

Health Consultation

COMBE FILL NORTH LANDFILL

MOUNT OLIVE TOWNSHIP, MORRIS COUNTY, NEW JERSEY

CERCLIS NO. NJD980530596

AUGUST 18, 2000

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

COMBE FILL NORTH LANDFILL

MOUNT OLIVE TOWNSHIP, MORRIS COUNTY, NEW JERSEY

CERCLIS ID NO. NJD980530596

Prepared by:

**New Jersey Department of Health and Senior Services
Hazardous Site Health Evaluation Program
Consumer and Environmental Health Services
Division of Epidemiology, Environmental and Occupational Health**

Statement of Issues and Purpose

In 1988, the Agency for Toxic Substances and Disease Registry (ATSDR) prepared a health assessment for the Combe Fill North Landfill site. At that time, the ATSDR concluded that the site posed potential risks to human health from possible exposures to landfill leachate, contaminated surface runoff, and vapors. Since that time, remedial measures were developed and implemented to contain the site in order to prevent environmental exposures to the community. However, the site's rocky, permeable soil, sloping topography, the hydrological connection between the site's groundwater and the aquifer utilized for potable water in the surrounding area, and the sporadic nature of contaminants present at the site in the past, raised the potential for future off-site groundwater contamination to communities living downgradient of the site.

Under a Cooperative Agreement, the ATSDR requested that the New Jersey Department of Health and Senior Services (NJDHSS) provide a status update of the Combe Fill North Landfill site to re-evaluate and ensure the effectiveness of the implemented containment remedies. This Health consultation will address the following questions:

- 1) Upon revisiting the conclusions and recommendations provided by the 1988 health assessment, are there currently any potential exposures to the public health resulting from on-site contaminants?
- 2) Are there any community concerns regarding the site at the present time?

Additionally, this Health consultation serves to document pertinent remedial activities implemented at the site subsequent to the 1988 health assessment as well as on-going operations and maintenance activities.

Background

The Combe Fill North Landfill site is located at 149 Gold Mine Road, Mount Olive Township, Morris County, New Jersey. (See Figures 1 and 2.) Mount Olive Township includes the municipalities of Budd Lake (located southwest of the site) and Flanders (located east of the site). The site covers approximately 103 acres, with an estimated 65 acres used for landfill activities. The surrounding area includes the residential community of Netcong Borough to the north.

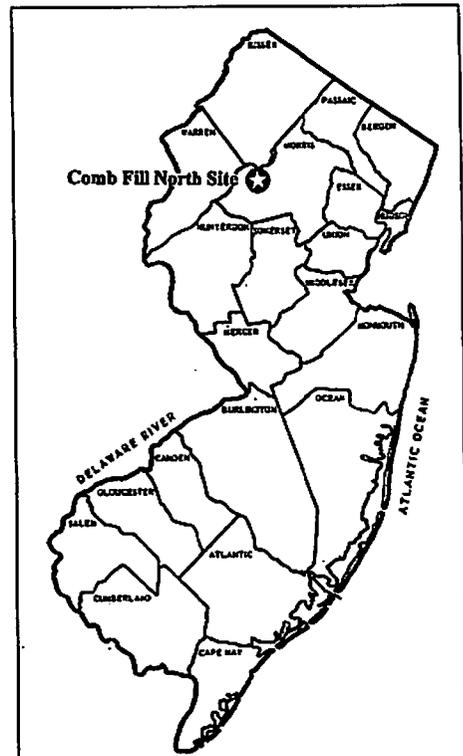


Figure 1 - Combe Fill North Site
40.881939; 74.713331

Prior to landfill activities, aerial photo site analysis from May 1966 suggest that mining (probably sand and gravel) and agricultural activities were the previous land uses of the landfill site (Baker 1983). Beginning in 1966, the site was first operated as a municipal landfill and reportedly accepted municipal, industrial (non-chemical), and other (bulky, vegetative, etc.) wastes along with small amounts of dry sewage sludge (Ebasco Services, Inc. 1986). From 1969 until 1978, the landfill was operated by Morris County Landfill, Incorporated.

From September 1978 until January 1981, the landfill was owned and operated by Combe Fill Corporation (CFC), a wholly owned subsidiary of Combustion Equipment Associates. During this time, CFC was repeatedly cited by the New Jersey Department of Environmental Protection (NJDEP) for violations of the New Jersey solid waste administrative codes which included windblown debris, inconsistent daily cover, inadequate leachate control, and allowing solid wastes to come into contact with both surface and groundwater. In January 1981, the NJDEP denied CFC's request to expand the landfill and the landfill was closed. CFC filed for bankruptcy later that same year. Public concern continued after landfill operations ceased due to noxious odors emanating from the landfill in addition to the potential effect of the landfill on the quality of the area's groundwater¹.

Community concern about the landfill began during its operation and led to the 1979 formation of a local citizens group called SMOTHER (Save Mount Olive Township Halt Environmental Rape). SMOTHER opposed the landfill's operational procedures and actively campaigned to close the landfill. Monitoring data from 1976 to 1982 indicated contamination of the groundwater and potable well water at and around the Combe Fill North Landfill site (SMOTHER 1982). The contaminants present during this time frame were usually sporadic in their occurrence. Results of groundwater sampling conducted by SMOTHER around the landfill helped to initiate the process for ranking the site on the National Priorities List (NPL) of Superfund sites, although the data were not used by the NJDEP due to a variety of quality control issues. At that time, the Combe Fill North Landfill site was ranked 36 of the 97 New Jersey sites on the NPL.

In August 1984, a Remedial Investigation/Feasibility Study (RI/FS) for the site was awarded to Ebasco Services, Incorporated subsequent to the NJDEP signing a Cooperative Agreement with the United States Environmental Protection Agency (USEPA). The objectives of the RI/FS were as follows: 1) identify the type, source and location of hazardous wastes disposed of at the site; 2) determine the nature, extent, and severity of ground water, soil and surface water contamination; 3) determine the nature and extent of air emissions; 4) identify and evaluate cleanup alternatives and recommend the most environmentally sound and cost-effective option; and 5) develop the conceptual design for the selected remedial action.

¹There are two aquifers upgradient of the site which flow to the northwest which include a shallow, unconfined aquifer in the surficial glacial moraine deposits, and a deeper, semi-confined aquifer in the lower portions of the glacial deposits and upper zone of the gneissic bedrock. The two aquifers are interconnected below the landfill where they become one.

Based on the absence of documented hazardous waste dumping at the landfill (information available indicated that the site may not have received larger quantities of hazardous substances than any sanitary landfill would be expected to receive in municipal refuse), monitoring data which indicated low levels of hazardous substances present in the landfill, and monitoring results which indicated that no contaminants related to the site were migrating from the site, the recommended remedial action alternative for the site was closure as a sanitary landfill².

A public meeting was held on July 1, 1986 to discuss the findings of the RI/FS and to present to the community the preferred alternative remedial action for the site. The study concluded that the low levels of contamination determined to be attributable to the landfill did not pose health risks. No consistent contaminant pattern or plume from the site to outlying areas was identified. The data further suggested that a source unrelated to the landfill may have been responsible for some of the contaminants, including 98 parts per billion of trichloroethylene detected in one potable well. Future off-site contaminant migration downgradient of the landfill, however, was a possibility.

With NJDEP concurrence, the USEPA issued a Record of Decision (ROD) for the site in September 1986 (USEPA 1986). The ROD required grading and compacting the landfill; capping the landfill; installing a drainage system; installing a landfill gas (methane) venting system; and constructing a site perimeter fence. These remedial measures were completed in 1991 and were implemented to minimize surface water and rainfall infiltration and associated leachate generation, minimize air pollution, minimize methane gas migration, and prevent human direct contact with solid wastes. Figure 3 illustrates an overview of activities occurring at the site beginning with the 1960s through present day.

Community Concerns

In an effort to identify community concerns related to the site subsequent to the 1988 ATSDR health assessment, the Mount Olive Department of Health, the USEPA, and the NJDEP were contacted. Since 1991 (when remedial construction measures closed the site as a sanitary landfill), community complaints relating to the former landfill site have ceased. According to the NJDEP, SMOTHER, the local citizens group originally formed to address concerns related to the site, is now defunct.

Site Visit

On February 10, 2000 a site visit of the Combe Fill North Landfill was conducted. Representatives of the ATSDR, NJDEP, USEPA and NJDHSS were present at the time of the inspection. Mount Olive Township Health Department officials had been informed and invited to

²Data originally used to rank the site on the NPL indicated contamination of a much higher concentration than that detected during the RI/FS.

be present during the scheduled site visit. No odors were detectable while standing at the site's Gold Mine Road front entrance. NJDEP staff permitted access to the site by unlocking a padlocked front gate. A good portion of the site, which was uniformly covered with a foot or more of snow, was walked and inspected. No problems or areas of concern were noted during the course of the inspection.

According to 1990 census data, 4,199 individuals live within a one mile radius of the site (Figure 4). However, observations made during the site visit indicate the area surrounding the landfill has undergone a great deal of development. Immediately west of the site is a 165 unit single family residential development (Country Oaks Estates) which completed construction in 1999. This development is supplied by public drinking water and sewer. Scattered throughout the area is new home construction. Most of these homes are being constructed with private wells and septic tanks (Mount Olive Department of Health, personal communication, 2000). The Mount Olive Transfer Station and Household Hazardous Waste Facility are located on Gold Mine Road as well as are Tri State Concrete and Dell Contractors (formerly Flanders Asphalt). Located within a few miles of the site are the Mt. Olive Township High School, the Flanders Valley Swim and Tennis Club, and the Fla-Net Park Campground for motor homes. This campground is scheduled to be closed due to the planned commercial development of the area (Mount Olive Department of Health, personal communication, 2000). The only "agricultural" activity observed in the general vicinity of the site was a commercial nursery.

Prior ATSDR Activity

In 1988, the ATSDR published a health assessment for the Combe Fill North Landfill. The following are the conclusions of the report:

1) *The site is of potential public health concern due to the risk of exposure to hazardous substances at concentrations that may result in adverse health effects.* Subsequent to the 1988 health assessment, remedial data and information did not indicate the presence of any human exposure pathways which could result in adverse health effects. The potential public health issues associated with the site were not actualized.

2) *Human exposure to leachate, contaminated surface runoff, and vapors released on-site may be of public health concern.* Remedial measures were implemented subsequent to the 1988 health assessment which addressed leachate, runoff, and vapor control. These issues were not associated with a completed exposure pathway, and thus were not of public health concern.

3) *The selected remedial alternatives presented in the ROD are protective of human health, with the exception of possible inhalation exposure to gas migrating from the site.* A gas collection system was part of the remedial design for the landfill. There were no completed exposure pathways associated with inhalation of landfill gases.

Discussion

As part of RI/FS activities, an inventory of all hazardous substances encountered at the Combe Fill North Landfill site was to be prepared. The purpose of this inventory was to document any and all substances which may have caused, are still causing, or have the potential to cause contamination of the soil, groundwater, air or surface waters of the area (Ebasco Services, Inc. 1984). No hazardous substance inventory was compiled for the site, however, as no drums, bottles, lab packs or impoundments, etc. were found during any phase of field work activity (Ebasco Services, Inc., undated).

Operations and maintenance activities have been implemented for the site since 1991 and include the inspection of the landfill cap, drainage system, gas vents, trenches and perimeter site fence. Cracks in the landfill cap caused by differential settlement have been identified and repaired. Future planned work activities include improvements to the existing surface water control structures in order to address ponded areas, the replacement of a damaged monitoring well, and the installation of a monitoring well into the deeper aquifer along Gold Mine Road. Non-emergency repair work is contracted once there is enough work required to substantiate the preparation of a contract engagement. Emergency repairs are promptly addressed; to date, emergencies at the site have involved only the rebedding of the site's access road subsequent to rainfall washouts (NJDEP, personal communication, 2000).

In September 1999, the USEPA provided the NJDEP with a five-year (statutory type I) review report for the Combe Fill North Landfill site. The purpose of this review, which is applicable at sites where construction activities have been completed, was to ensure that the remedial action selected for the landfill remains protective of public health and the environment. The report concluded that the remedial action selected remains fully protective of human health and the environment. The report also provided the NJDEP with the following recommendations: repair cracks and depressed areas located on the landfill cap; and ensure implemented operations and maintenance activities (i.e., identifying and correcting any ponding, settlement or erosion as well as routinely mowing the grass landfill cap) are consistent with the 1986 ROD.

Pathways Analysis

Groundwater remains as the only potential pathway associated with the Combe Fill North Landfill site. The location of on-site groundwater monitoring wells for the Combe Fill North Landfill site is provided in Figure 5. Groundwater monitoring data for the years 1985 through 1999 indicate residual volatile organic chemical contamination (see Appendix I). Twelve to 88 ppb of 4-methyl-2-pentanone was detected in one monitoring well, with the last detected result reported in 1993. In four monitoring wells, 1,2-dichloroethene was detected; 24 ppb was the highest result detected in one of the four wells. In 1988, 3,100 ppb of 2-butanone was detected in one monitoring well.

Results indicate that while mostly low levels of some organic compounds are detected in groundwater under the site, ground water quality standards (N.J.A.C. 7:9-6.7) have not been exceeded in the last several years. There is no indication that a contaminant plume exists or is migrating off-site.

There are no data or information indicating that off-site potable wells are being impacted by the site. Routine monitoring of off-site potable wells was discontinued due to the lack of contaminants detected (NJDEP, personal communication, 2000).

Child Health Considerations

ATSDR's Child Health Initiative recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination in their environment (ATSDR 1997). Children are at greater risk than adults from certain kinds of exposures to hazardous substances emitted from a waste site. They are more likely to be exposed because they play outdoors and they often bring food into contaminated areas. They are shorter than adults, which means they breathe dust, soil, and heavy vapors closer to the ground. Children are also smaller, resulting in higher doses of chemical exposure per body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most important, children depend completely on adults for risk identification and management decisions, housing decisions and access to medical care.

NJDHSS/ATSDR evaluated the likelihood for children to be exposed to Combe Fill North Landfill site related contaminants at levels of public health concern. There are presently no completed exposure pathways to children associated with the site.

Conclusions and Recommendations

Hazard Category

Based on a review of available data and information regarding the Combe Fill North Landfill site, the ATSDR and NJDHSS conclude that the Combe Fill North Landfill site currently poses *No Apparent Public Health Hazard*. There are no completed human exposure pathways associated with the Combe Fill North Landfill site at this time. Human exposure pathways identified in the 1988 ATSDR health assessment have been addressed, or are no longer valid under present site conditions.

Cease/Reduce Exposure Recommendation

There are a number of residents in the vicinity of the Combe Fill North Landfill site who use private wells for their source of drinking water. The NJDHSS recommends that these residents periodically monitor the quality of their well water by having it tested to ensure it is safe and free of contamination (NJDHSS 1999).

Site/Characterization Recommendation

There is no evidence that off-site groundwater contamination related to the site is occurring at this time. It is recommended that operations and maintenance activities (which include ongoing ground water monitoring of the site) continue in order to determine if any changes occur in the on-site groundwater contamination status.

Public Health Action Plan

The Public Health Action Plan (PHAP) for the Combe Fill North Landfill site contains a description of the actions to be taken at or in the vicinity of the site. The purpose of the PHAP is to ensure that this Health consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of ATSDR and the NJDHSS to follow-up on this plan to ensure its implementation. ATSDR will provide an annual follow-up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this Health consultation, and will be provided to persons who request it. The public health actions taken or to be implemented are as follows:

Public Health Actions Undertaken by ATSDR/NJDHSS:

- 1) Available data and information have been evaluated by the ATSDR/NJDHSS to determine public health concerns regarding potential human exposure pathways.

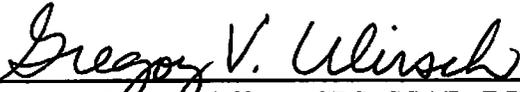
Public Health Actions Planned by ATSDR/NJDHSS:

- 1) In an effort to further evaluate the public health significance of the Combe Fill North Landfill site, the ATSDR and the NJDHSS, as requested, will work with the NJDEP and USEPA to provide a public health review of future groundwater and private well water data generated during ongoing site investigations and remedial activities.
- 2) The ATSDR and the NJDHSS will re-evaluate and revise the PHAP, as warranted. New environmental, toxicological, health outcome data, changes in conditions at the Combe Fill

North Landfill site, or the results of implementing the above proposed actions may determine the need for additional actions at the Combe Fill North Landfill site by the NJDHSS and/or the ATSDR.

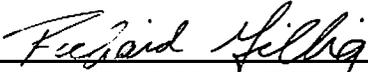
CERTIFICATION

The Health Consultation for the Combe Fill North Landfill site was prepared by the New Jersey Department of Health and Senior Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the Health Consultation was initiated.



Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Health Consultation and concurs with its findings.



Acting Chief, SSAB, DHAC, ATSDR

References

Agency for Toxic Substances and Disease Registry. Health Assessment for the Combe Fill North Landfill, Mount Olive Township, New Jersey. US Department of Health and Human Services; 1988 May.

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Ebasco Services, Incorporated. Field sampling plan for Feasibility Study at the Combe Fill North Landfill Site; 1984.

Ebasco Services, Incorporated, undated. Feasibility Study for the Combe Fill North Landfill Site at Mount Olive Township, New Jersey. Task 2 Report: Site Investigations. No date available but is thought to be prepared subsequent to November 1985 Task 2 Report).

Ebasco Services, Incorporated. Feasibility Study for the Combe Fill North Landfill Site at Mount Olive Township, New Jersey. Task 3: Identification of Remedial Alternatives; Task 5: Evaluation of Remedial Alternatives; 1986 May.

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Save Mount Olive Township Halt Environmental Rape. March 22, 1982. Technical assessment of the risk of siting landfills in groundwater recharge areas. Report to Morris County Solid Waste Advisory Committee.

US Environmental Protection Agency, Region II. Record of Decision for the Combe Fill North Landfill, Mount Olive Township, Morris County; 1986 September.

Acknowledgment

The NJDHSS would like to recognize the assistance of the following agencies in the preparation of this Health consultation: Publically Funded Site Remediation Program; Bureau of Site Management; Bureau of Construction; and Bureau of Ground Water Pollution Abatement; all of the NJDEP; and the Mount Olive Township Health Department.

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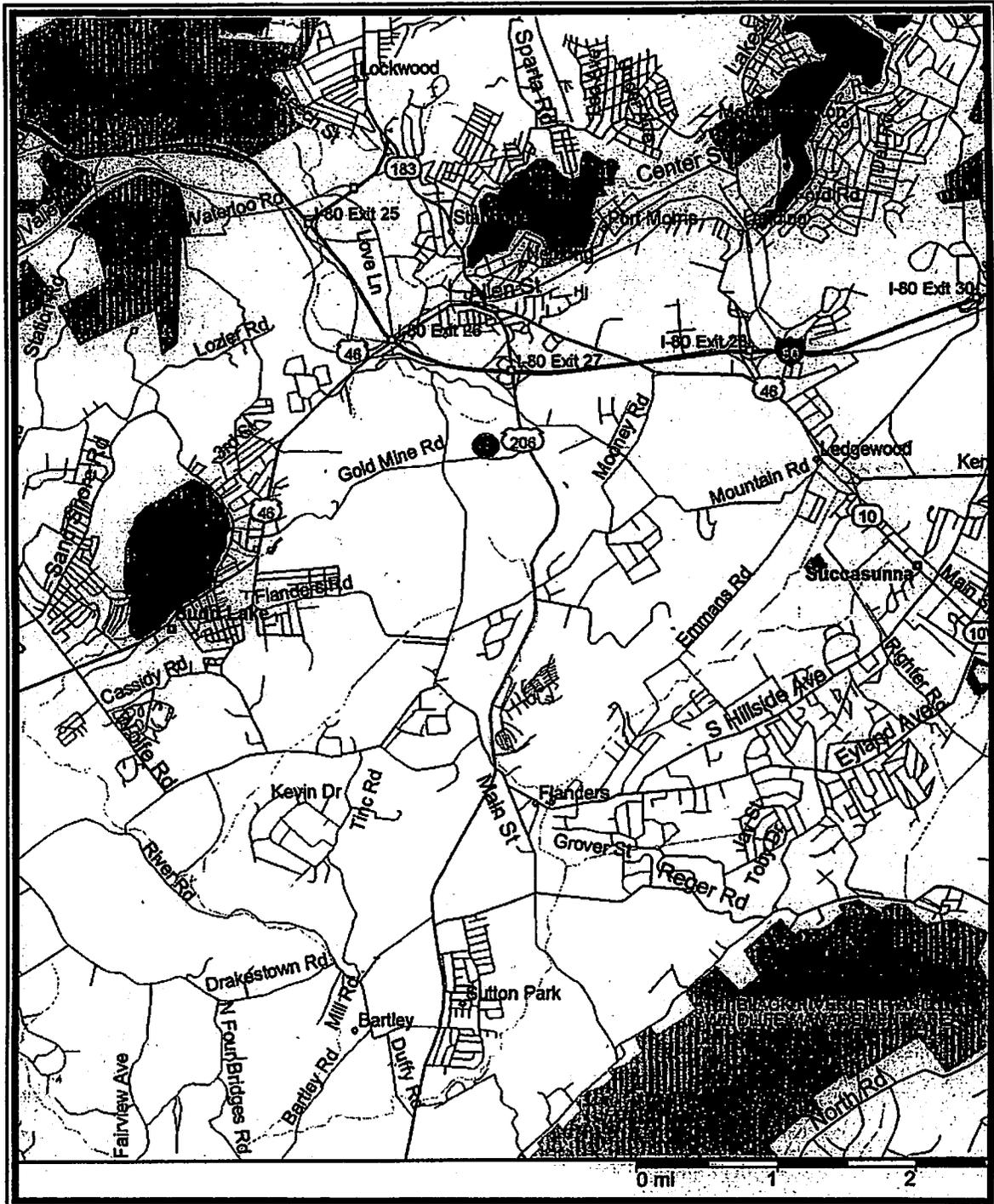


Figure 2 - The Combe Fill North Landfill site located at 149 Gold Mine Road, Mount Olive Township, Morris County New Jersey.

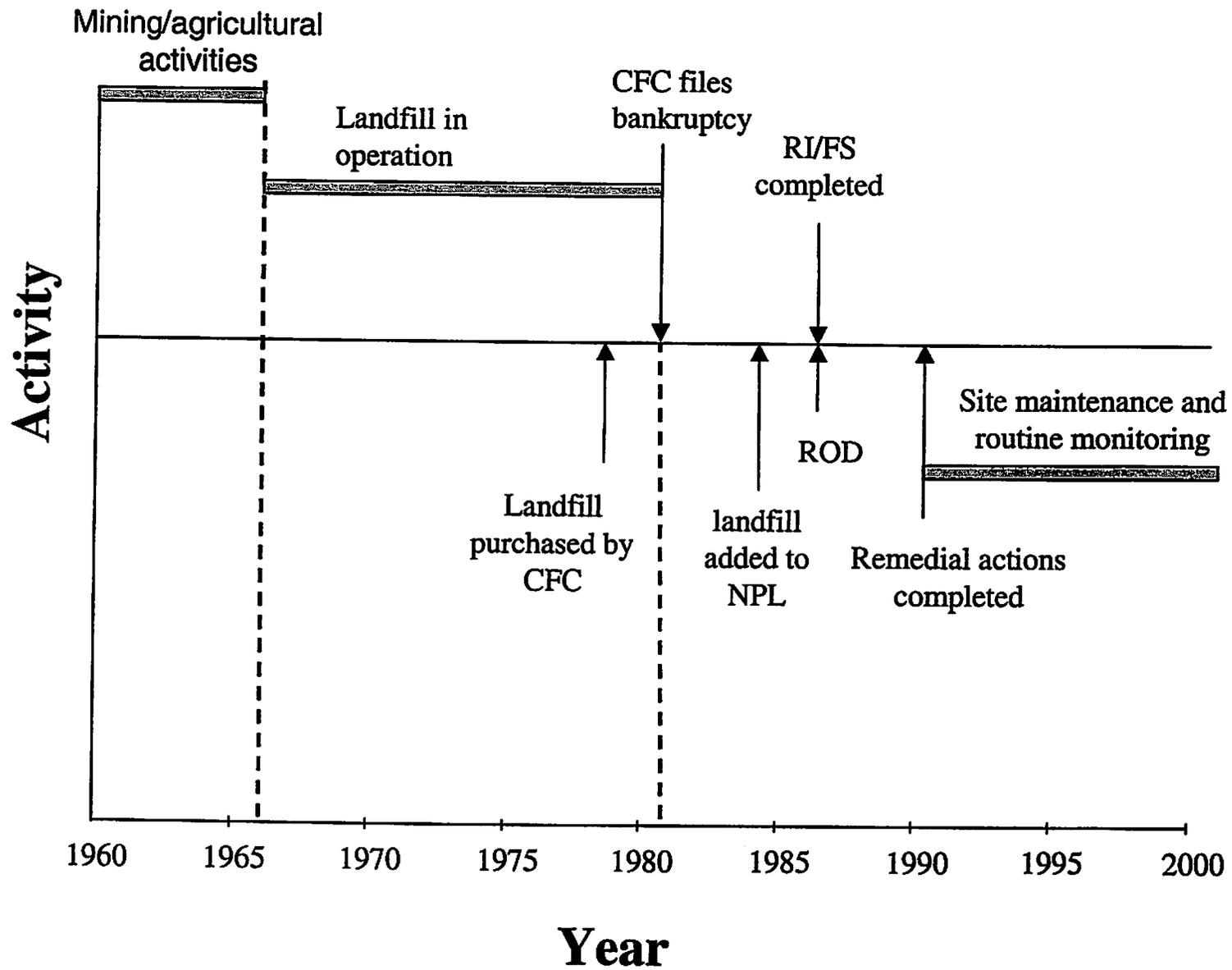


Figure 3: Overview of activities at the Combe Fill North Landfill Site.

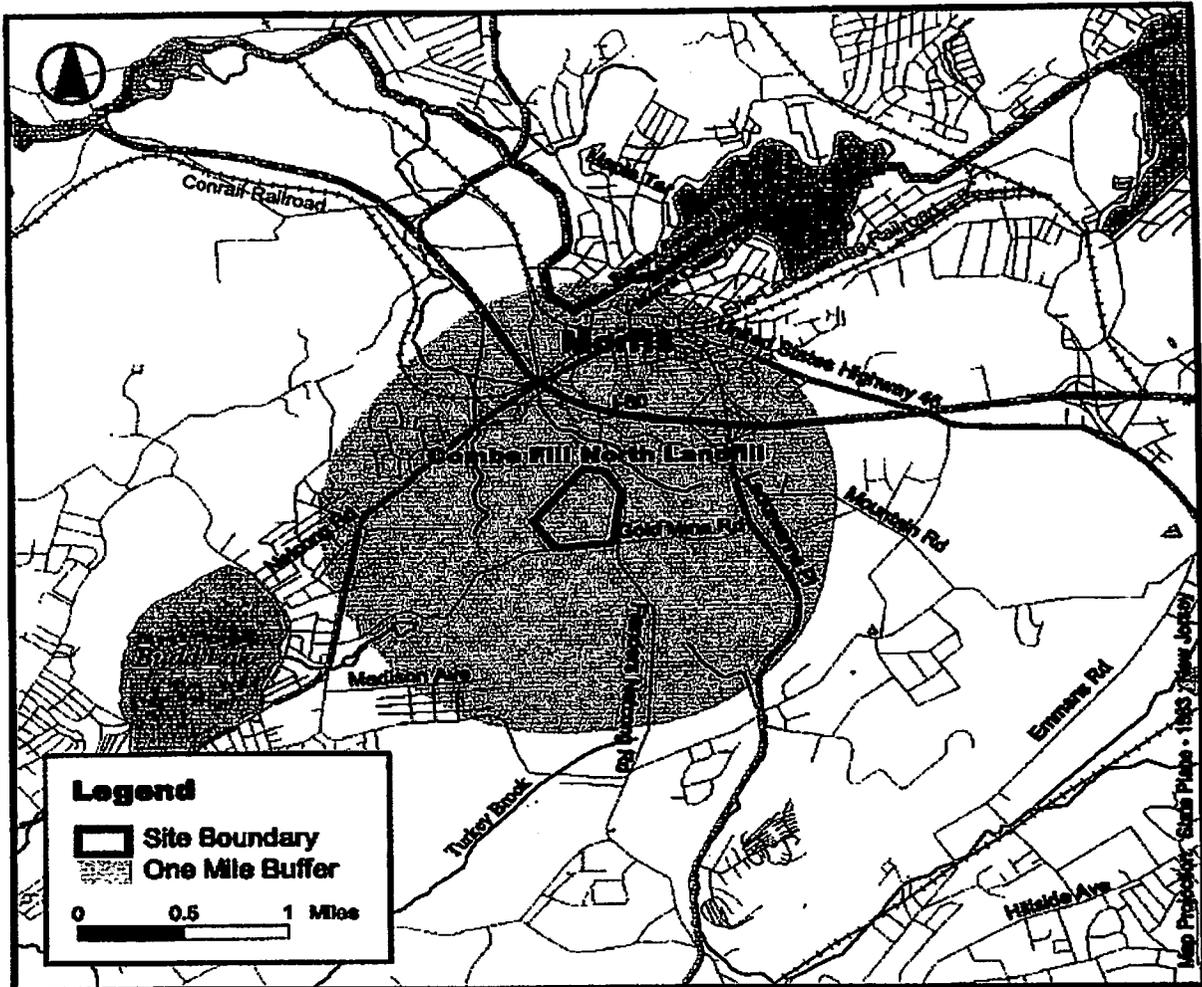


Figure 4 - Demographic information for a one mile radius of the Combe Fill North Landfill site.

Total Population	4,199	Total Housing Units	1,903
White	4,018	Hispanic*	124
Black	89	Children ≤ 6 years	367
American Indian	6	Adults ≥ 65 years	501
Asian	60	Females 15 - 44 years	1,092
Other race	25		

*Black or White

Demographics Statistics Source: 1990 United States Census

Combe Fill North Monitor Well Locations

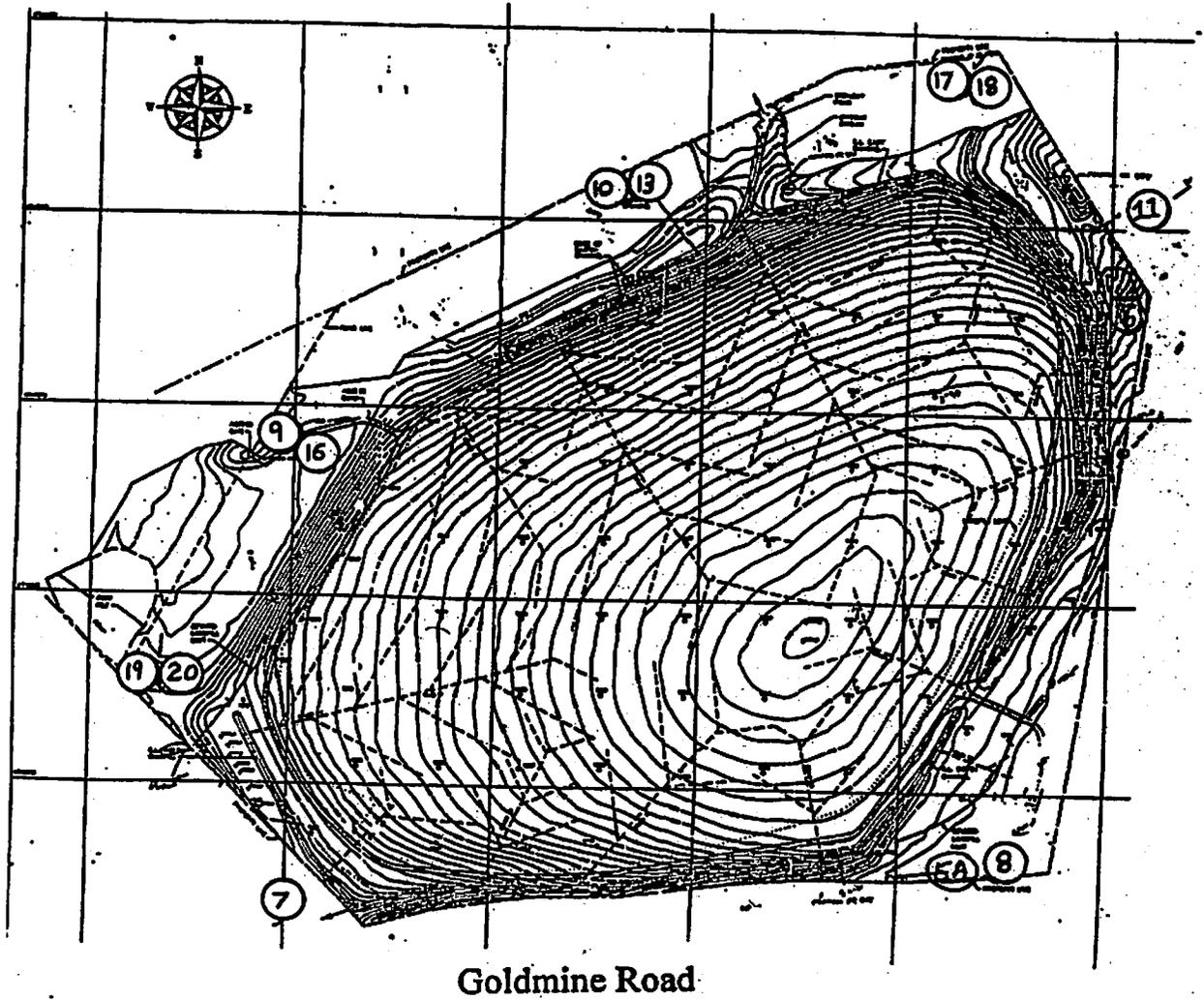


Figure 5 - Location of on-site monitoring wells for the Combe Fill North Landfill site, Mount Olive Township, Morris County, New Jersey.

Appendix I

**Combe Fill North Landfill
1,2-Dichloroethene Results**

results in ug/L

Sampling Dates	Ground Water Data											
	MW 5 (A)	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12	MW 16	MW 17	MW 18	MW 19	MW 20
July 1985												
February 1988												
May 1992		ND	ND	ND	ND	ND	ND	ND	3	24	ND	ND
August 1992		ND	ND	ND	ND	ND	ND	ND	17	2	ND	ND
November 1992		ND	ND	ND	ND		ND	ND	21	ND	ND	ND
February 1993												
April 1993		ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND
August 1993		ND	ND	ND	ND	ND	ND	ND	15	ND	ND	ND
May 1994		ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND
October 1994	ND	ND	ND	ND	ND	ND	ND	ND	16	ND	ND	ND
June 1995	ND	ND	ND	ND	ND	ND	ND	1	17	ND	ND	ND
October 1995	ND	ND	ND	ND	ND	ND	ND	ND	17	ND	ND	ND
December 1995	ND	ND	ND	ND	ND	ND	ND	ND	14	ND	ND	ND
February 1996								1	12	ND	1	ND
June 1996	ND	ND	ND	ND	ND		ND	ND	11	ND	ND	ND
September 1996	ND	ND	ND	ND	ND		ND	ND	15	ND	ND	ND
December 1996	ND	ND	ND	ND	ND		ND	ND	16	ND	ND	ND
March 1997	ND	ND	ND	ND	ND		ND	NA	12	ND	ND	ND
December 1997	ND	ND	ND	ND	ND		ND	ND	7	ND	ND	ND
March 1998	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND
August 1998	ND	**	**	**	ND		ND	ND	8	ND	ND	ND
September 1999	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND

** - Results were non-detect. However, the data are considered qualified, biased low due to elevated sample temperatures upon receipt at the laboratory.

The results in column "MW 5 (A)" reflect the data from monitor well 5 through the August 1998 sampling event. Starting with September 1999, the results are for replacement well, 5A.

**Combe Fill North Landfill
4-Methyl-2-pentanone Results**

results in ug/L

Sampling Dates	Ground Water Data												
	MW 5 (A)	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12	MW 16	MW 17	MW 18	MW 19	MW 20	
July 1985			NA	NA	NA		NA	NA					
February 1988			ND	ND	ND		88	ND					
May 1992		ND	ND	ND	ND	ND	21	ND	ND	ND	ND	ND	ND
August 1992		ND	ND	ND	ND	ND	42	ND	ND	ND	ND	ND	ND
November 1992		ND	ND	ND	ND	ND	54	ND	ND	ND	ND	ND	ND
February 1993		NA	ND	NA	NA	NA	54	ND	ND	ND	NA	NA	NA
April 1993		ND	ND	ND	ND	ND	12	ND	ND	ND	NA	ND	ND
August 1993		ND	ND	ND	ND	ND	12	ND	ND	ND	ND	ND	ND
May 1994		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
October 1994	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
June 1995	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
October 1995	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
December 1995	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
February 1996													
June 1996	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
September 1996	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
December 1996	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
March 1997	ND	ND	ND	ND	ND		ND	NA	ND	ND	ND	ND	ND
December 1997	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
March 1998	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
August 1998	ND	**	**	**	ND		ND	ND	ND	ND	ND	ND	ND
September 1999	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND

** - Results were non-detect. However, the data are considered qualified, biased low due to elevated sample temperatures upon receipt at the laboratory.

The results in column "MW 5 (A)" reflect the data from monitor well 5 through the August 1998 sampling event. Starting with September 1999, the results are for replacement well, 5A.

Summary of Groundwater monitoring results; Combe Fill North site (NJDEP).

**Combe Fill North Landfill
2-Butanone Results**

results in ug/L

Sampling Dates	Ground Water Data											
	MW 5 (A)	MW 7	MW 8	MW 9	MW 10	MW 11	MW 13	MW 16	MW 17	MW 19	MW 19	MW 20
July 1985			NA	NA	NA		NA	NA				
February 1988			R	R	R		3,100	R				
May 1992		ND	ND	ND	ND	ND	150	ND	ND	ND	ND	ND
August 1992		ND	ND	ND	ND	ND	430	ND	ND	ND	ND	ND
November 1992		ND	ND	ND	ND	ND	530	ND	ND	ND	NA	NA
February 1993		NA	ND	NA	NA	NA	530	ND	ND	ND	NA	ND
April 1993		ND	ND	ND	ND	ND	85	ND	ND	ND	ND	ND
August 1993		ND	ND	ND	ND	ND	85	ND	ND	ND	ND	ND
May 1994		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
October 1994	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
June 1995	ND	ND	ND	ND	ND	ND	20	ND	ND	ND	ND	ND
October 1995	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
December 1995	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
February 1996							ND	ND	ND	ND	ND	ND
June 1996	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
September 1996	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
December 1996	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND
March 1997	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
December 1997	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
March 1998	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
August 1998	ND	**	**	**	ND							
September 1999	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Summary of groundwater monitoring results: Combe Fill North site (NIDEP)

** - Results were non-detect. However, the data are considered qualified, biased low due to elevated sample temperatures upon receipt at the laboratory.
 The results in column "MW 5 (A)" reflect the data from monitor well 5 through the August 1998 sampling event. Starting with September 1999, the results are for replacement well, 5A.