma – Chlordane	NRL	1.7	--	--	--	--	--	1.1	--	--
Arodor – 1016	NRL	33	--	--	--	--	--	--	--	--
Arodor – 1254	NRL	33	--	--	--	--	--	--	530	--
Arodor – 1260	NRL	33	100	--	--	--	--	78	--	--
TAL Inorganic Analytes (mg/kg)										
Aluminum	NRL	200	9810	8940	9290	5520	7580	8140	10500	11000
Arsenic	NRL	10	4.3	8.5 J	6.1 J	6.0 J	5.9 J	7.5 J	21.4 J	6.4 J
Barium	NRL	200	113	90.9	118	62.1	81.4	96.7	116	104
Beryllium	NRL	5	0.36 J	0.4 J	0.36 J	0.32 J	0.36 J	0.33 J	0.42 J	0.52 J
Cadmium	NRL	5	0.65 J	--	--	--	0.11 J	0.39 J	0.83 J	0.51 J
Calcium	NRL	5000	8800	3600 J	2360 J	69300 J	40500 J	22400 J	3840 J	8000 J
Chromium	NRL	10	17.6	69.9 J	10.6 J	18.7 J	158 J	26.9 J	30.2 J	17.6 J
Cobalt	NRL	50	8.0 J	9.0 J	7.0 J	6.6 J	18.4	8.5 J	13	21.4
Copper	NRL	25	40.3	139 J	22.2 J	26.8 J	40.8 J	35.9 J	48.9 J	31.2 J
Iron	NRL	100	33000	29600 J	17300 J	14100 J	24600 J	20500 J	32500 J	23700 J
Lead	NRL	3	147	38.3 J	20.2 J	10.8 J	34.9 J	39.2 J	63.1 J	762 J
Magnesium	NRL	5000	4200	3470	3300	3460	6610	3100	3100	4400
Manganese	NRL	15	402	491	778	632	1670	557	385	565
Mercury	NRL	0.2	0.49	0.34	--	--	0.26 J	0.45	0.87 J	0.45

TABLE 6
SURFACE AND SUBSURFACE SOIL/WASTE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	TCLP REGULATORY LEVEL (mg/L)[1]	CRDL	WT101 (3')	WT102 (3')	WT102 (7')	WT103 (3')	WT103 (4')	WT104 (4')	WT104 (6')	WT105 (4')
TCL Volatile Organic Compounds – Medium Level Analysis (µg/kg)										
Chloromethane	NRL	10	--	--	--	--	--	--	--	--
Methylene Chloride	NRL	10	11 J	9 J	16	18	20	4 J	4 J	4 J
Acetone	NRL	10	12 J	--	29	15 J	9 J	21	39	390
Carbon Disulfide	NRL	10	--	--	--	--	4 J	--	--	6 J
2-Butanone	NRL	10	--	--	5 J	--	--	--	8 J	110
Benzene	NRL	10	--	--	--	--	--	--	--	--
Toluene	NRL	10	--	--	4 J	--	5 J	8 J	--	21
Ethylbenzene	NRL	10	--	--	6 J	--	15	9 J	--	110
Total Xylenes	NRL	10	--	--	7 J	--	19	210	11 J	130
TCL Semivolatile Organic Compounds (µg/kg)										
Naphthalene	NRL	330	--	--	--	--	--	--	73 J	270 J
2-Methylnaphthalene	NRL	330	--	--	--	--	--	--	98 J	98 J
Dimethylphthalate	NRL	330	--	--	--	--	--	--	--	--
Acenaphthylene	NRL	330	--	--	--	--	48 J	--	53 J	--
Acenaphthene	NRL	330	--	--	--	--	--	--	95 J	--
Dibenzofuran	NRL	330	--	--	--	--	--	--	81 J	--
Diethylphthalate	NRL	330	--	--	--	--	--	--	42 J	--
Fluorene	NRL	330	--	--	--	--	--	--	190 J	--
Phenanthrene	NRL	330	--	--	--	--	420	44 J	1400	170 J
Anthracene	NRL	330	--	--	--	--	97 J	--	100 J	--
Carbazole	NRL	330	--	--	--	--	150 J	--	110 J	--
Di-n-butylphthalate	NRL	330	--	--	--	--	300 J	--	400	--
Fluoranthene	NRL	330	--	41 J	--	--	1600	72 J	1300	180 J
Pyrene	NRL	330	--	77 J	--	--	1200	61 J	1000	140 J
Butylbenzylphthalate	NRL	330	--	--	--	--	--	77 J	--	--
Benzo(a)anthracene	NRL	330	--	--	--	--	960	--	260 J	63 J
Chrysene	NRL	330	--	--	--	--	1000	44 J	370 J	74 J
bis(2-ethylhexyl)phthalate	NRL	330	190 J	810	84 J	71 J	210 J	810	3200	180 J
Di-n-octylphthalate	NRL	330	--	--	--	--	--	--	1200	--
Benzo(b)fluoranthene	NRL	330	--	--	--	--	670	--	230 J	41 J
Benzo(k)fluoranthene	NRL	330	--	--	--	--	640	--	190 J	42 J
Benzo(a)pyrene	NRL	330	--	--	--	--	780	40 J	210 J	50 J
Indeno(1,2,3-cd)pyrene	NRL	330	--	--	--	--	540	--	170 J	49 J
Dibenz(a,h)anthracene	NRL	330	--	--	--	--	75 J	--	--	--
Benzo(g,h,i)perylene	NRL	330	--	--	--	--	480	--	180 J	49 J

TABLE 6
SURFACE AND SUBSURFACE SOIL/WASTE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	TCLP REGULATORY LEVEL (mg/L)	CRDL	WT105D (4')	WT105 (7')	WT106	WT107	BS101 (10')[2]	BS101D (10')[2]	BS102 (24')[2]	BS103 (14')[2]
TCL Volatile Organic Compounds – Medium Level Analysis (µg/kg)										
Chloromethane	NRL	10	--	56 J	NA	NA	--	--	--	--
Methylene Chloride	NRL	10	--	16 J	NA	NA	16	10 J	9 J	15
Acetone	NRL	10	220	540 J	NA	NA	11 J	7 J	4 J	--
Carbon Disulfide	NRL	10	--	53 J	NA	NA	--	--	--	--
2-Butanone	NRL	10	56	300 J	NA	NA	--	--	--	22
Benzene	NRL	10	--	7 J	NA	NA	--	--	--	--
Toluene	NRL	10	6 J	300 J	NA	NA	--	--	4 J	6 J
Ethylbenzene	NRL	10	79	1000 J	NA	NA	--	--	--	--
Total Xylenes	NRL	10	69	3800 J	NA	NA	--	--	--	--
TCL Semivolatile Organic Compounds (µg/kg)										
Naphthalene	NRL	330	510	56 J	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NRL	330	--	100 J	NA	NA	NA	NA	NA	NA
Dimethylphthalate	NRL	330	--	95 J	NA	NA	NA	NA	NA	NA
Acenaphthylene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Acenaphthene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Dibenzofuran	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Diethylphthalate	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Fluorene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Phenanthrene	NRL	330	--	55 J	NA	NA	NA	NA	NA	NA
Anthracene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Carbazole	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	NRL	330	--	780	NA	NA	NA	NA	NA	NA
Fluoranthene	NRL	330	--	52 J	NA	NA	NA	NA	NA	NA
Pyrene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	NRL	330	--	4100	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Chrysene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
bis(2-ethylhexyl)phthalate	NRL	330	76 J	2100	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	NRL	330	--	100 J	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NRL	330	--	--	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NRL	330	--	--	NA	NA	NA	NA	NA	NA

TABLE 6
SURFACE AND SUBSURFACE SOIL/WASTE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	TCLP REGULATORY LEVEL (mg/L)[1]	CRDL	WT101 (3')	WT102 (3')	WT102 (7')	WT103 (3')	WT103 (4')	WT104 (4')	WT104 (6')	WT105 (4')
Nickel	NRL	40	22.5	56.9 J	16.1 J	20.9 J	242 J	28.7 J	55 J	57.9 J
Potassium	NRL	5000	1130 J	1170	982 J	899 J	904 J	783 J	1100 J	1350
Silver	NRL	10	--	5.6	--	--	--	--	--	--
Sodium	NRL	5000	421 J	319 J	272 J	344 J	307 J	370 J	326 J	356 J
Thallium	NRL	10	11.3	--	--	--	3.8	--	--	--
Vanadium	NRL	50	13.4	14.3	14.6	10.8	15.4	11.7	14.8	15.4
Zinc	NRL	20	231	67.1 J	92.9 J	65.6 J	99.5 J	246 J	202 J	136 J
TCLP Volatile Soil Analysis (mg/L)										
2 - Butanone	NRL	0.05	--	--	--	--	--	--	--	0.02 J
Tetrachloroethene	0.73	0.05	--	--	--	0.01 J	--	--	--	0.01 J
TCLP Semivolatile Soil Analysis (mg/L)										
NO TCLP SEMIVOLATILE COMPOUNDS DETECTED										
TCLP Inorganic Soil Analysis (mg/L)										
Barium	100	10	1.0	1.4	1.7	1.6	1.4	1.0	1.3	1.8
Cadmium	1	0.1	--	--	--	--	0.011	0.008	0.0096	0.0097
Chromium	5	1	--	0.016	0.0075 J	--	0.0096 J	--	0.012	0.008 J
Lead	5	1	0.12	0.22	0.072	--	0.09	0.084	0.43	--
Mercury	0.2	0.05	0.00057	--	--	--	--	--	0.00022	--
Selenium	1	0.1	--	--	--	--	--	--	0.097	--
Silver	5	1	--	--	--	--	--	--	0.012	--
Soil Characteristic Analysis										
Corrosivity (inch/yr)	NRL	0.01	--	--	--	--	--	--	--	--
Ignitability (Degrees F)	NRL	212	--	--	--	--	--	--	--	--
pH	NRL	NDL	6.71	8.66	8.72	9.16	8.87	8.68	8.09	8.44
Reactive Cyanide (ppm)	NRL	1	--	--	--	--	--	--	--	--
Reactive Sulfide (ppm)	NRL	1	--	--	--	--	--	--	--	--
Total Cyanide (mg/kg)	NRL	0.6	--	--	--	--	--	--	--	--

TABLE 6
SURFACE AND SUBSURFACE SOIL/WASTE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	TCLP REGULATORY LEVEL (mg/L)	CRDL	WT105D (4')	WT105 (7')	WT106	WT107	BS101 (10')[2]	BS101D (10')[2]	BS102 (24')[2]	BS103 (14')[2]
TCLP Volatile Soil Analysis (mg/L)										
2-Butanone	NRL	0.05	--	--	--	--	NA	NA	NA	NA
Tetrachloroethene	NRL	0.05	--	--	--	--	NA	NA	NA	NA
TCLP Semivolatile Soil Analysis (mg/L)										
NO TCLP SEMIVOLATILE COMPOUNDS DETECTED										
TCLP Inorganic Soil Analysis (mg/L)										
Barium	100	10	1.9	1.9	0.81 J	1.1 J	NA	NA	NA	NA
Cadmium	1	0.1	0.0066	0.014	--	--	NA	NA	NA	NA
Chromium	5	1	0.0074 J	0.018	--	--	NA	NA	NA	NA
Lead	5	1	--	0.55	0.043 J	0.062 J	NA	NA	NA	NA
Mercury	0.2	0.05	--	--	0.00037	--	NA	NA	NA	NA
Selenium	1	0.1	--	--	--	--	NA	NA	NA	NA
Silver	5	1	--	--	--	--	NA	NA	NA	NA
Soil Characteristic Analysis										
Corrosivity (inch/yr)	NRL	0.01	--	--	--	--	NA	NA	NA	NA
Ignitability (Degrees F)	NRL	212	--	--	--	--	NA	NA	NA	NA
pH	NRL	NDL	8.21	8.11	6.20	6.33	NA	NA	NA	NA
Reactive Cyanide (ppm)	NRL	1	--	--	--	--	NA	NA	NA	NA
Reactive Sulfide (ppm)	NRL	1	--	--	--	--	NA	NA	NA	NA
Total Cyanide (mg/kg)	NRL	0.6	--	--	--	--	NA	NA	NA	NA

Notes:

[1]TCLP Regulatory Limits from 6 NYCRR Part 371 (NYSDEC, 1995)
[2]Depth of sample represents the top of the sampled split-spoon interval for soil boring samples.
CRDL = Contract Required Detection Limit
TAL = Target Analyte List
TCL = Target Compound List
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
µg/L = micrograms per liter
PCB = polychlorinated biphenyl
J = estimated value
-- = not detected
inch/yr = inches per year
ppm = parts per million
NA = not analyzed
NDL = no designated limit
NRL = no regulatory limit

TABLE 6
SURFACE AND SUBSURFACE SOIL/WASTE SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLL, NEW YORK

COMPOUND	TCLP REGULATORY LEVEL (mg/L)	CRDL	WT105D (4')	WT105 (7')	WT106	WT107	BS101 (10')[2]	BS101D (10')[2]	BS102 (24')[2]	BS103 (14')[2]
Pesticides and PCBs (µg/kg)										
delta-BHC	NRL	1.7	--	1 J	NA	NA	NA	NA	NA	NA
Heptachlor	NRL	1.7	--	--	NA	NA	NA	NA	NA	NA
Aldrin	NRL	1.7	--	--	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NRL	1.7	--	--	NA	NA	NA	NA	NA	NA
Endosulfan I	NRL	1.7	--	1.2 J	NA	NA	NA	NA	NA	NA
Dieldrin	NRL	3.4	--	--	NA	NA	NA	NA	NA	NA
4,4'-DDE	NRL	3.4	--	--	NA	NA	NA	NA	NA	NA
Endosulfan II	NRL	3.4	--	--	NA	NA	NA	NA	NA	NA
4,4'-DDD	NRL	3.4	--	--	NA	NA	NA	NA	NA	NA
4,4'-DDT	NRL	3.4	--	--	NA	NA	NA	NA	NA	NA
Methoxychlor	NRL	17	--	--	NA	NA	NA	NA	NA	NA
alpha-Chlordane	NRL	1.7	--	2.3 J	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NRL	1.7	--	4	NA	NA	NA	NA	NA	NA
Arodor-1016	NRL	33	40 J	--	NA	NA	NA	NA	NA	NA
Arodor-1254	NRL	33	--	--	NA	NA	NA	NA	NA	NA
Arodor-1260	NRL	33	--	--	NA	NA	NA	NA	NA	NA
TAL Inorganic Analytes (mg/kg)										
Aluminum	NRL	200	10300	9750	NA	NA	11800	13200	4540	5790
Arsenic	NRL	10	2.5 J	7.7 J	NA	NA	14 J	12.1 J	5.1	5.6 J
Barium	NRL	200	158	134	NA	NA	94	101	51.9	48.7
Beryllium	NRL	5	0.55 J	0.43 J	NA	NA	0.51 J	0.57 J	0.21 J	0.26 J
Cadmium	NRL	5	0.18 J	0.32 J	NA	NA	--	--	0.26 J	--
Calcium	NRL	5000	2290 J	6940 J	NA	NA	9700 J	10600 J	27800	9140 J
Chromium	NRL	10	13.9 J	31.2 J	NA	NA	16.6 J	18.7 J	7.1	7.9 J
Cobalt	NRL	50	10 J	18.9	NA	NA	13.1	13.8	4.1 J	4.9 J
Copper	NRL	25	14.4 J	51.3 J	NA	NA	20.1 J	22.4 J	14.8	8.1 J
Iron	NRL	100	18400 J	33900 J	NA	NA	29900 J	31500 J	10700	13200 J
Lead	NRL	3	20.7 J	294 J	NA	NA	10.3 J	10.1 J	9.2	3.7 J
Magnesium	NRL	5000	2970	3800	NA	NA	8120	8510	3410	3470
Manganese	NRL	15	259	605	NA	NA	360	383	340	225
Mercury	NRL	0.2	--	--	NA	NA	--	--	--	--
Nickel	NRL	40	21.5 J	51.4 J	NA	NA	28 J	30.8 J	9.4	11.6 J
Potassium	NRL	5000	718 J	1040 J	NA	NA	1560	1980	779 J	860 J
Silver	NRL	10	--	--	NA	NA	--	--	--	--
Sodium	NRL	5000	351 J	332 J	NA	NA	331 J	377 J	344 J	318 J
Thallium	NRL	10	--	--	NA	NA	--	--	3.4	--
Vanadium	NRL	50	15.4	13.7	NA	NA	15.6	17.5	5.7 J	7.3 J
Zinc	NRL	20	75.5 J	158 J	NA	NA	72.9 J	85.1 J	49.2	33.2 J

Nine VOCs were identified during laboratory analysis of test pit soil/waste samples; chloromethane, methylene chloride, acetone, carbon disulfide, 2-butanone, benzene, toluene, ethylbenzene, and xylenes. Sample WT-105 at 7 feet bgs contained the maximum concentrations of all contaminants with the exception of methylene chloride, which had a maximum concentration in sample WT-103 at 4 feet bgs. At least one SVOC was identified in each test pit soil/waste sample. The highest concentrations of SVOC contaminants were found in samples WT-103 at 4 feet bgs and WT-104 at 6 feet bgs.

Pesticides were detected in eight of the 10 samples submitted for analysis: delta-benzene hexachloride (BHC); heptachlor; aldrin; heptachlor epoxide; Endosulfan I; dieldrin; 4,4'-dichlorodiphenyldichloroethene (DDE); Endosulfan II; 4,4'-dichlorodiphenyl-dichloroethane (DDD); 4,4'-dichlorodiphenyltrichloroethene (DDT); methoxychlor; alpha-chlordane; and gamma-chlordane. The PCBs Aroclor-1016 and -1254 were detected in one sample each, and the PCB Aroclor-1260 was detected in two test pit soil/waste samples.

Seventeen common inorganic analytes were detected in all test pit soil/waste samples collected from the Carroll Town Site. In addition, cadmium, mercury, silver, and thallium were also identified in at least one of the samples. TCLP VOC analysis detected 2-butanone and tetrachloroethene at estimated concentrations below the CRDL in two samples. No TCLP SVOCs were identified, and all estimated concentrations of TCLP inorganics were below the CRDL. Soil characteristic analysis did not identify any of the samples to be characteristic hazardous waste.

Surface Soil/Waste Sampling Results. Two surface soil/waste samples were collected and analyzed for TCLP VOCs, SVOCs, and inorganics and the characteristics of ignitability, corrosivity, and reactivity. The approximate locations of the surface soil/waste samples are shown on Figure 3.

No TCLP VOCs or SVOCs were identified in either sample. The TCLP inorganics barium, lead, and mercury were detected, but at concentrations below the CRDLs. Soil characteristic analysis did not identify either of the samples to be characteristic hazardous waste.

Subsurface Soil Sampling Results. Three subsurface soil samples and a duplicate were collected and submitted for analysis of TCL VOCs and TAL inorganics. The samples were collected from soil borings that were installed and completed as monitoring wells. Figure 3 shows the location of the soil borings/monitoring wells.

The VOCs methylene chloride, acetone, 2-butanone, and toluene were identified in at least one of the soil samples. Although commonly considered laboratory contaminants, methylene chloride, acetone, and 2-butanone were not detected in laboratory method blank samples. Seventeen common inorganics were detected in all four subsurface soil samples submitted for analysis. In addition, cadmium and thallium were detected in sample BS-102.

4.2.4 Groundwater Analytical Results

Groundwater samples were collected from the four new monitoring wells (MW-101 through MW-104) as well as from Water Supply Well No. 5 (WW-5) and two associated monitoring wells (MW-13 and MW-16). All samples were analyzed for TCL VOCs and TAL inorganics. In addition, sample MW-102 was analyzed for TCL SVOCs. Medium-level VOC analysis was performed on the samples collected from the new monitoring wells, and low-level VOC analysis was performed on the remaining samples. Table 7 presents groundwater analytical results in addition to NYS Class GA groundwater quality standards and NYSDOH MCLs for the compounds detected.

The VOCs vinyl chloride, methylene chloride, acetone, and 1,2-DCE were detected in samples from the four new monitoring wells. The maximum concentration of every contaminant except acetone was at location MW-102. Acetone was identified in the water supply well and its associated monitoring wells, and chlorobenzene was identified in one of the monitoring wells. Although commonly considered laboratory contaminants, methylene chloride and acetone were not detected in laboratory method blanks or trip blanks. Concentrations of vinyl chloride and 1,2-DCE exceeded NYSDEC Class GA groundwater quality standards and NYSDOH MCLs.

Fifteen inorganic analytes were identified in at least one sampling location during analysis. Concentrations of arsenic in MW-101, iron and manganese in all samples except MW-16

TABLE 7
GROUNDWATER SAMPLING DATA

CARROLL TOWN LANDFILL
TOWN OF CARROLLL, NEW YORK

COMPOUND	NYSDEC CLASS GA STANDARDS[1]	NYSDOH MCL	CRDL	MW101	MW102	MW103	MW103D	MW104	MW13	MW16	WW5
TCL Volatile Organic Comounds – Medium Level Analysis (µg/L)											
Vinyl Chloride	2	2	10	--	**120**	--	--	--	NA	NA	NA
Methylene Chloride	5	5	10	2 J	2 J	1 J	2 J	2 J	NA	NA	NA
Acetone	50	50	10	--	--	--	--	8 J	NA	NA	NA
1,2-Dichloroethene (total)	5	5	10	--	39	--	--	--	NA	NA	NA
TCL Volatile Organic Compounds – Low Level Analysis (µg/L)											
Acetone	50	50	5	NA	NA	NA	NA	NA	4 J	11	3 J
Chlorobenzene	5	5	1	NA	NA	NA	NA	NA	--	0.3 J	--
TCL Semivolatile Organic Compounds (µg/L)											
NO SEMIVOLATILE ORGANIC COMPOUNDS DETECTED											
TAL Inorganic Analytes (µg/L)											
Aluminum	NS	NS	200	1220	1600	1370	1240	1550	302	--	--
Arsenic	25	50	10	**70.8**	--	--	--	--	--	--	--
Barium	1000	2000	200	762	106 J	231	212	235	69.9 J	63.1 J	86.3 J
Calcium	NS	NS	5000	68400	69900	51100	47300	54000	49700	50700	50700
Chromium	50	100	10	--	2 J	1.9 J	1.4 J	13	--	8.2 J	1.8 J
Cobalt	NS	NS	50	--	--	--	--	1.8 J	--	--	--
Copper	200	1000	25	--	--	--	--	--	--	--	35.6
Iron	300*	300*	100	**3790**	**2380**	**2100**	**1870**	**3440**	**580**	136	--
Lead	25	50	3	--	2.6 J	--	--	3.3	--	--	--
Magnesium	NS	NS	5000	16400	12900	11500	10600	14000	9050	9440	10100
Manganese	300*	300*	15	**1050**	**64.7**	**237**	**218**	**439**	**35.9**	5.4 J	3.7 J
Mercury	2	2	0.2	--	--	1.1	0.93	--	--	--	--
Potassium	NS	NS	5000	913 J	1390 J	1670 J	1530 J	6470	825 J	802 J	862 J
Sodium	20000	NDL	5000	8730	2910 J	4270 J	3690 J	**29500**	3170 J	4350 J	5610
Vanadium	NS	NS	50	--	2.5 J	1.4 J	1.3 J	3 J	--	--	--

Notes:

[1]Class GA Groundwater Quality Standards taken from 6NYCRR Part 700-705 (NYSDEC, 1994)

CRDL = Contract Required Detection Limit
TAL = Target Analyte List
TCL = Target Compound List
µg/L = micrograms per liter
J = estimated value
-- = not detected
MCL = Maximum Contaminant Level
NA = not analyzed
NS = no standard
NDL = no designated limit
* = When both iron and manganese are present, the standard for the total of both compounds is 500 µg/L.

and WW-5, and sodium in MW-104 exceed NYSDEC Class GA groundwater quality standards. No TCL SVOCs were identified during analysis.

4.3 CONTAMINATION ASSESSMENT SUMMARY

The following subsection discuss the assessment of sampling and analysis results performed by ABB-ES for the Carroll Town Landfill PSA field investigation. Information collected during the PSA field activities and the previous data reviewed during the records search indicates that contamination is still present at the Carroll Town Landfill. The PSA field investigation was designed to identify potential source areas at the site and identify the possibility of contaminant migration from the site via the media sampled.

4.3.1 Surface Water Sample Summary

Surface water at the Carroll Town Landfill Site consists of a drainage swales surrounding the two landfill cells and a wetland area to the north and northwest of the cells. Upstream and downstream samples north of the cells did not identify levels of organic contamination above CRDLs or NYSDEC Class C Surface Water Standards. Five inorganics were detected at concentrations greater than the surface water standard; aluminum, cobalt, lead, selenium, and cyanide. Exceedances may be associated with entrained suspended solids rather than dissolved inorganic contamination.

4.3.2 Leachate Sample Summary

Leachate samples were collected from discolored wetland areas, excavated test pits, and hand dug depressions within and surrounding the western landfill cell boundary. Sample analysis identified VOC contamination above NYSDEC Class C Surface Water Standards in LT-106, LT-107, and LT-109. Samples LT-106 and LT-109 were collected from seeps in TP-105 and TP-102, respectively. Sample LT-107 was collected from a shallow excavation on the western margin of the western cell (see Figure 3). The locations are associated with the northern or western portion of the western landfill cell and are similar in location to the site of NYSDEC leachate sample B14703. The NYSDEC sample contained concentrations of vinyl chloride and 1,2-DCE well above CRDLs during a previous NYSDEC sampling effort (ABB-ES, 1995b).

Concentrations of ethylbenzene and xylenes in the three samples were detected at concentrations greater than NYSDEC Class C Surface Water Standards. The maximum concentration of ethylbenzene was 21 µg/L in LT-106 and the maximum concentration of xylenes was 100 µg/L, also in LT-106. Toluene was detected in LT-106 at a maximum concentration of 30 µg/L, and was detected in the other two samples at concentrations below the standard. The estimated concentration of TCE (9 µg/L) in LT-107, was the only other exceedance of surface water standards for VOCs. Concentrations of vinyl chloride (630 µg/L) and 1,2-DCE (730 µg/L) were greater than CRDLs in sample LT-107. No surface water standard has been established for these compounds; however, the TCLP regulatory level for vinyl chloride is 200 µg/L. The concentration of vinyl chloride in LT-107 is characteristic of hazardous waste. Vinyl chloride and 1,2-DCE are generally considered degradation products of TCE.

Sample LT-106 was the only leachate sample analyzed for TCL SVOCs. Concentrations of 4-Methylphenol, 4-Chloro-3-Methylphenol, and bis(2-ethylhexyl)phthalate were above the NYSDEC Class C Surface Water Standards in this sample. Phenols and phthalates are most commonly associated with plastics.

No pesticides or PCBs were detected in sample LT-106 above NYSDEC Class C Surface Water Standards. No other leachate samples were analyzed for pesticides or PCBs. Several inorganic analytes (aluminum, cadmium, cobalt, copper, lead, selenium, thallium, vanadium, zinc, and cyanide) were identified above NYSDEC surface water standards. It is possible that these exceedance are associated with entrained suspended solids in the leachate samples rather than dissolved inorganic analytes.

4.3.3 Surface and Subsurface Soil/Waste Sample Summary

Surface and subsurface soil/waste samples were collected from test pits, soil borings, and the ground surface. Elevated concentrations of VOCs were identified in test pit soil/waste samples, primarily samples collected from TP-105. This test pit was excavated on the northern portion of the western landfill cell. To assess the magnitude of the concentrations of contaminants in the soils they were compared to clean-up objectives as recommended in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives (NYSDEC, 1994b). The concentrations of acetone in WT-105 at 4 feet bgs (390 micrograms per kilogram [µg/kg])

and at 7 feet bgs (estimated at 540 µg/kg) were greater than the soil cleanup objective for acetone (110 µg/kg). Estimated concentrations of 2-butanone (300 µg/kg) and xylene (3800 µg/kg) in WT-105 at 7 feet bgs, also exceeded their respective cleanup objectives.

Elevated concentrations of SVOCs were also detected in several of the test pit soil/waste samples. Only one exceedance of NYSDEC Soil Cleanup Objectives occurred; chrysene in WT-103 at 4 feet bgs (1000 µg/kg). The majority of contamination was detected in samples collected from test pits TP-103, TP-104, and TP-105. These three test pits are located in the northwestern portion of the western landfill cell.

Detections of pesticides and PCBs in test pit soil/waste samples were below soil cleanup objectives; however, concentrations of Aroclor-1260 (100 µg/kg in WT-101 at 3 feet bgs) and Aroclor-1254 (530 µg/kg in WT-104 at 6 feet bgs) were significantly greater than CRDLs. Concentrations of all detected pesticides were less than 100 µg/kg.

Estimated soil background concentrations for the eastern United States have been identified in the NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels (NYSDEC, 1994b). Concentrations of inorganics in subsurface soil/waste samples are generally within background concentration ranges; nickel and zinc exceeded background most often. Nickel was detected at an estimated maximum concentration of 242 mg/kg and zinc was detected at an estimated maximum concentration of 246 mg/kg. The associated background values are 25 mg/kg and 50 mg/kg, respectively. There were no exceedances of TCLP regulatory levels for samples collected for analysis.

4.3.4 Groundwater Sample Summary

Groundwater samples from all wells sampled contained detectable concentrations of VOCs. MW-102 contained the highest concentrations of vinyl chloride (120 µg/L) and 1,2-DCE (39 µg/L). These concentrations are greater than their respective NYSDEC Class GA Groundwater Quality Standards and their NYSDOH MCLs. Vinyl chloride and 1,2-DCE are generally considered degradation products of TCE. The flow of groundwater from the site towards the Frewsburg Water Supply Well could explain the presence of chlorinated solvents in a monitoring well situated between the two locations. These two contaminants were also detected in leachate migrating from the western landfill cell.

Acetone was identified at similar concentrations in all seven wells sampled; however, it was not detected in laboratory method blanks. The maximum acetone concentration (11 µg/L) was detected in MW-16. Concentrations of acetone greater than soil clean-up objectives, which are designated to be protective of groundwater, were also detected in on-site test pit soil/waste samples. Acetone generally exhibits high mobility in soils. It leaches rapidly through sandy soil into groundwater and typically has a great propensity to dissolve into and migrate with groundwater rather than adsorb to the soil.

SVOCs, pesticides, and PCBs were not detected in groundwater at the Carroll Town Landfill. Arsenic, iron, manganese, and sodium were the only inorganic analytes detected above NYSDEC Class GA Groundwater Quality Standards and NYSDOH MCLs. Arsenic in MW-101 at a concentration of 70.8 µg/L exceeded the standards. Iron and manganese have a combined standard of 500 µg/L (NYSDEC and NYSDOH) when they are both present in a sample. The standards well exceeded in all samples except those collected from MW-16 and WW-5. Sodium exceeded the NYSDEC Class GA Groundwater Quality Standard of 20,000 µg/L in the sample collected from MW-104 (29,500 µg/L). No NYSDOH MCL is given for sodium. The presence of iron and manganese in groundwater at concentrations greater than the NYSDEC standards and NYSDOH MCLs may potentially be attributed to site soils and the typically high levels of these metals in the soil in this region (NYSDEC, 1994b).

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following subsections further evaluate the findings presented in Section 4.0 against the purpose of the PSA investigation to develop a recommendation for reclassification of the site.

5.1 HAZARDOUS WASTE DEPOSITION

Disposal of hazardous waste at Carroll Town Landfill can be established based on the definitions set forth under the NYSDEC regulation for Identification and Listing of Hazardous Waste, 6 NYCRR Part 371. The following table lists the hazardous wastes detected at the Carroll Town Landfill during the PSA and the corresponding hazardous waste numbers, as defined in 6 NYCRR Part 371:

LISTED HAZARDOUS WASTES DETECTED AT CARROLL TOWN LANDFILL

HAZARDOUS WASTE	USEPA HAZARDOUS WASTE NUMBER	MEDIA	MAXIMUM CONCENTRATION DETECTED (ppb)
1,1-DCE	F039[1]	Leachate	3J
1,2-DCE	U079	Leachate Groundwater	730 39
2-Butanone	U159	Leachate Subsurface Soil	11 300 J
2-Hexanone	F039[1]	Leachate	2J
4,4'-DDD	U060	Subsurface Soil	6.3 J
4,4'-DDT	U061	Subsurface Soil	60
4-Chloro-3-Methylphenol	U039	Leachate	4 J
4-Methylphenol	U052	Leachate	98 J
4-methyl-2-pentanone	F039[1]	Leachate	3J
Acetone	F003	Subsurface Soil Groundwater	540 J 8 J
Aldrin	P004	Subsurface Soil	22
Benzene	F005	Leachate Subsurface Soil	2 J 7 J
Benzo(a)pyrene	U022	Subsurface Soil	780
Carbon Disulfide	F005	Subsurface Soil	53 J

LISTED HAZARDOUS WASTES DETECTED AT
CARROLL TOWN LANDFILL

HAZARDOUS WASTE	USEPA HAZARDOUS WASTE NUMBER	MEDIA	MAXIMUM CONCENTRATION DETECTED (ppb)
Chlordane (alpha/gamma)	U036	Subsurface Soil	2.3/4
Chlorobenzene	F039[1]	Leachate	4J
Chrysene	U050	Subsurface Soil	1000
Di-n-octylphthalate	U107	Subsurface Soil	670
Dibenz(a,h)anthracene	U063	Subsurface Soil	75 J
Dieldrin	P037	Subsurface Soil	25
Diethylphthalate	U088	Leachate Subsurface Soil	7 J 42 J
Dimethylphthalate	U102	Subsurface Soil	95 J
Endosulfan I	P050	Subsurface Soil	15 J
Endosulfan II	P050	Subsurface Soil	5.5 J
Endrin Aldehyde	P051	Leachate	0.1
Fluoranthene	U120	Subsurface Soil	1600
Heptachlor	P059	Subsurface Soil	1.1 J
Indeno(1,2,3-cd)pyrene	U137	Subsurface Soil	540
Landfill Leachate [1]	F039	N/A	N/A
Methoxychlor	U247	Subsurface Soil	23
Methylene Chloride	F001	Subsurface Soil Groundwater	20 2 J
Naphthalene	U165	Leachate Subsurface Soil	10 J 510
Toluene	F005	Leachate Subsurface Soil	30 300 J
Trichloroethene	F039[1]	Leachate	9J
Vinyl Chloride	U043	Leachate Groundwater	630 120
Xylenes	F003	Leachate Subsurface Soil	100 3800

Notes:

[1] Landfill leachate contains other F-listed wastes including 1,1-DCE, trichloroethene, 4-methyl-2-pentanone, 2-hexanone, and chlorobenzene. These wastes were identified in leachate samples only, and are therefore not uniquely defined as hazardous waste (NYSDEC, 1995a).

DCE = dichloroethene
4,4'-DDD = 4,4'-dichlorodiphenyldichloroethane
4,4'-DDT = 4,4'-dichlorodiphenyltrichloroethane
J = estimated value
ppb = parts per billion
N/A = Not applicable

Although containers of hazardous waste were not identified in the Carroll Town Landfill cells during the PSA, detection of listed hazardous wastes in on-site subsurface soils indicates hazardous waste is present at the site. In addition, the presence of listed hazardous wastes in site groundwater at concentrations greater than NYSDEC Class GA standards and NYSDOH MCLs and in landfill leachate at concentrations greater than NYSDEC Class C Surface Water standards indicates that consequential quantities of hazardous wastes were released to the environment from previous landfill activities.

5.2 SIGNIFICANT THREAT DETERMINATION

The NYSDEC regulation pertaining to Inactive Hazardous Waste Sites, 6 NYCRR Part 375, sets forth several definitions of significant threat. The mere presence of hazardous waste at a site or in the environment is not a sufficient basis for finding that hazardous waste disposed at a site constitutes a significant threat to public health or the environment. However, because the Carroll Town Landfill is located above a sole source aquifer and a public drinking water supply well is located near the site, a significant threat can be evaluated by comparing groundwater analytical results to NYSDEC Class GA Groundwater Quality Standards in 6 NYCRR Parts 700-705 (NYSDEC, 1994) and NYSDOH drinking water standards (i.e., MCLs) in Title 10, Section 5-1.52.

Leachate from the landfill cells is believed to be discharged to the wetland areas northwest and west of the landfill cells. These wetland areas ultimately discharge to Conewango Creek, a NYS Class C surface water body. Therefore, significant threat can also be established through comparison of surface water and leachate analytical results to surface water regulations set forth under 6 NYCRR Parts 700-705 (NYSDEC, 1994).

Exceedances of NYSDEC Class GA Groundwater Quality Standards and NYSDOH MCLs are presented in the following table:

EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS AND NYSDOH MAXIMUM CONTAMINANT LEVELS

PARAMETERS	NYSDEC CLASS GA STANDARD (µg/L)	NYSDOH MCL (µg/L)	MAXIMUM CONCENTRATION IN GROUNDWATER (µg/L)
Vinyl Chloride	2	2	120
1,2-DCE	5	5	39
Arsenic	25	50	70.8
Iron	300 [1]	300 [1]	3790
Manganese	300 [1]	300 [1]	1050
Sodium	20000	NDL	29500

Notes:
[1] When both iron and manganese are present, the standard for the total of both compounds is 500 µg/L.
µg/L = micrograms per liter
NDL = no designated limit

Exceedances of NYSDEC Class C Surface Water Standards are presented in the following table:

EXCEEDANCES OF NYSDEC CLASS C SURFACE WATER STANDARDS

PARAMETERS	MEDIA	NYSDEC CLASS C SURFACE WATER STANDARD (µg/L)	MAXIMUM CONCENTRATION (µg/L)
TCE	Leachate	5	9 J
Toluene	Leachate	5	30
Ethylbenzene	Leachate	5	21
Total Xylenes	Leachate	5	100
4-Methylphenol	Leachate	5 [1]	98 J
4-Chloro-3-Methylphenol	Leachate	1 [2]	4 J
bis(2-ethylhexyl)phthalate	Leachate	0.6	3 J
Aluminum	Surface Water	100	2100
	Leachate	100	17400

EXCEEDANCES OF NYSDEC CLASS C SURFACE WATER STANDARDS

PARAMETERS	MEDIA	NYSDEC CLASS C SURFACE WATER STANDARD (µg/L)	MAXIMUM CONCENTRATION (µg/L)
Cadmium	Leachate	4.4 [3]	5.3
Cobalt	Surface Water	5	15.6 J
	Leachate	5	80.2
Copper	Leachate	52.0 [3]	455
Lead	Surface Water	3.6 [3]	7.8 J
	Leachate	28.9 [3]	371
Selenium	Surface Water	1	9.4 J
	Leachate	1	5.1
Thallium	Leachate	8	14.1
Vanadium	Leachate	14	27.6 J
Zinc	Leachate	273.6 [3]	888
Cyanide	Surface Water	5.2	11
	Leachate	5.2	285

Notes:

[1] A standard of 5 µg/L is for total non-chlorinated phenolic compounds.

[2] A standard of 1 µg/L is for total chlorinated phenolic compounds.

[3] The standard for this compound is calculated for each sample using a formula dependent upon the hardness of the sample. The standard listed corresponds to the sample with the maximum concentration.

µg = micrograms per liter

Although VOCs, SVOCs, pesticides, PCBs, and inorganics were detected in subsurface soils during the PSA, there are no standards against which to compare this data. TCLP Regulatory Levels were not exceeded in subsurface and surface soil/waste samples analyzed for TCLP.

For purposes of the PSA and recommending a reclassification, significant threat is established based on a contravention of environmental quality standards. However, in accordance with Part 375-1 4 and the definitions of significant threat, additional criteria that were considered by ABB-ES include

- Part 375-1.4(b)(3) - the manner of disposal of the hazardous waste;
- Part 375-1.4(b)(4) - the nature of soils at and near the site;
- Part 375-1.4(b)(5) - the groundwater hydrology at and near the site;

- Part 375-1.4(b)(10) - the proximity of the site to areas of critical environmental concern (wetlands or aquifers); and
- Part 375-1.4(b)(12) - the integrity of the mechanism that is containing the hazardous waste.

The location of hazardous waste, although not pinpointed during the PSA, is believed to be the western portion of the western cell. Contamination identified in subsurface soil/waste samples collected in this area during test pitting is similar to that in samples collected from nearby surface water and groundwater. Additionally, contaminants identified in leachate and groundwater samples are considered degradation products of wastes (such as TCE) that were believed to be disposed at the landfill.

Landfilled wastes at the Carroll Town site are separated from a sole source sand and gravel aquifer by approximately 30 feet of silty clay material of unknown hydraulic conductivity. The presence of vinyl chloride and 1,2-DCE in MW-102 suggests the overlying silty clay layer is not acting as an impermeable boundary to landfill related contamination. Since the initiation of pumping activities in January 1995, groundwater flow at and near the site is believed to have changed from northwesterly to southwesterly, towards the water supply well. Additionally, leachate and surface water at the site ultimately discharge to Conewango Creek, a NYS Class C Surface Water body. Contamination identified in leachate and surface water could have a negative impact on the creek.

The factors indicated above are sufficient to support the interpretation that hazardous waste at the Carroll Town Landfill site is presenting a significant threat to human health and the environment.

5.3 RECOMMENDATIONS

Based on information obtained during the PSA performed for the Carroll Town site, ABB-ES recommends that this site be reclassified as a Class 2 site as set forth under 6 NYCRR Part 375-1.8(a)(2)(ii). A Class 2 site is a site at which hazardous waste disposal poses a significant threat to the environment, as described in Section 375-1.4. In accordance with

the NYS Superfund Program, sites designated as Class 2 continue into the Remedial Investigation/Feasibility Study phase.

Because of the elevated concentrations of solvent contamination in groundwater, the hydraulic conductivity of the sand and gravel soils beneath the landfill, and the presence of an active public water supply well 700 feet from the site, it is likely that a groundwater contamination plume is emanating from the site towards the water supply well. To further define the location of solvent contamination detected in groundwater and prevent possible contamination of the Frewsburg well, ABB-ES recommends further investigations at the Carroll Town site, including:

- increased frequency of sampling of the Frewsburg Water Supply Well for site-related contaminants (i.e., VOCs);
- a hydrogeologic investigation to determine the physical properties of the sand and gravel aquifer and estimate the flow rate of groundwater and distribution of contamination; and
- subsurface investigations to confirm the presence or absence of a groundwater contamination plume and determine the location of the plume.

GLOSSARY OF ACRONYMS & ABBREVIATIONS

ABB-ES	ABB Environmental Services
American Auger	American Auger and Ditching Co., Inc.
ASP	Analytical Services Protocols
ASTM	American Standard for Testing and Materials
bgs	below ground surface
BHC	benzenehexachloride
BS	soil boring sample
CRDL	Contract Required Detection Limit
D	concentration determined by secondary dilution
1,2-DCA	1,2-dichloroethane
1,2-DCE	1,2-dichloroethene
1,1-DCE	1,1-dichloroethene
DDD	4,4'-dichlorodiphenyldichloroethane
DDE	4,4'-dichlorodiphenyldichloroethene
DDT	4,4'-dichlorodiphenyltrichloroethane
ELAP	Environmental Laboratory Approval Program
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
G	guidance value
HASP	Health and Safety Plan
HRS	Hazard Ranking System
ID	inside diameter
inch/yr	inches per year
J	estimated value
LT	leachate sample

GLOSSARY OF ACRONYMS & ABBREVIATIONS

Marcor	Marcor of New York, Inc.
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MW	monitoring well
mg/kg	milligrams per kilogram
NDL	no designated limit
ND	not detected
NRL	no regulatory limit
NA	not analyzed
NS	no standard
NTUs	Nephelometric Turbidity Units
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State
NYSDOT	New York State Department of Transportation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	State of New York Department of Health
NYTEST	NYTEST Environmental, Inc.
PCBs	polychlorinated biphenyls
PID	photoionization detector
ppb	part per billion
ppm	parts per million
PSA	Preliminary Site Assessment
PVC	polyvinyl chloride
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
QC	Quality Control
SVOCs	semivolatile organic compounds
SW	surface water sample
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List

TB	test boring
TCE	trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristics Leaching Procedure
TIC	tentatively identified compounds
TP	test pit
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey
UST	underground storage tank
VOCs	volatile organic compounds
WW	Water Supply Well
WT	soil/waste samples

REFERENCES

ABB Environmental Services, 1994. *Program Health and Safety Plan, Part II, Revision 1.* Prepared for New York State Department of Environmental Conservation, Albany, New York. June 1994.

ABB Environmental Services, 1995a. *Program Quality Assurance Program Plan.* Prepared for the New York State Department of Environmental Conservation, Albany, New York. June 1995.

ABB Environmental Services, 1995b. Site *Work Plan, Carroll Town Landfill, Carroll, New York, Site No. 907017, Work Assignment No. D002472-23.* September 1995.

Chautauqua County, 1973. Letter to Charles B. Barone, Supervisor, Town of Carroll, from Anthony T. Voell, P.E., Director, Chautauqua County, Division of Environmental Health Services. Dated December 27, 1973.

Chautauqua County, 1976. Letter to Town of Carroll from Lawrence G. Genung, Senior Environmental Health Technician, Chautauqua County Department of Health. Dated December 7, 1976.

Conestoga Rovers and Associates, 1994. Remedial Investigation/Feasibility Study - Remedial Investigation Report - Vac Air Alloys Division, Frewsburg, New York. March 1994.

Doster, M., personal communication, 1993. Memorandum to Mr. Earl Barcomb from Mr. M. Doster of NYSDEC; Subject: Friendship Foundries Site and Carroll Town Dump Site; dated December 10, 1993.

Federal Emergency Management Agency (FEMA), 1982. Flood Insurance Rate Map, Town of Carroll, Chautauqua County, New York. October 29, 1982.

Moody and Associates, Inc., 1993. Preliminary Report - Town of Carroll - Frewsburg Water District - Report on Groundwater Supply Exploration and Testing. Prepared for Town of Carroll, Frewsburg Water District, Frewsburg, New York. Dated May 1993.

New York State Department of Environmental Conservation (NYSDEC), 1977. Refuse Disposal Area Inspection Report.

New York State Department of Environmental Conservation (NYSDEC), 1978. Letter to Jamestown Rendering from Robert J. Mitrey, P.E., Regional Solid Waste Engineer.

New York State Department of Environmental Conservation (NYSDEC), 1979a. Letter to Town of Carroll from Robert J. Mitrey, Associate Sanitary Engineer, dated July 18, 1979.

New York State Department of Environmental Conservation (NYSDEC), 1979b. Division of Solid Waste Management - Facility Inspection Report. Dated September 7, 1979.

New York State Department of Environmental Conservation (NYSDEC), 1979c. Letter to Town of Carroll from Peter J. Burke, Regional Attorney concerning "Order on Consent - Our File No. 78-97". Dated October 2, 1979.

New York State Department of Environmental Conservation (NYSDEC), 1979d. "Order on Consent, File No. 78-97 - In the Matter of Alleged Violations of Part 360 of Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York, Environmental Law Sections 27-0703 by Town of Carroll". Dated October 2, 1979.

New York State Department of Environmental Conservation (NYSDEC), 1979e. Letter to Willis Hale, Supervisor, Town of Carroll, from Robert J. Mitrey, P.E. Dated October 18, 1979.

New York State Department of Environmental Conservation (NYSDEC), 1979f. Letter to Town of Carroll from Robert J. Mitrey, Associate Sanitary Engineer, dated December 27, 1979

New York State Department of Environmental Conservation (NYSDEC), 1983. Freshwater Wetland Data - Frewsburg I. January 25, 1983.

New York State Department of Environmental Conservation (NYSDEC), 1990. Letter to Town of Carroll from Cheryl Webster, Assistant Sanitary Engineer, dated April 10, 1990.

REFERENCES

New York State Department of Environmental Conservation (NYSDEC), 1992a. Memorandum to Martin Doster from Gregory Sutton; "Town of Carroll Landfill, Carroll (T), Chautauqua County, Unlisted Site". Dated January 17, 1992.

New York State Department of Environmental Conservation (NYSDEC), 1992b. Memorandum Titled: "Request for PSA, Town of Carroll Landfill, Carroll (T), Chautauqua County." To Mr. Walt Demick, Bureau of Hazardous Site Control, From Mr. Gregory Sutton, NYSDEC Region 9. Dated March 17, 1992.

New York State Department of Environmental Conservation,(NYSDEC), 1992c. Memorandum - Town of Carroll Landfill, Leachate Sampling 4/8/92, Carroll (T), Chautauqua County.

New York State Department of Environmental Conservation (NYSDEC), 1992d. Registry Site Classification Form - Carroll Town Landfill. Dated October 24, 1991; effective May 15, 1992.

New York State Department of Environmental Conservation (NYSDEC), 1992e. *New York Codes, Rules, and Regulations, Title 6, Part 375- Inactive Hazardous Waste Disposal Sites Remedial Program.* Effective May 1992.

New York State Department of Environmental Conservation (NYSDEC), 1992f. Unpublished work plan titled: "Scope of Work - Town of Carroll Landfill - Carroll (T), Chautauqua County - Site No. 907017"; dated July 1992.

New York State Department of Environmental Conservation (NYSDEC), 1993a. *Analytical Services Protocol.* September 1993.

New York State Department of Environmental Conservation (NYSDEC), 1993b. Ambient Water Quality Standards and Guidance Values. October 1993.

New York State Department of Environmental Conservation (NYSDEC), 1994a. *Water Quality Regulations for Surface Waters and Groundwater*, 6 NYCRR, Parts 700-705. Effective January 9, 1994.

New York State Department of Environmental Conservation (NYSDEC), 1994b. *Revised TAGM - Determination of Soil Cleanup Objectives and Cleanup Levels*, January 24, 1994.

New York State Department of Environmental Conservation (NYSDEC), 1995a. *New York Codes, Rules, and Regulations, Title 6, Part 371- Identification and Listing of Hazardous Wastes*. January 14, 1995.

New York State Department of Environmental Conservation (NYSDEC), 1995b. *Work Assignment (W.A.) No. D002472-23, Four Site PSA: Fabrizio Site #4-20-001; Nichols Spill Site #7-54-014; Cole Road Dump, Site # 8-59-018; Carroll Town Landfill, Site #9-07-017*. March 31, 1995.

New York State Department of Transportation (NYSDOT), 1978. Jamestown Quadrangle - New York - Chautauqua County - 7.5 Minute Series Planimetric. 1978 Edition

Rickard, L.V., and D.W. Fisher, 1970. *Geologic Map of New York, Niagara Sheet*. Prepared for the U.S. Geological Survey.

State of New York, 1978. Record of Proceedings - State of New York, Chautauqua County Board of Health, against Town of Carroll, on October 4, 1977; dated March 18, 1978.

New York State (NYS) Natural Heritage Program, 1995. File of Natural Heritage Sites in NYS; Reviewed by Brian Butler and Cornelia Morin of ABB-ES; Files located at NYSDEC Region 9 Division of Fish and Wildlife; Buffalo, New York. May 18, 1995.

Town of Carroll, 1979a. Letter from Willis C. Hale, Supervisor, Town of Carroll, to Mr. Robert Wright, Attorney at Law. Dated October 8, 1979.

Town of Carroll, 1979b. Letter from Attorneys Wright, Wright, and Hampton for the Town of Carroll, to Robert J. Mitrey, P.E., Associate Sanitary Engineer, NYSDEC. Dated December 5, 1995.

Town of Carroll, 1990. Letter from Frank Engblom, Supervisor, Town of Carroll, to Cheryl Webster, Assistant Sanitary Engineer, NYSDEC. Dated April 16, 1990.

REFERENCES

Town of Carroll, 1994. Tax Roll - Town of Carroll, Chautauqua County - Tax of 1995 Levied 1994; Taxable Status date March 1, 1994.

U.S. Department of Agriculture (USDA), 1994. "Soil Survey of Chautauqua County, New York". Issued August 1994.

U.S. Geological Survey (USGS), 1966. "Groundwater Resources of the Jamestown Area, New York - with Major Emphasis on the Hydrology of the Major Stream Valleys"; prepared by the USGS in cooperation with the City of Jamestown and New York Water Resources Commission; Water Resources Commission Bulletin No. 58.

Wart, William L., 1995. *Law of Wetlands Regulation*. Clark, Boardman, and Callaghan, New York, NY; pp 13-137 to 13-155.

APPENDIX A

SITE INSPECTION REPORT (USEPA FORM 2070-13)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Carroll Town Landfill	Ivory Road - State Route 62

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST
Carroll	New York	14738	Chautauqua		31

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
42 04 30	78 08 00	_ A. PRIVATE _ B. FEDERAL _____ _ C. STATE _ D. COUNTY X E. MUNICIPAL _ F. OTHER _____ _ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION (MONTH DAY YEAR)	02 SITE STATUS	03 YEARS OF OPERATION
05 19 95	X ACTIVE _ INACTIVE	early 1960s (BEGINNING YEAR) 1979 (ENDING YEAR)

04 AGENCY PERFORMING INSPECTION (Check all that apply)
_ A. EPA _ B. EPA CONTRACTOR _____ (Name of firm) _ C. MUNICIPAL _ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
X E. STATE X F. STATE CONTRACTOR ABB Environmental Services (Name of firm) _ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Brian K. Butler	Geologist	ABB Environmental Services	(207) 775-5401
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Cynthia Whitfield	Environmental Engineer	NYSDEC-Bureau of Hazardous Site Control	(518) 457-0639
Cameron O'Conner	Environmental Health Specialist	NYS Department of Health-Region 9	(716) 847-5500
Gregory P. Sutton	Environmental Engineer	NYSDEC-Division of Haz. Waste Remediation	(716) 851-7220
Steve Johnson	Environmental Health Specialist	Chautauqua County Health Department	(716) 753-4481

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Garry Waid	Highway Superintendant	P.O. Box 9010 Frewsburg, New York 14738	(716) 569-6161
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
X PERMISSION ☐ WARRANT	1000	Sunny, Temp 60°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Cynthia Whitfield	New York State Department of Environmental Conservation	(518) 457-0639

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	03 DATE
Gina L. Gulseth	Not Applicable	ABB Environmental Services	(207) 775-5401	01/31/97 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

EPA

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

_ A. SOLID
_ B. POWDER, FINES
_ C. SLUDGE
X D. OTHER — Soil/Leachate/Groundwater (Specify)
_ E. SLURRY
_ F. LIQUID
_ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS
CUBIC YARDS Unknown
NO. OF DRUMS Unknown

03 WASTE CHARACTERISTICS (Check all that apply)

X A. TOXIC
_ B. CORROSIVE
_ C. RADIOACTIVE
_ D. PERSISTENT
_ Unknown
X E. SOLUBLE
_ F. INFECTIOUS
_ G. FLAMMABLE
_ H. IGNITABLE
_ I. HIGHLY VOLATILE
_ J. EXPLOSIVE
_ K. REACTIVE
_ L. INCOMPATIBLE
_ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOVENTS	Unknown		Contaminated soil, leachate, and groundwater
PSD	PESTICIDES	Unknown		present on site. Little historical information
OCC	OTHER ORGANIC CHEMICALS	Unknown		available regarding contaminants previously
IOC	INORGANIC CHEMICALS	Unknown		disposed on site. Contamination appears to be
ACD	ACIDS			greatest in northwestern corner of western cell.
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04/STORAGE/DISPOSAL METHOD	05 CONCENTRATION (MAXIMUM)	06 MEASURE OF CONCENTRATION
SOL	1,2-Dichloroethene	156-60-5	Landfill	730	ug/L Leachate
				39	ug/L Groundwater
SOL	2-Butanone	78-93-3	Landfill	11	ug/L Leachate
				300 estimated (J)	ug/kg Soil/Waste
PSD	4,4'-DDD	72-54-8	Landfill	6.3 J	ug/kg Soil/Waste
PSD	4,4'-DDT	50-29-3	Landfill	60	ug/kg Soil/Waste
OCC	4-Chloro-3-Methylphenol	59-50-7	Landfill	4 J	ug/L Leachate
OCC	4-Methylphenol	1319-77-3	Landfill	98 J	ug/L Leachate
SOL	Acetone	67-64-1	Landfill	540 J	ug/kg Soil/Waste
				8 J	ug/L Groundwater
PSD	Aldrin	309-00-2	Landfill	22	ug/kg Soil/Waste
SOL/OCC	Benzene	71-43-2	Landfill	2 J	ug/L Leachate
				7 J	ug/kg Soil/Waste
OCC	Benzo(a)pyrene	50-32-8	Landfill	780	ug/kg Soil/Waste
SOL	Carbon Disulfide	75-15-0	Landfill	53 J	ug/kg Soil/Waste
PSD	Chlordane (alpha/gamma)	57-74-9	Landfill	4	ug/kg Soil/Waste
OCC	Chrysene	218-01-9	Landfill	1000	ug/kg Soil/Waste
OCC	Di-n-octylphthalate	117-84-0	Landfill	670	ug/kg Soil/Waste
OCC	Dibenz(a,h)anthracene	53-70-3	Landfill	75 J	ug/kg Soil/Waste
PSD	Dieldrin	60-57-1	Landfill	25	ug/kg Soil/Waste
OCC	Diethylphthalate	84-66-2	Landfill	7 J	ug/L Leachate
				42 J	ug/kg Soil/Waste
OCC	Dimethylphthalate	131-11-3	Landfill	95 J	ug/kg Soil/Waste
PSD	Endosulfan (I and II)	115-29-7	Landfill	15 J	ug/kg Soil/Waste
PSD	Endrin Aldehyde	72-20-8	Landfill	0.1	ug/L Leachate

OCC	Fluoranthene	206-44-0	Landfill	1600	ug/kg Soil/Waste
PSD	Heptachlor	76-44-8	Landfill	1.1 J	ug/kg Soil/Waste
OCC	Indeno(1,2,3-cd)pyrene	193-39-5	Landfill	540	ug/kg Soil/Waste
SOL	Landfill leachate	NA	Landfill	NA	NA
OCC	Methoxychlor	72-43-5	Landfill	23	ug/kg Soil/Waste
SOL	Methylene chloride	75-09-2	Landfill	20	ug/kg Soil/Waste
				2 J	ug/L Groundwater
OCC	Naphthalene	91-20-3	Landfill	10 J	ug/L Leachate
				510	ug/kg Soil/Waste
SOL/OCC	Toluene	108-88-31	Landfill	30	ug/L Leachate
				300 J	ug/kg Soil/Waste
SOL	Vinyl chloride	75-01-4	Landfill	630	ug/L Leachate
				120	ug/L Groundwater
SOL/OCC	Xylenes	1330-20-7	Landfill	100	ug/L Leachate
				3800	ug/kg Soil/Waste

V. FEEDSTOCKS (See Appendix for CAS Numbers) NOT APPLICABLE

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

EPA

I. IDENTIFICATION	
01 STATE: New York	01 SITE NUMBER:

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION — 02 X OBSERVED (DATE: 10/22/96) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: >1,000 — 04 NARRATIVE DESCRIPTION
Seven groundwater samples were collected on October 21 and 22, 1996. The samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) and Target Analyte List (TAL) inorganics. One sample was also analyzed for semivolatile organic compounds (SVOCs), pesticides, and PCBs. Vinyl chloride (120 ug/L), 1,2-dichloroethene (39 ug/L), arsenic (70.8 ug/L), iron and manganese (4840 ug/L), and sodium (29500 ug/L) were detected above the NYSDEC Class GA Groundwater Quality Standards and the NYSDOH MCLs (where applicable). The Frewsburg Aquifer has been designated by USEPA and NYSDEC as a principal aquifer.

01 X B. SURFACE WATER CONTAMINATION — 02 X OBSERVED (DATE: 09/09/96) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION
Two surface water samples were collected on September 9, 1996 from the drainage swale located north of the landfill cells. These samples contained concentrations of inorganics above NYSDEC Class C Surface Water Quality Standards including; aluminum (2100 ug/L), chromium (15.6J ug/L), lead (7.8J ug/L), selenium (9.4J ug/L), and cyanide (11 ug/L). The surface water in the swale discharges to the Frewsburg I Wetland northwest of the site and ultimately to Conewango Creek.

01 _ C. CONTAMINATION OF AIR — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Not Applicable

01 _ D. FIRE/EXPLOSIVE CONDITIONS — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Not Applicable

01 _ E. DIRECT CONTACT — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Not Applicable

01 X F. CONTAMINATION OF SOIL — 02 X OBSERVED (DATE: 09/10-13/96) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <100 — 04 NARRATIVE DESCRIPTION
Subsurface soil/waste samples were collected from test pits excavated in the landfill cells. The VOCs acetone (540 ug/kg), 2-Butanone (300 ug/kg), and xylene (3800J ug/kg) exceeded NYSDEC soil cleanup objectives. The SVOC chrysene (1000 ug/kg) also exceeded the cleanup objective. Concentrations of toluene (300J ug/kg) and ethylbenzene (1000J ug/kg) were well above Contract Required Detection Limits (CRDLs). These compounds in site soils could potentially leach into groundwater.

01 X G. DRINKING WATER CONTAMINATION — 02 X OBSERVED (DATE: 10/21/96) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: >1000 — 04 NARRATIVE DESCRIPTION
Frewsburg Water Supply Well No. 5 and two associated monitoring wells were sampled on October 21, 1996 for TCL VOC and TAL inorganics. Sample results identified the presence of acetone in the monitoring wells and the supply well at concentrations below the NYSDEC Class GA Groundwater Quality Standards and the NYSDOH MCLs. Chlorobenzene was also detected in the monitoring well closest to the water supply well (MW-16). The concentration was below the CRDL. Samples from the on-site monitoring well positioned between the western landfill cell and the water supply well contained concentrations of vinyl chloride and 1,2-DCE well above NYSDEC and NYSDOH standards. Groundwater flow is believed to be toward the water supply well.

01 _ H. WORKER EXPOSURE/INJURY — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Not Applicable

01 _ I. POPULATION EXPOSURE/INJURY — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Not Applicable

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE: New York	01 SITE NUMBER:

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 X J. DAMAGE TO FLORA — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION
Damage to flora is possible due to discharge of leachate contaminated with VOCs, SVOCs, and inorganics to the Frewsburg I wetland area northwest of the site. This wetland subsequently discharges to Conewango Creek.

01 X K. DAMAGE TO FAUNA — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)
Damage to fauna is possible due to discharge of leachate contaminated with VOC, SVOCs, and inorganics to the Frewsburg I wetland area northwest of the site. This wetland subsequently discharges to Conewango Creek. Receptor species living in the wetland or along the Conewango River may be effected by this contamination, including woodcock, mallards, redwings, great blue heron, ruffed grouns, green heron, chickadee, beaver, muskrat, gray fox, mink, raccoon, oppossum, skunk, white tail deer, cotton tail rabbit, fox squirrel, gray squirrel, and red squirrel.

01 _ L. CONTAMINATION OF FOOD CHAIN — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

Not applicable

01 X M. UNSTABLE CONTAINMENT OF WASTES — 02 X OBSERVED (DATE: 09/09-13/96) _ POTENTIAL _ ALLEGED
(Spills/Runoff/Standing liquids, Leaking drums)
03 POPULATION POTENTIALLY AFFECTED: <100 — 04 NARRATIVE DESCRIPTION
The Carroll Town Landfill does not have containment features to prevent disposed waste from leaching to the Frewsburg I wetland area northwest of the site or groundwater. Leachate was observed seeping into the wetland area during PSA field activities, and groundwater contamination was observed from sampling activities.

01 _ N. DAMAGE TO OFFSITE PROPERTY — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Not Applicable

01 _ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Not Applicable

01 X P. ILLEGAL/UNAUTHORIZED DUMPING — 02 _ OBSERVED (DATE: _____) _ POTENTIAL X ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <100 — 04 NARRATIVE DESCRIPTION
Records indicate that a Part 360 Solid Waste Disposal Permit for landfill operation expired in 1976. It is also suggested that disposal activities continued at the landfill unpermitted until the landfill was closed in 1979 after failure to meet New York State Part 360 solid waste regulations.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

Not Applicable

III. TOTAL POPULATION POTENTIALLY AFFECTED: >1000

IV. COMMENTS

The Carroll Town Landfill is the location of a former municipal landfill that operated from the early 1960s to 1979. Industrial wastes were allegedly disposed in the landfill during the period of operation and partially buried 15- and 55-gallon drums have been observed on several occasions at the site. Sources of waste are alleged to include metal debris from Vac Air Alloys and unpermitted disposal of sludge from the Jamestown Rendering wastewater treatment facility. All wastes disposed were placed in landfill cells without secondary containment.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

EPA

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
_ A. NPDES				
_ B. UIC				
_ C. AIR				
_ D. RCRA				
_ E. RCRA INTERIM STATUS				
_ F. SPCC PLAN				
X G. STATE (specify) 1) Part 360 Solid Waste Disposal Permit 2) Construction and Demolition Debris Disposal Site Permit	1) Unknown 2) 07D31	1) Unknown 2) December 1979	1) 1976 2) March 29, 1986	
_ H. LOCAL (specify)				
_ I. OTHER (specify) Unknown				
_ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
_ A. SURFACE IMPOUNDMENT		
_ B. PILES		
_ C. DRUMS, ABOVE GROUND		
_ D. TANK, ABOVE GROUND		
_ E. TANK, BELOW GROUND		
X F. LANDFILL	Unknown	
_ G. LANDFARM		
X H. OPEN DUMP	Unknown	
_ I. OTHER (specify)		

04 TREATMENT (check all that apply)
- _ A. INCINERATION
- _ B. UNDERGROUND INJECTION
- _ C. CHEMICAL/PHYSICAL
- _ D. BIOLOGICAL
- _ E. WASTE OIL PROCESSING
- _ F. SOLVENT RECOVERY
- _ G. OTHER RECYCLING/RECOVERY
- X H. OTHER None (specify)

05 OTHER
- _ A. BUILDINGS ONSITE

06 AREA OF SITE
approx. 25 (acres)

07 COMMENTS
The site occupies approximately 25 acres of a 305-acre parcel owned by the Town of Carroll. The landfill consists of two roughly rectangular cells that contain several 15- and 55-gallon drums identified during PSA field activities. Many of the drums were crushed and rusted through. The landfill does not contain any secondary containment features.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (check one)

_ A. ADEQUATE, SECURE _ B. MODERATE X C INADEQUATE, POOR _ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

Drums identified at the site during PSA field activities were crushed and rusted through. The landfill does not contain any secondary containment features.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: X YES _ NO

02 COMMENTS

Several crushed drums were noted at or just below the ground surface. Cover soil on the landfill was less than one foot in depth in some areas.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analyses, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

EPA

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (check as applicable)	SURFACE	WELL	02 STATUS			03 DISTANCE TO SITE
			ENDANGERED	AFFECTED	MONITORED	
COMMUNITY	A. _	A. X	A. _	B. X	C. X	A. 700 (ft)
NON-COMMUNITY	B. _	B. X	D. _	E. _	F. _	B. 1,200 (ft)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (check one)

X A. ONLY SOURCE FOR DRINKING _ B. DRINKING (other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) _ C. COMMERCIAL INDUSTRIAL IRRIGATION (Limited other sources available) _ D. NOT USED, UNUSABLE

02 POPULATION SERVED BY GROUNDWATER	03 DISTANCE TO NEAREST DRINKING WATER WELL
>1000	700 feet

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
0 (ft)	Southwest	15-20 (ft)	200,000 (gpd)	_ YES X NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)
Seven wells were sampled during PSA field activities. Four of the wells are monitoring wells located at the Carroll Town Landfill Site. Two of the wells are approximately 15 feet deep and the remaining two are approximately 30 feet deep. The water supply well and two associated monitoring wells were also sampled. The water supply well is 81 feet deep and used to supply potable water to the Village of Frewsburg. The two monitoring wells are set to approximately the same depth.

10 RECHARGE AREA		11 DISCHARGE AREA	
X YES _ NO	The aquifer is recharged by slow movement of water from Conewango Creek and the nearby swampy area through the upper confining bed to the sand and gravel formation.	_ YES X NO	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

_ A. RESERVOIR, RECREATION DRINKING WATER SOURCE _ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES _ C. COMMERCIAL INDUSTRIAL X D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Conewango Creek		3,300 (ft)
Frewsburg I Wetland Area	X	Adjacent to site (mi)
	_	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN			02 DISTANCE TO NEAREST POPULATION
ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE	
A. < 200 NO. OF PERSONS	B. < 100 NO. OF PERSONS	C. < 1500 NO. OF PERSONS	< 1 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
< 500	approximately 800 feet

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The area surrounding the Carroll Town Landfill site is primarily rural farmland. The Village of Frewsburg is located approximately 1 mile southwest of the site and Jamestown, NY is located approximately 5 miles northwest of the site.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

EPA

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

_ A. 10^{-6} - 10^{-8} cm/sec _ B. 10^{-4} - 10^{-6} cm/sec _ C. 10^{-4} - 10^{-3} cm/sec X D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

_ A. IMPERMEABLE (less than 10^{-6} cm/sec) X B. RELATIVELY IMPERMEABLE (10^{-4} - 10^{-6} cm/sec) _ C. RELATIVELY PERMEABLE (10^{-2} - 10^{-4} cm/sec) 4 _ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL Ph	
76-81 (ft)	approx. 3 - 7 (ft)	6.71 - 9.16	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE		
		SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
average 39 (in)	2.2 (in)	< 5 %	northwest	< 5 %

09 FLOOD POTENTIAL

SITE IS IN N/A YEAR FLOODPLAIN

10 _ SITE IS ON RIVERAIN FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE OTHER

A. 3,300 (ft) B. 0 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

> 3 (mi)

ENDANGERED SPECIES: osprey

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AGRICULTURAL LANDS AG LAND
A. 800 (ft)	B. 1200 (ft)	C. < 1 (mi)	D. < 1 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The Carroll Town Landfill is composed of two landfill cell areas separated by a north-south trending drainage swale. The eastern cell is fairly even, sloping gently to the north. The topography of the western cell is irregular with several flat areas or subcells of differing elevations. The southwestern part of the western cell is bounded by a low area. The entire site is located on a northwest-facing, gently sloping hillside. The site is surrounded by active and inactive farmland, wooded areas, wetlands, and private homes.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

EPA

I. IDENTIFICATION	
01 STATE: New York	01 SITE NUMBER:

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	7	NYTEST Environmental, Inc.	11/96
SURFACE WATER	2	NYTEST Environmental, Inc.	10/96
WASTE	2	NYTEST Environmental, Inc.	11/96
LEACHATE	6	NYTEST Environmental, Inc.	10/96
AIR	0		
RUNOFF	0		
SPILL	0		
SOIL	12	NYTEST Environmental, Inc.	10/96
VEGETATION	0		
OTHER:	0		

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Photoionization Detector	Measurements taken for soil/waste samples, leachate samples, and surface water samples.
Vinyl Chloride and TCE Drager Tubes	Measurements taken for soil/waste samples, leachate samples, and surface water samples prior to collection of analytical samples.
pH	Measurements taken for surface water, leachate, and groundwater samples.
Temperature	Measurements taken for surface water, leachate, and groundwater samples.
Conductivity	Measurements taken for surface water, leachate, and groundwater samples.
Dissolved Oxygen	Measurements taken for surface water, leachate, and groundwater samples.
Turbidity	Measurements taken for surface water, leachate, and groundwater samples.
Salinity	Measurements taken for surface water, leachate, and groundwater samples.

IV. PHOTOGRAPHS AND MAPS

01 TYPE X GROUND X AERIAL

02 IN CUSTODY OF Chautauqua County, New York Files
(Name of organization or individual)

03 MAPS
X YES
_ NO

04 LOCATION OF MAPS
New York State Department of Environmental Conservation

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Leachate and 55-gallon container sampling were completed by NYSDEC on April 14, 1992. Three leachate samples and one 55-gallon container sample were collected.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analyses, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Town of Carroll		5 West Main Street		Frewsburg	New York	14738

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE
Not Applicable						

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

EPA

I. IDENTIFICATION

01 STATE	01 SITE NUMBER
New York	

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER
Not Applicable								

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER

PREVIOUS OPERATOR'S PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE: New York	01 SITE NUMBER:

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
Not Applicable	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Town of Carroll			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
5 West Main Street			
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
Frewsburg	New York 14738		
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Vac Air Alloys	NYD041848334		
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
Frewsburg	New York 14738		

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Not Applicable			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analyses, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE: New York	01 SITE NUMBER:

II. PAST RESPONSE ACTIVITIES

01 _ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

01 _ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT APPLICABLE

II. PAST RESPONSE ACTIVITIES (Continued)

01 _ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

01 _ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

NOT APPLICABLE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997, ABB Environmental Services, and references cited therein.

EPA	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 11 - ENFORCEMENT INFORMATION	I. IDENTIFICATION	
		01 STATE New York	01 SITE NUMBER

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION X YES _ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

In 1976, the sites' NYS Part 360 Solid Waste Disposal Permit expired. Records indicate that disposal of industrial wastes continued at the landfill unpermitted until 1979 when the landfill failed to meet NYS Part 360 solid waste regulations. On October 2, 1979, NYSDEC issued a consent order stating the landfill was in violation of Article 27 of the New York State Environmental Conservation Law and 6 NYCRR Part 360. The Consent Order established a fine of $2,000 with further potential liability of $20,000 if conditions of the consent order were not met. In December 1979, the town received a permit to operate the landfill as a construction and demolition debris disposal site; however, the landfill could not accept wastes from Vac Air Alloys, could not place wastes within five feet of the water table, and would cover completed areas with two feet of soil.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Draft Preliminary Site Assessment Report, January 1997. ABB Environmental Services, and references cited therein.