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FINAL
SITE INSPECTION PRIORITIZATION REPORT
ATLANTIC ASBESTOS
RED HOOK, NEW YORK

CERCLIS ID No.: NYD980202014

September 1995

Work Order No.: 04200-022-081-0081

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

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GENERAL DESCRIPTION AND SITE HISTORY

Atlantic Asbestos, a.k.a. Red Hook Paper Company, (CERCLIS ID No. NYD980202014) (Ref. Nos. 2, p. 1-1; 4, p. 1-1; 11) is located on Spring Lake Road, in the rural Town of Red Hook, Dutchess County, New York (Ref. No. 11). The currently active site is privately owned by Mr. Barry Hull and encompasses approximately 66 acres with two buildings, two ponds, four piles of trash, and a series of lagoons (Ref. Nos. 2, pp. 4-4, 4-4a; 3; 4, p. 2-1). One building is used for paper production and the other houses offices. The lagoons and the ponds together form a "closed loop water recycling system"; the lagoons, acting as settling ponds, receive effluent from the manufacturing facility and drain into the large pond which is drained by a gate valve to a smaller pond that supplies water for the manufacturing process (Ref. Nos. 2, p. 1-1; 4, p. 1-1). Atlantic Asbestos Corporation (Red Hook Paper Company) has produced asbestos fiber, asbestos paper, and a low quality shipping paper since the facility was opened in 1946. The Ozurovich family owned the property from 1938 until 1970, when it was sold to the Atlantic Asbestos Corporation (Ref. Nos. 2, p. 4-1; 4, p. 5-1). The site is bordered to the north by vacant land, to the south by Cokertown Road (a.k.a. Hapeman Road), to the east by Spring Lakes, and to the west by another unnamed lake (Ref. No. 1).

Beginning in 1974, complaints from a nearby resident initiated several site inspections by the Dutchess County Department of Health (DCDOH) (Ref. No. 2, pp. 4-1, 4-2). During the April 1977 DCDOH site inspection uncovered asbestos was noted in the vicinity of the lagoons; this information was referred to the New York State Department of Environmental Conservation (NYSDEC). No violations were noted during a site walk-through conducted by the DCDOH on 3 August 1978; however, it was noted that the potential for flooding of adjacent waterways existed. On 8 August 1979 the DCDOH collected a bacteriological sample from nearby Spring Lakes at the request of a resident. Although analytical results were not found in background files, the April 1991 YEC, Inc./LMS Phase II Report indicated that the lake was free of coliform bacteria contamination. On 14 August 1979, Atlantic Asbestos was listed as a NYSDEC Reported Hazardous Waste Site. Water samples were collected by the DCDOH from four locations around the site on 17 October 1979. Analytical results reportedly indicated that total suspended solids in the lagoonal effluent exceeded levels found entering sewage treatment plants; however, no analytical results were found in background files. In addition, NYSDEC determined on 28 November 1979 that a State Pollutant Discharge Elimination System (SPDES) Permit was required for the mill and that effluent monitoring, a weir, and a gauging station were required to be built upstream of the culvert that drains an on-site pond into the wetlands adjoining Saw Kill Creek. These additional requirements were to be completed by 30 March 1981; however, there is no indication in background files that a gauging station was constructed. In July 1982 the original facility was destroyed by fire (Ref. No. 2, pp. 1-2A, 1-3, 4-2, 4-3). The United States Environmental Protection Agency (U.S. EPA) completed a Potential Hazardous Waste Site Preliminary Assessment Report of Atlantic Asbestos on 1 August 1983.

Wehran Engineering conducted a Phase I Investigation for the site on 24 September 1984 on behalf of NYSDEC Superfund Program. In the summer of 1986, a site investigation conducted by NYSDEC found open bags of asbestos, which had been removed from storage in the mill building after the fire and stored near the mill building; this asbestos was reportedly removed from the site to an approved disposal facility by Coachman Carting of Port Jervis, New York on 27 August 1987 (Ref. No. 2, p. 4-3).

Waste sources at the site include four trash piles located along a former logging road that runs north-to-south to the high ground overlooking the pond and a series of lagoons and associated dredge piles (Ref. No. 2, pp. 1-1, 4-4). Waste pile No. 1 contains household refuse, a 5-gallon container of pure asphalt, petroleum spirits and long asbestos fibers, an unlabeled container with a tarry substance adhered to its outside, five rusted 1-gallon paint containers, and numerous plastic containers of bleach and antifreeze. Waste pile No. 2 contains a refrigerator, a rusted 55-gallon open top steel drum, tar paper shingles, household trash, an automobile anti-freeze container, tires, and aluminum beverage cans. Waste pile No. 3 contains one empty 5-gallon can of driveway sealer or roof tar, several empty one gallon paint cans, and aluminum beverage cans. Waste pile No. 4 contains 15 1-gallon paint/turpentine/wood preserver cans and household refuse. The lagoons were used as crude settling ponds in the "closed loop water recycling system" at the site (Ref. No. 2, pp. 1-1, 4-5). According to the March 1991 YEC, Inc. Phase II Report, some of the effluent was noted at the interface of the unnamed lake and the final lagoon. No signs of stressed vegetation were noted at any of the four waste piles or the lagoons (Ref. No. 2, pp. 4-4, 4-5). There is no indication in background files how large of an area waste piles No. 1, No. 3, and No. 4 encompass; however, waste pile No. 2, which is documented to be the largest pile, is approximately 150 feet long and 5 to 20 feet wide. The two ponds encompass approximately 8.75 acres of the total 66 acres (Ref. No. 2, pp. 1-1, 4-4).

YEC, Inc. conducted a Phase II Investigation between February 1990 and March 1990 under contract to Lawler, Matusky, & Skelly Engineers on behalf of NYSDEC/Division of Hazardous Waste Remediation to determine the effects of waste dumping on the environment and to determine the immediate extent and magnitude of contamination based on site specific hydrogeologic conditions (Ref. No. 2, pp. 3-2, 3-8). Three groundwater wells, GW-1, GW-2, and GW-3 were installed around the site. Monitoring well GW-1 was located north of the waste piles No. 3 and No. 4 (Ref. No. 2, p. 3-4, Figure 4-1). Monitoring well GW-2 was installed in the vicinity of the intermittent stream that flows into the northwest corner of the large pond (Ref. No. 2, pp. 3-5, Figure 4-1). Monitoring well GW-3 was installed southwest of the lagoons (Ref. No. 2, p. 3-6, Figure 4-1). All three of these wells were sampled by YEC, Inc. and analyzed by Aquatec Labs for Target Compound List (TCL) compounds (Ref. No. 2, pp. 3-10, 3-15). Two surface water and two sediment samples were collected from the lagoonal mouth and analyzed by Aquatec Inc. for TCL compounds and asbestos (Ref. No. 2, pp. 3-11, 3-15, 4-34). Seven sludge samples were collected and analyzed by Aquatec Inc. for TCL

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TABLE 1

SELECTED ANALYTICAL RESULTS FOR SAMPLES COLLECTED BY YEC, INC. AT THE ATLANTIC ASBESTOS SITE IN FEBRUARY AND MARCH 1990

Contaminant	Waste Source Concentration	Upgradient Concentration	Highest Downgradient Concentration
Groundwater (ug/L)			
Iron	NA	2,320	51,700
Sludge (mg/kg)			
Chromium	269 E	40	NA
Magnesium	74,600	5,000	NA
Nickel	677	25	NA
Zinc	380 E	50	NA
Cyanide	15.5	NA	NA
Naphthalene	20,000 J	NA	NA
2-Methylnaphthalene	140,000	NA	NA
Bis(2-ethylhexyl)phthalate	8,700 J	NA	NA
Acetone	7 J	NA	NA
Chloroform	31	NA	NA
Toluene	6,100	NA	NA
Xylene	190	NA	NA
Asbestos (%)	67	NA	NA

Notes:

J - Estimated value, compound present below contract required detection limit but above instrument detection limit.
NA - Not Applicable
ug/L - Micrograms per liter.
mg/kg - Micrograms per kilogram.
U - Not detected.
E - Estimated concentration

(Ref. No. 2, pp. 3-9b,4-15,4-18,4-20,4-28,4-30,4-32,4-35, App. F7 through F181).

compounds and asbestos; SL-1 was collected from lagoon A, SL-2 was collected from lagoon C, SL-3 was collected from lagoon E, SL-4 was collected from the exposed dredged sludge pile southeast of lagoon D, SL-5 was collected approximately 130 feet downstream of SL-3, SL-6 was collected from the bottom of the stream bed, about 200 feet from the mouth of Lagoon F, and SL-7 was collected from the stream, about 40 feet from the mouth near lagoon F (Ref. No. 2, p. 3-12). Four soil samples were collected during the Phase II Investigation and analyzed for TCL compounds; SS-1 was collected at the large waste pile, SS-2 was collected downgradient from SS-1, SS-3 and SS-4 were collected downgradient from the two smaller waste piles (Ref. No. 2, p. 3-13). Three air samples were collected for asbestos analysis only; Pump 1 was located downwind of the exposed settling lagoon dredge pile near sludge sample SL-4, Pump 2 was located downwind of the dredge pile adjacent to settling lagoon C, Pump 3 was placed upwind of settling lagoon E, and the fourth pump was used as a blank (Ref. No. 2, p. 3-10). All data was validated by Data Validation Services of Riparius, New York, in accordance with NYSDEC 1987 Contract Laboratory Protocols (CLP) (Ref. No. 2, p. 3-15). Selected analytical results for this sampling event are presented in Table 1.

Currently, the site remains active for paper manufacturing, utilizing the "closed loop water recycling system" (Ref. No. 10). Access to the site is not limited to the public. According to an employee of Red Hook Paper Company, there are 10 workers on site (Ref. No. 10). The site is listed by NYSDEC, Division of Hazardous Waste Remediation as a Class 3 inactive hazardous waste site (Ref. No. 2, p. 1-1).

EVALUATION OF EXISTING INFORMATION AND SITE INSPECTION REPORT

Existing information and analytical data, primarily from the June 1990 Phase II Investigation Report and supporting documentation file, were used to conduct an evaluation of the site. Updated and additional data were collected to further evaluate the site to determine the need for CERCLA remedial action. The information used to reevaluate the current site status included groundwater population data within a 4-mile radius of the site, wellhead protection area information, fishery and sensitive environment data within 15 miles downstream of the site, and 1990 census data and sensitive environments within 4 miles of the site.

HAZARD ASSESSMENT

Groundwater Pathway - A release of site contaminants to groundwater is not observed. Several metals were detected in both the upgradient sample and the downgradient sample during the Phase II Investigation conducted by YEC, Inc. in February and March 1990; however, only iron was detected in the downgradient sample (51,700 ug/L) at a concentration greater than 10 times its respective upgradient concentration (2,320 ug/L) (Ref. No. 2, p. 4-15). Since iron is not attributable to site waste sources, it is not considered to be a contaminant of concern; therefore,

a release to groundwater was not documented. No volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls (PCBs), or pesticides were detected in downgradient samples at concentrations greater than three times the upgradient sample concentrations (Ref. No. 2, pp. F7-F14,F17-F28,F37-F53,F63-F71).

Groundwater in the vicinity of Atlantic Asbestos occurs in both unconsolidated deposits of sand and gravel and consolidated formations which together comprise the aquifer of concern (Ref. No. 2, pp. 5-2, 5-9, 5-13, 5-14, 5-15, 5-24 through 5-26). Wells in close proximity to the site are drilled into the Hudson River Formation, also known as the Normanskill Formation, which is composed of highly fractured shales and sandstones (Ref. No. 2, pp. 5-9, 5-10, 5-18, 5-20, 5-23). Due to the highly fractured nature of these rocks and the lack of any confining layer, the overburden aquifer and the bedrock aquifer may be considered one hydrogeologic unit. Layers of sand and gravel were laid down by melt water streams that entered glacial lakes, and are generally less than 25 feet thick, but can be as much as 50 feet thick in some areas within Dutchess County. Silt, sand, and gravel were encountered at the site between ground surface and 9.5 feet below ground surface (bgs) (Ref. No. 2, pp. 5-14, 5-15, 5-17, 6-1 through 6-3). The thickness of the Hudson River Formation across the county varies, ranging from a few feet to several thousand feet (Ref. No. 2, p. 5-10). Bedrock was encountered at various depths across the site, ranging from the ground surface to about 28 feet bgs (Ref. No. 2, pp. 6-1 through 6-3). Two wells which were installed on site by YEC, Inc. during the February 1990 Phase II Investigation, GW-1 (screened in highly weathered and fractured shale) and GW-2 (screened in silty sand and gravel) exhibited hydraulic conductivity values of 8.34×10^{-4} centimeters per second (cm/s) and 2.18×10^{-3} cm/s, respectively (Ref. No. 2, pp. 3-4 through 3-6, 3-8A, 6-1 through 6-3). No data was available for monitoring well GW-3 because of its close proximity to the lake and the highly fractured shale in which it was installed (Ref. No. 2, p. 3-9). Based on the Phase II Investigation boring logs, depth from the ground surface to the saturated zone (water table) is approximately 4 to 25 feet below ground surface (bgs) (Ref. No. 2, 6-1 through 6-3). Groundwater at the site is expected to flow in a southeastern direction towards a valley south of the Spring Lakes (Ref. No. 2, pp. 3-8b, 4-8). Depth to contamination at the site is reported to be approximately 3 feet below ground surface (Ref. No. 4, p. 5-2).

The nearest potable well, which serves approximately 3 people, based on 1990 Census Population data for the Town of Red Hook, is located approximately 200 to 300 feet southeast of the site (Ref. Nos. 1; 15). Groundwater serves approximately 7,040 people within a 4-mile radius of the site (0-¼ mile: 40; ¼-½ mile: 90; ½-1 mile: 280; 1-2 miles: 1,130; 2-3 miles: 1,110; 3-4 miles: 4,390) (Ref. No. 5). There are several designated wellhead protection areas within 4 miles of the site; however, none of these areas exist directly below the site (Ref. No. 9).

Surface Water Pathway - A release of site contaminants to surface water has not been observed or documented. Although no background surface water or sediment samples were collected during the 1990 Phase II Investigation conducted by YEC, Inc., none of the site-associated compounds or analytes detected exceeded three times their detection limit concentrations (Ref. No. 2, pp. 3-9b, 4-18, 4-20, 4-35).

The nearest downslope surface water body is Spring Lakes, designated Class B(T) by NYSDEC, which is located approximately 1,000 feet northeast of the site (Ref. Nos. 1; 13). The probable point of entry (PPE) is considered to be about 500 feet north of Spring Lake's southern tip, along its eastern border (Ref. No. 1). Spring Lakes, which has an estimated flow rate of less than 10 cubic feet per second (cfs) drains into Lakes Kill, a State designated Class B(T) water body, which flows at approximately 100 to 1,000 cfs and is located about 500 feet south of the PPE to the surface water pathway. Lakes Kill flows into Saw Kill, also designated Class B(T) by NYSDEC, with an estimated flow rate of 100 to 1,000 cfs. Saw Kill is located about 2.75 miles from the PPE and continues to flow in a northwest to westerly direction for approximately 7.0 miles where it discharges into Hudson River. Hudson River flows at approximately 14,060 cfs and is a State designated Class A water body. The 15-mile in-water segment extends along Hudson River approximately 5.25 miles, south of the Kingston-Rhinecliff Bridge (Ref. Nos. 1; 12; 13). Class A waters can be used for drinking, culinary, or food processing purposes, and any other uses while waters of Class B(T) are suitable for primary contact recreation and any other uses except as a source of water supply drinking, culinary, or food processing purposes (Ref. No. 13). Lakes Kill, Saw Kill, and Hudson River are all used for fishing and are state designated for the maintenance and propagation of aquatic species (Ref. No. 14). Surface water bodies within the 15-mile surface water pathway are considered sensitive environments since they are areas designated for protection and maintenance of aquatic life. There are approximately 0.4 mile of wetland frontage located along Lakes Kill which are considered sensitive environments (Ref. No. 1). Rhinebeck, which is partially located within the 4-mile target distance limit (TDL), uses the Hudson River for a potable water supply; however, the intake is located outside of the 15-mile surface water pathway, on the Hudson River, along Route 308 West (Ref. No. 5). There are no other known surface water intakes located within the 15-mile TDL. No flood plain panels were available for the Atlantic Asbestos site; the Map Index indicates that the site is located in an area of minimal flooding outside the 100-year floodplain (Ref. No. 7). There are no New York State (NYS)-listed threatened or endangered species habitats located within the surface water pathway (Ref. No. 6).

Soil Exposure Pathway - Hazardous substances have been detected on-site within two feet of the ground surface. Seven sludge samples were collected from on-site lagoons and associated dredge piles during the Phase II Investigation (Ref. No. 2, p. 3-12). Although metals were detected in the sludge samples, the quality assurance/quality control (QA/QC) for these samples is not known; therefore, analytical results were compared with their respective Eastern USA

Background concentrations. None of the metals were detected at concentrations in excess of 40 times the background level. Several volatile organic compounds and semivolatile organic compounds were detected in these sludge samples. Asbestos was also detected in sludge samples collected on-site (Ref. No. 2, pp. F77-F80, F83-F88, F89-F96, F101-F108, F117-F131, F137-F148, F152-F159, F162-F180). There is no indication in background files that these dredge piles were disposed of properly or covered, resulting in relatively easy access to the public. In addition, only metals were detected in surface soil samples collected on-site; however, none of the site related metals exceeded greater than 40 times their associated Eastern USA Background Standard concentrations. See Table 1 for selected sludge and soil sample analytical results. No residence, school, day care facility, or sensitive environment is located within 200 feet of the site (Ref. Nos. 1; 6). The site is currently active with approximately 10 employees (Ref. No. 9).

Air Pathway - A release of site contaminants to air is not observed. No measurable quantity of asbestos was detected in the air samples collected during the Phase II Investigation (Ref. No. 2, p. 3-9b). Air monitoring was conducted during the Phase II Investigation in April 1990, no constant readings above background were detected in the ambient air using an HNu photoionization detector (PID) and an MIE PDM-3 Miniram dust, aerosol, and mist monitor (Ref. No. 2, p. 4-12). There are approximately 7,180 people living within a 4-mile radius of the site (0-¼ mile: 40; ¼-½ mile: 90; ½-1 mile: 280; 1-2 miles: 1,130; 2-3 miles: 1,540; 3-4 miles: 4,100) (Ref. No. 5). There are more than 229 acres of wetlands within 4 miles of the site (0-¼ mile: 2; ¼-½ mile: 5; ½-1 mile: 18; 1-2 miles: 44; 2-3 miles: 60; 3-4 miles: 100) (Ref. Nos. 1; 10). There are two New York State (NYS)-listed threatened species habitats located within a 4-mile radius of the site (Ref. No. 6).

SUMMARY

The existing information, data, and additional information collected were sufficient to evaluate this site. This assessment indicated that the site poses a minimal impact to receptors in the vicinity of the site. A review of groundwater data from samples collected from on-site wells in 1990 did not indicate a release of site contaminants to groundwater. A release of contaminants to surface water has not been documented. There are no sensitive environments located in the immediate vicinity of the site. There is no known residential population located within 200 feet of site waste sources.

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Document Control No.: 4200-22-AFWC

REFERENCES

1. Four-Mile Vicinity Map/Surface Water Pathway Map for the Atlantic Asbestos Site, compiled from U.S. Department of Interior, Geological Survey Topographical Maps, 7.5 minutes series; Saugerties, NY, Quadrangle, 1963, photoinspected 1978; Clermont, NY Quadrangle, 1963, photorevised 1978; Ancram, NY Quadrangle, 1963, photorevised 1978; Rock City, NY Quadrangle, 1990; and Kingston East, NY Quadrangle, 1990.

THIS ENTIRE REPORT IS ALREADY IN THE SITE FILE (WHY DUPLICATE)

* 2. New York State Department of Environmental Conservation (NYSDEC)/Division of Hazardous Waste Remediation, Engineering Investigations At Inactive Hazardous Waste Sites Phase II Investigation Report, Atlantic Asbestos, Site No. 314019, prepared by YEC, Inc., for Lawler, Matusky, & Skelly Engineers, April 1991. 300+ PAGES

3. Phone Conversation Record: Conversation between Richard Trotti, Red Hook Tax Assessor's Office, and Michelle Hunter, Roy F. Weston, Inc. (WESTON), 9 February 1995.

THIS ENTIRE REPORT IS ALREADY IN THE SITE FILE

* 4. NYSDEC Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase I Investigation Report, Atlantic Asbestos Site, Site No. 314019, prepared by Wehran Engineering, P.C., September 1984. (WHY DUPLICATE)

07 PAGES

5. Project Note from Michelle Hunter, WESTON, to Atlantic Asbestos file, Subject: Water Supply, 2 February 1995; plus attachments.

6. Project Note from Michelle Hunter, WESTON, to Atlantic Asbestos File, Subject: Sensitive Environment Summary, 2 June 1995.

7. Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map, Town of Red Hook, New York, Dutchess County, Community-Panel Numbers 361143 0001-0035, Effective Date: 16 October 1984.

8. Project Note from Michelle Hunter, WESTON, to Atlantic Asbestos file, Subject: Wellhead Protection Information, 2 June 1995; plus attachments.

9. Phone Conversation Record: Conversation between Kathy, Red Hook Paper Company, and Michelle Hunter, WESTON, and 30 May 1995.

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REFERENCES (CONTINUED)

10. Project Note from Michelle Hunter, WESTON, to Atlantic Asbestos file, Subject: Wetland Acreage Summary, 2 June 1995.

11. U.S. Environmental Protection Agency (U.S. EPA) Superfund Program, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), List-4: Site Alias Location Listing, p. 294, and List-8: Site/Event Listing, p. 274, 14 October 1994.

12. Project Note From Michelle Hunter, WESTON, to Atlantic Asbestos file, Subject: Stream Flow Information, 4 August 1995; plus attachments.

13. Project Note from Michelle Hunter, WESTON, to Atlantic Asbestos file, Subject: Stream Classification Information, 1 June 1995; plus attachments.

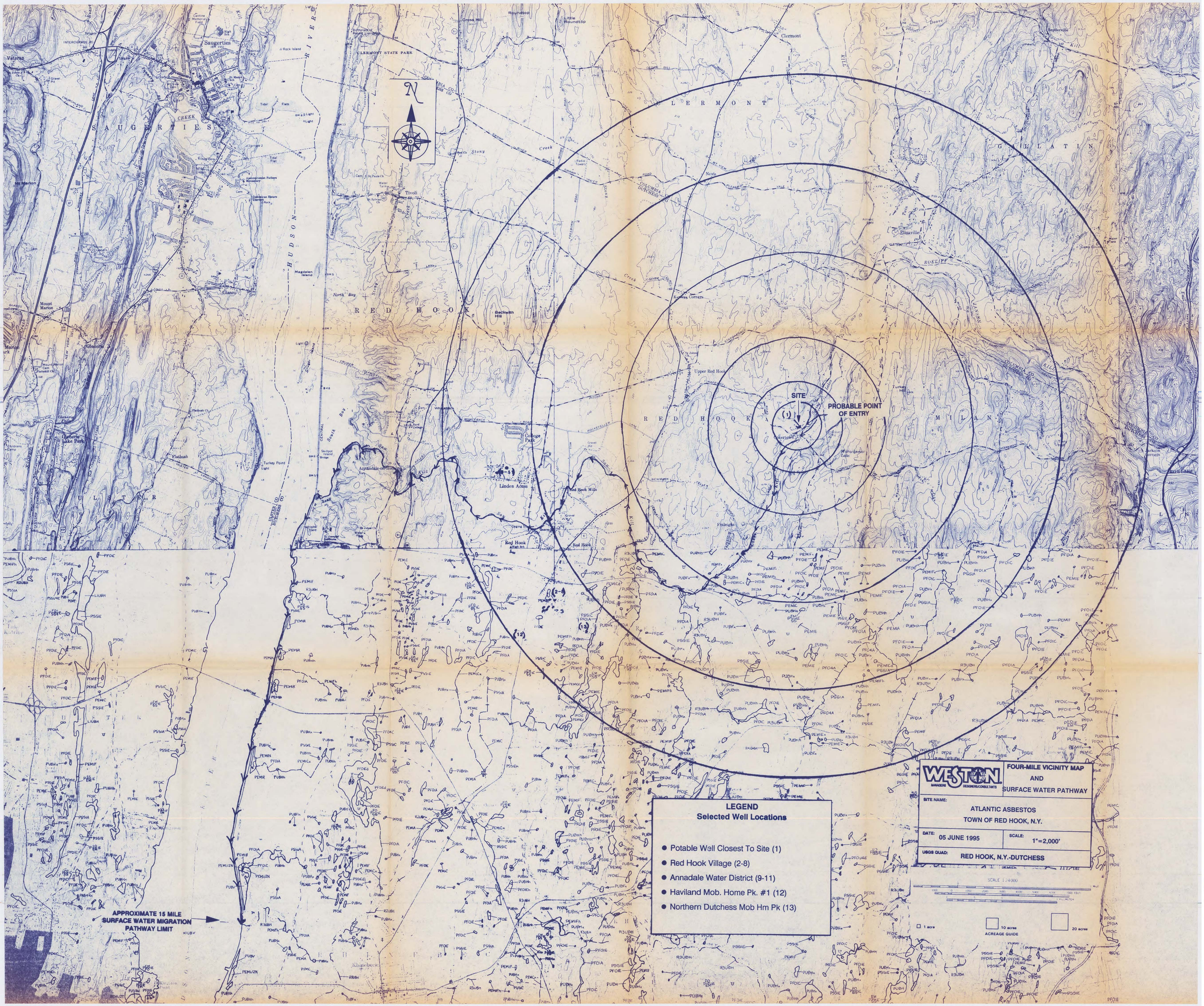
14. Phone Conversation Record: Conversation between Robert Angyal, NYSDEC/Division of Fish and Wildlife, and Michelle Hunter, WESTON, 23 May 1994.

15. New York State, Department of Economic Development, State Data Center, Census Population and Group Quarters Counts, Vacancy Status, and Persons Per Unit for All Governmental Units, 1990.

16. ADD REFERENCE TO: PA (?)

17. ADD REFERENCE TO: SI (?)

REFERENCE NO. 1



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WESTON
MANAGERS DESIGNERS/CONSULTANTS
FOUR-MILE VICINITY MAP AND SURFACE WATER PATHWAY
SITE NAME:
ATLANTIC ASBESTOS
TOWN OF RED HOOK, N.Y.
DATE: 05 JUNE 1995
SCALE: 1"=2,000'
USGS QUAD: RED HOOK, N.Y.-DUTCHESS
SCALE 1:24000
1 acre
10 acres
20 acres
ACREAGE GUIDE

REFERENCE NO. 2

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

ATLANTIC ASBESTOS

Site No. 314019
Town of Red Hook, New York
Dutchess County

DATE: April 1991

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, *Commissioner*

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., *Director*

By:

YEC, Inc.

Under contract to:

Lawler, Matusky, & Skelly Engineers

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK PHASE II INVESTIGATION

ATLANTIC ASBESTOS
TOWN OF RED HOOK, NEW YORK
DUTCHESS COUNTY
NYSDEC I.D. NO. 314019

PREPARED FOR

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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March 1991

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1.0 EXECUTIVE SUMMARY

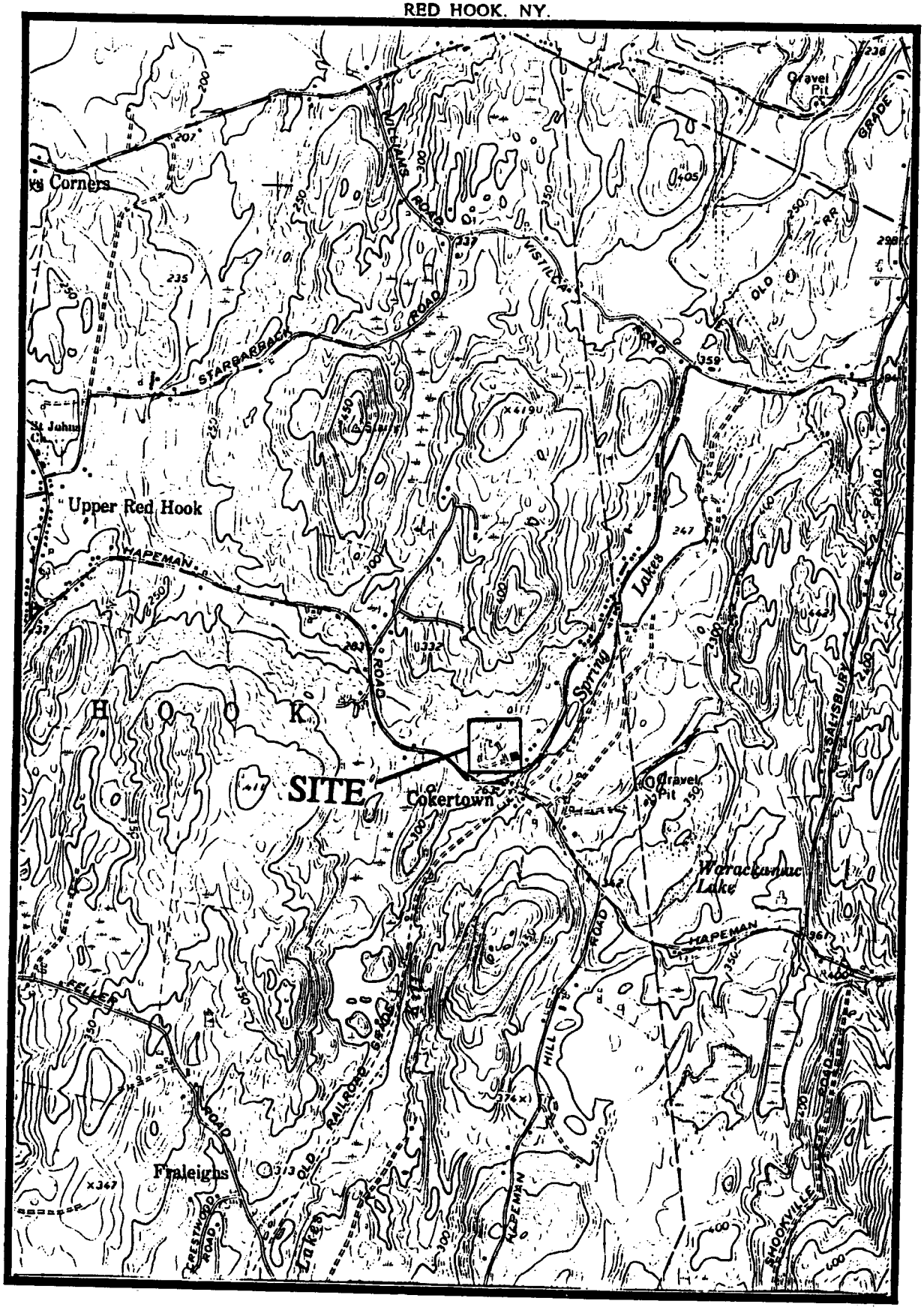
Atlantic Asbestos is listed as a Class 3 inactive hazardous waste site by the NYSDEC Division of Hazardous Waste Remediation. It has been listed as such since 1980. The Atlantic Asbestos site is located at the intersection of Spring Lake Road (Dutchess County road #56) and Cokertown Road, approximately 1 1/2 miles east of the intersection of U.S. Highway 9 and Spring Lake Road, in the Town of Red Hook, Dutchess County, New York (Figures 1-1 and 1-2). The site contains two parcels (Plate A, Survey and Tax Map). The present landowners are Red Hook Paper Company (owned by Barry Hull) and James Horkan of Spring Lake Road in Red Hook. The site is approximately 66 acres in area, including two ponds, which encompass about 3/4 and 8 acres, respectively.

In 1946, the Atlantic Asbestos Corporation began building in preparation of manufacturing asbestos fiber, asbestos paper and low grade paper at this site (Appendix A, Ref. 1). The facility continued operations until 1977 under the management of Atlantic Asbestos. In 1950, the paper mill became operational with the completion of a "closed loop water recycling system" (Appendix A, Ref. 2). This was in reality a chain of lagoons that led to a large pond. The large pond drained to a smaller pond when a gate valve was opened. The smaller pond served to supply water for the manufacturing processes. If the large pond was not allowed to drain after a significant rainfall, the potential existed for the large pond to overflow.

The plant operated without incident for many years. In the spring of 1974, complaints by neighbors began, with claims that the "closed loop" system was not operated properly during periods of high runoff. Allegedly, a garage was flooded and dead fish covered an adjacent parcel.

During the 1960's and early 1970's, dumping of suspected hazardous material occurred on site. Four mounds of trash were left along a former logging road in a remote area in the hills west of the mill. The Dutchess County Health Department

FIGURE 1-1
SITE LOCATION MAP
ATLANTIC ASBESTOS PHASE II INVESTIGATION
RED HOOK, NY.

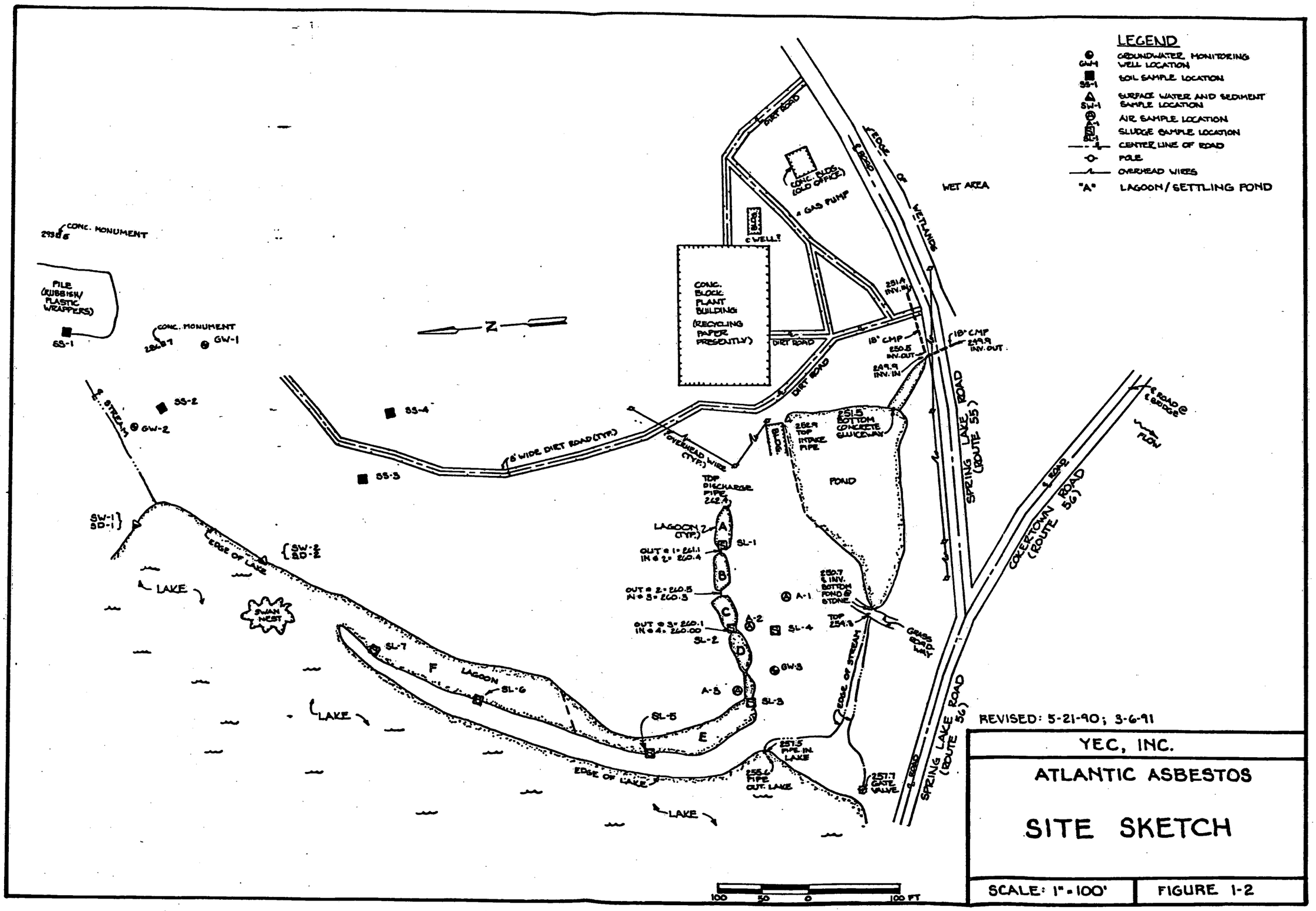


1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SITE COORDINATES:

LATITUDE: 42° 1′ 9.6″
LONGITUDE: 73° 49′ 15″

SCALE: 1:24000
QUAD.: CLERMONT (USGS, 1963)



REVISED: 5-21-90; 3-6-91

YEC, INC.

ATLANTIC ASBESTOS

SITE SKETCH

SCALE: 1" = 100'

FIGURE 1-2

found asbestos piles in the vicinity of the lagoons on April 15, 1977. On April 14, 1980, NYSDEC identified Atlantic Asbestos in a Hazardous Waste Disposal Site Report for the first time. In July, 1980, ownership of the land and its buildings changed hands to Barry Hull.

In the summer of 1986, a site investigation by NYSDEC found open bags of asbestos stored near the mill building. The asbestos had been removed from storage in the mill building after a fire in 1982. At NYSDEC's insistence, Red Hook Paper arranged for the proper storage and subsequent removal by Coachman Carting of Port Jervis, New York to an approved disposal site on August 27, 1987.

The Phase II activities included:

- Background records search and site assessment;
- Screening of on-site air quality;
- Exploratory boring and monitoring well installation;
- Subsurface hydrogeologic characterization;
- Groundwater, surface water, air and sediment sampling and analysis;
- Surveying; and
- Evaluation of Phase II data.

No HRS computation was conducted for this investigation.

Results of the Phase II investigation indicate the presence of asbestos, 2-methylnaphthalene, naphthalene, toluene, xylene (total), and chloroform in some sludge samples taken from settling lagoons on site. Chrysotile asbestos content in 7 sludge samples ranged in concentration from 67% to less than 1%. Asbestos content increased in samples that were further downstream from the effluent pipe and in areas of very slow current. It is possible that solvents or lubricants used in the paper recycling process are being introduced to the surrounding surface water and, subsequently, New York State-designated wetlands through the effluent pipe.

Samples taken closest to the effluent pipe of the mill contained much greater concentrations of volatiles and semi-volatiles than samples taken further downstream. Sample SL-1 contained the highest concentrations of 2-methylnaphthalene, toluene and xylene, but less than 1% asbestos. 2-methylnaphthalene was also detected in surface water. In monitoring wells installed onsite, iron and manganese were detected in concentrations above New York State's Ambient Water Quality Standards and Guidance Values for class GA groundwater.

Based on the results of this investigation, it is recommended that additional investigations be conducted at the site, including:

1) A grid sampling and retesting of the lagoons to determine the extent of asbestos contamination.

2) Additional testing of the sediment from the lake and pond and the adjacent wetlands. Samples should be taken in the vicinity of high water marks near the culvert that enters the wetland from the small pond onsite.

3) The determination of the nature, extent and quantity of contaminated sludge and sediment. This should include locating sludge that had been buried onsite by Atlantic Asbestos, Inc.

4) Resampling of the air in the vicinity of the lagoons for asbestos fibers.

5) A study be undertaken to create a plan for disposal of the sludge.

2.0 PURPOSE/OBJECTIVES

Under contract to Lawler, Matusky and Skelly Engineers, Inc. (LMS), who is in turn under contract to the New York State Department of Environmental Conservation (NYSDEC) Superfund Program, YEC, Inc. conducted this Phase II investigation at the Atlantic Asbestos Site. The purpose of this Phase II Study was to address specific concerns regarding past illegal waste disposal practices, and to provide information for calculating a Hazard Ranking Score (HRS). This assessment will be used to determine what additional actions, if any, should be conducted at the site. A NYSDEC-approved Phase II Work Plan was developed and implemented which, to the extent designed, has provided information to assist in the attainment of project objectives. These objectives included:

(1) Providing a preliminary geologic and hydrogeologic site assessment;

(2) Identifying and evaluating the potential presence and nature of contamination;

(3) Evaluating the environmental significance based on (1) and (2);

(4) Providing additional information for scoring the site utilizing the Mitre Model Hazard Ranking System (HRS); and

(5) Preparing a report document which is in accordance with NYSDEC's Phase II report format.

3.0 SCOPE OF WORK

The scope of work for the Phase II investigation included the following:

- o Record Search
- o Air Monitoring
- o Subsurface Investigation
- o Monitoring Well Installation
- o Sampling and Analysis
- o Site Surveying

Details of the specific items involved in this program are summarized in the following sections.

3.1 RECORD SEARCH

Record searches, data compilations and interviews were conducted as part of the Phase II investigation at the Atlantic Asbestos Site. A list of agencies and individuals contacted is included in Appendix B.

3.2 AIR MONITORING

Prior to the start of the various field investigation activities, an initial screening of ambient air quality on site was conducted using a HNU photoionization detector. A HNU photoionization detector was maintained on site during all field activities. A MIE PDM-3 Miniram dust, aerosol, and mist monitor was also present during drilling operations to detect any dust levels above background that could be resulting from dumped or buried asbestos. For initial screening purposes, the site was traversed and air quality readings were recorded. Measurements were also taken periodically

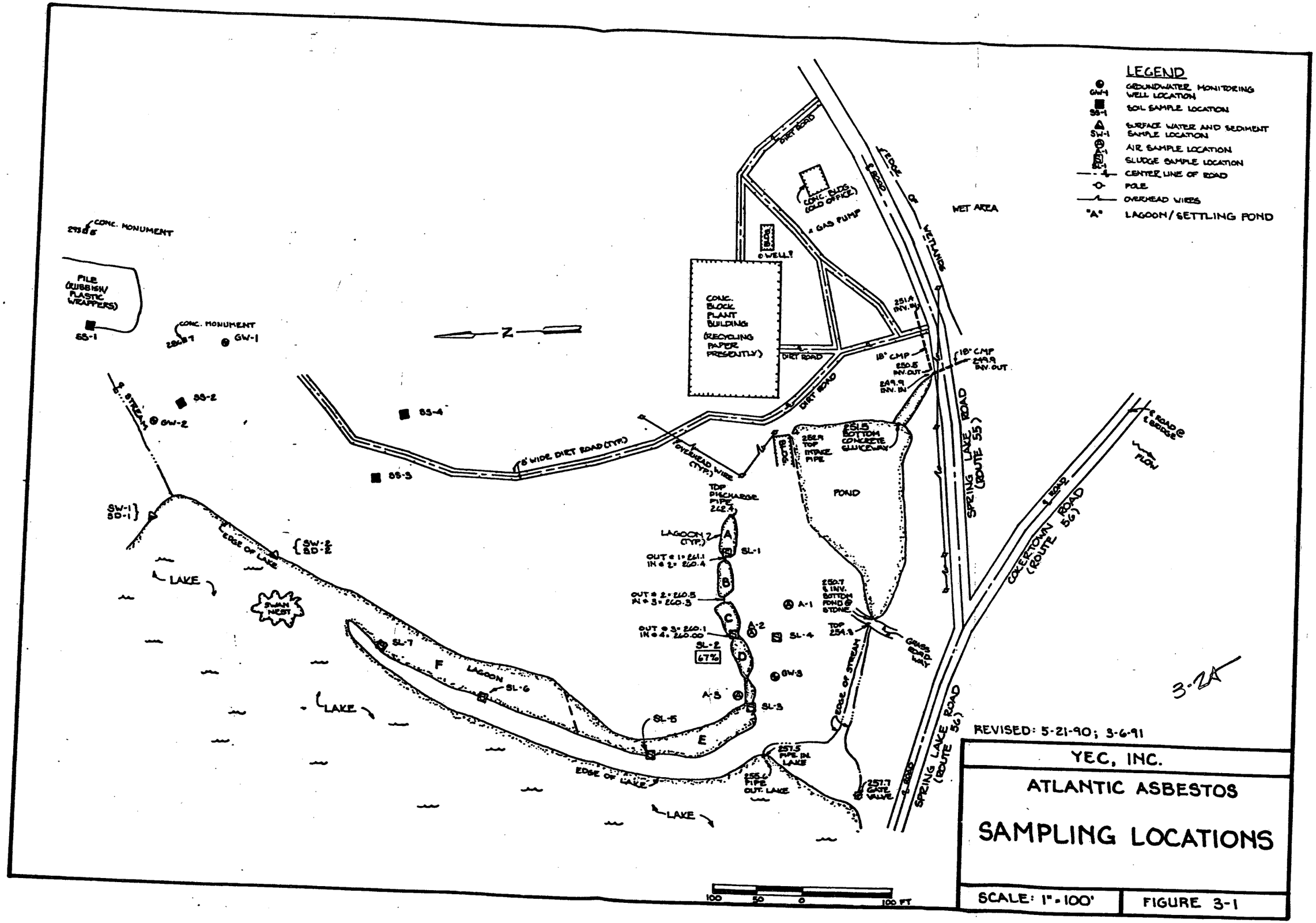
during other field activities. The Miniram was an automatic calibrating model that zeroed itself whenever the unit was activated. Calibration of the HNU was performed daily.

3.3 SUBSURFACE INVESTIGATION/WELL CONSTRUCTION

The Phase II Investigative program was conducted (1) to determine the effects of waste dumping on the environment, and (2) to determine the immediate extent and magnitude of contamination based on site specific hydrogeologic conditions. To facilitate these determinations, three subsurface borings were advanced at the locations shown on Figure 3-1, with subsequent installation of groundwater monitoring wells (GW-1 through GW-3). Monitoring well locations were selected to insure well placement both up and downgradient relative to possible contaminant plumes.

The boring/rock coring program was conducted during the period of February 5, 1990 through February 28, 1990, with the assistance of Associated Drilling Company of Meriden, Connecticut. Drilling was accomplished with two rigs, a CME-45 track-mounted and a CME-75 truck-mounted drill rig. Soil borings were advanced with 4 1/4" inside diameter (I.D.), continuous flight, hollow stem augers (HSA). Rock coring employed NX core barrel and rock was bored out with 3 5/8" and 5 15/16" roller bits. The drill rig, augers, and all drilling tools were decontaminated with high pressure steam between borings.

Monitoring wells were constructed in completed borings to monitor the saturated zone in overburden or bedrock. The site is underlain with only a veneer of soil covering highly deformed phyllitic shales. Bedrock is incompetent in the shallow depths where drilling took place. Quartz veins cross-cut the shales' cleavage planes at several different attitudes. Water moving through the fracture zones in the shale caused mineral dissolution leaving large voids in the bedrock. Because of these


LEGEND
GW-1 GROUNDWATER MONITORING WELL LOCATION
SS-1 SOIL SAMPLE LOCATION
SW-1 SURFACE WATER AND SEDIMENT SAMPLE LOCATION
AIR SAMPLE LOCATION
SLUDGE SAMPLE LOCATION
CENTER LINE OF ROAD
POLE
OVERHEAD WIRES
"A" LAGOON/SETTLING POND
CONC. MONUMENT
293.8'
PILE (RUBBISH/ PLASTIC WRAPPERS)
SS-1
CONC. MONUMENT
GW-1
STREAM
GW-2
SS-2
SS-4
SS-3
N
8' WIDE DIRT ROAD (TYP.)
OVERHEAD WIRE (TYP.)
DIRT ROAD
CONC. BLOCK PLANT BUILDING (RECYCLING PAPER PRESENTLY)
CONC. BLDG. (OLD OFFICE)
GAS PUMP
WELL?
EDGE OF WETLANDS
WET AREA
251.4 INV. IN
18" CMP
250.5 INV. OUT
249.9 INV. IN
18" CMP
249.9 INV. OUT
DIRT ROAD
BLDG.
262.9 TOP INTAKE PIPE
251.5 BOTTOM CONCRETE SLUICEWAY
POND
SPRING LAKE ROAD (ROUTE 55)
ROAD (BRIDGE)
FLOW
COLESTOWN ROAD (ROUTE 56)
TOP DISCHARGE PIPE 242.4
LAGOON 2 (TYP.)
A
B
C
D
E
F
SL-1
OUT @ 1: 261.1
IN @ 2: 260.4
OUT @ 2: 260.5
IN @ 3: 260.3
OUT @ 3: 260.1
IN @ 4: 260.00
SL-2
67%
A-1
A-2
A-3
SL-4
GW-3
SL-3
250.7 & INV. BOTTOM POND @ STONE
TOP 254.3
GRASS ROAD
EDGE OF STREAM
SW-1
SD-1
SW-2
SD-2
EDGE OF LAKE
LAKE
SWAN NEST
SL-7
SL-6
SL-5
257.5 PIPE IN LAKE
255.6 PIPE OUT LAKE
257.7 GATE VALVE
SPRING LAKE ROAD (ROUTE 56)
100 50 0 100 FT
3-2A
REVISED: 5-21-90; 3-6-91
YEC, INC.
ATLANTIC ASBESTOS
SAMPLING LOCATIONS
SCALE: 1" = 100'
FIGURE 3-1

circumstances, neither wells 1 nor 3 could be constructed as a standard NYSDEC rock well. Instead, the wells were constructed using two inch PVC screens and riser pipe.

While augering, representative soil samples were obtained from all appropriate borings with 2 foot long, 1 3/8 inch I.D. split spoon samplers. Standard penetration test measurements were recorded for each sampling attempt in accordance with ASTM-D-1586. Spoons were driven ahead of the augers beginning at the surface and continuing every five feet through unsaturated strata. Spoons were driven continuously upon encountering the saturated zone. Soil samples were collected to insure a sufficient quantity of sample for geotechnical analysis and to permit an accurate analysis of the natural unconsolidated deposits of the area. All soil samples collected were placed in pre-cleaned 500 ml glass jars and sealed with Teflon liners and screw-on caps. At the sites for GW-1 and GW-3, soil consisted almost entirely of partially-weathered bedrock of coarse gravel or greater grain size. Due to the dearth of suitable soil, only one sample was selected for geotechnical analysis and relinquished under chain of custody to Buffalo Drilling Company of Buffalo, New York for grain size analysis.

Upon recovery, each split spoon sample was inspected for any visual signs of contamination, characterized for material physical properties, visually identified (ASTM-D-2488), and monitored for volatile organic compounds with a HNU. Information on sample identifications and descriptions was recorded on subsurface boring logs, which are presented in Appendix C. More detailed descriptions of site-specific geology and subsurface characteristics are presented in Sections 4.3 and 4.4.

As with soils, upon recovery, each rock core sample was inspected for any visual signs of contamination and monitored for volatile organic compounds with a HNU. A Rock Quality Determination characterized physical properties. Information on sample identifications and descriptions was recorded on subsurface boring logs, which are presented in Appendix C. More detailed descriptions of site-specific geology and subsurface characteristics are presented in Sections 4.3 and 4.4.

3.3.1 TEST BORING/CONSTRUCTION OF GW-1

Drilling of the upgradient well GW-1 began on February 7. The track-mounted CME-45 attempted to advance with 4 1/4 i.d. hollow stem augers during February 7 and 8. With NYSDEC approval, a total of 6 attempts were undertaken at 5 different locations, as far as 250 feet from the original site chosen for GW-1 The deepest penetration was to 4 feet. As auger refusal was met, each boring attempt was backfilled with cuttings. These unsuccessful attempts caused NYSDEC to alter the work plan, which originally called for overburden wells, and for the sub-contractor to drill a NYSDEC-designed rock well.

On February 19, rock drilling in the area designated for GW-1 began. The CME-45 was equipped with a 5 15/16" diameter roller bit to drill to a depth of 4 1/2 feet. Using this large bit permitted easy placement of a protective steel casing and concrete seal when the well was constructed.

Rock drilling used a tremendous quantity of water due to the highly fractured rock, which prevented retention of water in the borehole. Coring with NX began at 4.5 feet and continued down to 28 feet. Consumption of purchased water while drilling GW-1 was approximately 5500 gallons. A static water level of 21.72 feet below ground surface (bgs) was recorded in the borehole late afternoon on Feb. 23. On Feb. 28, the level stabilized at 22.2 feet below ground surface after bailing 10 gallons.

Although the borehole held only 6 feet of water, NYSDEC approved construction of a monitoring well drilled to 28 feet. Since RQD's (Table 3-1) for these cores ranged from very poor (13%) to fair (62%), an open rock well was unfeasible. An overburden-style monitoring well was installed after roller-bitting the borehole with the 3 5/8 inch diameter tri-cone bit. Roller-bitting was used to provide a greater annulus around the screen and riser for the placement of a sand pack and bentonite pellets without bridging the borehole created by the NX core bit. Though the sand

TABLE 3-1
ATLANTIC ASBESTOS
ROCK QUALITY DETERMINATIONS (RQD)

WELL #	CORE INTERVAL (FT)	RQD (%)	RQD (RATING)
GW-3	9.5-12.0	15%	Very poor/Highly fractured
	12.0-16.5	7%	Very poor/Highly fractured
	16.5-21.0	50%	Fair
GW-1	4.5-7.5	13%	Very poor/Highly fractured
	7.5-12.5	62%	Fair
	12.5-17.5	39%	Fair
	17.5-22.5	56%	Fair
	22.5-27.5	25%	Very poor/Highly fractured

NOTE: Fractures caused by the core barrel must be distinguished from natural fractures. Pieces > 4" but fractured by the core barrel are NOT CONSIDERED in the RQD determination.

RQD(%) = (Total Length of Pieces > 4 Inches in Length/Total Recovery of Core Interval)

RQD SCALE

0%-25%	VERY POOR/HIGHLY FRACTURED
25%-30%	MODERATELY FRACTURED-POOR
30%-75%	FAIR
75%-90%	GOOD/SLIGHTLY FRACTURED
90%-100%	EXCELLENT

YEC, INC. 1990

itself was not needed in a screened rock well, NYSDEC required a bentonite seal above the static water level, necessitating the use of a sand pack to support it. Several inches of #1 New Jersey silica sand were placed in the bottom of the boring. Screen was installed at approximately 28 below grade to 18 feet below grade. More sand pack was placed around the screen to a depth of 15 feet. Bentonite pellets were placed around the riser from 15 to 13 feet below ground surface (bgs). The pellets were then hydrated. A grout mix of water, portland cement and powdered bentonite was placed over the pellets. The grout was poured to approximately 2 to 2 1/2 feet bgs, where it interfaced with the concrete topseal. A 5 foot length of 4 inch i.d. protective steel casing with a hinged locking cap was placed over the PVC riser pipe and set into the concrete and bentonite pellets to a depth of approximately 2 1/2 feet. The PVC cap was vented to allow equilibration of static water levels with barometric pressure. Concrete was then mounded around the protective steel casing at ground surface to prohibit accumulation of surface water around the well.

3.3.2 TEST BORING/CONSTRUCTION OF GW-2

Drilling of GW-2 began on February 6, 1990. The location designated by NYSDEC for GW-2 was in the vicinity of the intermittent stream that flows into the northwest corner of the large pond. A former logging trail in the woods, uphill and west of the mill building was cleared of timber to gain access to GW-2.

In position at GW-2, Associated Drilling's track-mounted CME-45 drill rig, using 4 1/4 inch i.d. hollow stem augers, advanced to a depth of 9 1/2 feet bgs before refusal. Wet soil was encountered almost immediately after the auger head pierced the ground surface. After considering subsurface conditions, NYSDEC approved the construction of an overburden well with just five feet of screen.

Monitoring well GW-2 was constructed on February 7. A five foot section of 0.01 inch (#10) slot PVC well screen with an end cap was attached, via an interior-

threaded coupling, to a ten foot length of two inch i.d. capped schedule 40 PVC riser pipe. This pipe was then lowered into the borehole, screened interval first, through the augers and centered in the borehole with the bottom of the screen at a depth of approximately 9 1/2 feet bgs, atop several inches of #2 New Jersey silica sand. As the auger flights were withdrawn from the borehole, more #2 sand was then placed in the annular space around the screen and riser to a level 1 foot above the top of the screen (approximately 4 1/2 feet bgs). A seal of hydrated, 3/8 inch diameter bentonite pellets was placed above the sand pack to prohibit downward migration of surface water from entering the screened interval. These pellets were poured to approximately 2 to 3 1/2 feet bgs, where they interfaced with the concrete topseal. A 5 foot length of 4 inch i.d. protective steel casing with a hinged locking cap was placed over the PVC riser pipe and set into the concrete and bentonite pellets to a depth of approximately 2 1/2 feet. The PVC cap was vented to allow equilibration of static water levels with barometric pressure. Concrete was then mounded around the protective steel casing at ground surface to prohibit accumulation of surface water around the well. Specific construction details for each well are presented in Appendix C.

3.3.3 TEST BORING/CONSTRUCTION OF GW-3

Drilling of GW-3 began on February 13. After augering through 10 feet of weathered bedrock, the NX core barrel was advanced through highly fractured, incompetent shale. On February 19, after having cored to 17 feet, an equilibrated static water level was recorded at approximately 12 feet. As the water level remained static after coring to 22 feet, NYSDEC approved construction of a monitoring well in the borehole.

RQD's (Table 3-1) for GW-3's cores ranged from very poor to fair, necessitating the construction of GW-3 in the manner of an overburden well on February 21. Although the annulus around the 2 inch i.d. PVC screen and riser was only 3/4 inch, sand pack was placed without widening the borehole with the approval of the

NYSDEC representative. Several inches of #1 New Jersey silica sand were placed at approximately 22 feet bgs. Screen was installed from 21 1/2 to 11 1/2 feet bgs. More sand pack was placed around the screen to a depth of 10 feet. Bentonite pellets were placed around the riser from 10 to 8 feet bgs. The pellets were then hydrated. A grout mix of portland cement and powdered bentonite was placed over the pellets. The grout was poured to approximately 2 to 2 1/2 feet bgs, where it interfaced with the concrete topseal. A 5 foot length of 4 inch I.D. protective steel casing with a hinged locking cap was placed over the PVC riser pipe and set into the concrete and bentonite pellets to a depth of approximately 2 1/2 feet. The PVC cap was vented to allow equilibration of static water levels with barometric pressure. Concrete was then mounded around the protective steel casing at ground surface to prohibit accumulation of surface water around the well.

3.4 WELL DEVELOPMENT

Monitoring wells (GW-1 through GW-3) were developed during the period of February 9 to March 1, 1990. Development was accomplished by surging and bailing with a dedicated PVC bailer attached to a 1/4 inch diameter nylon rope to loosen and remove silt and clay smeared on the screen and core hole during auger withdrawal or to remove fines created during coring.

Development of monitoring well GW-2 did not achieve the expectations (turbidity < 50 NTU's) outlined by the NYSDEC work plan within the time allotted. This may be caused by the well's proximity to the large pond and also the nature of the material in the screened interval.

Discharge water was constantly monitored. A ten quart (2.50 gallon) measuring bucket was utilized to attain measurements for the discharge rate, accurate to 0.1 gallon per minute. An electronic water level indicator and an engineer's tape were used to measure water levels to within 0.01 foot (see Table 3-3). The volume of water

evacuated, its appearance, pH, specific conductance, temperature, and turbidity were measured and recorded. Details of well development are presented in Appendix D.

3.5 HYDRAULIC CONDUCTIVITY TESTING

Hydraulic conductivity testing was performed on each well (GW-1, GW-2 and GW-3) on March 2, 1990. This was accomplished by performing in-situ rising head and falling head slug tests. The procedure incorporated the injection of a steam cleaned steel slug (42.5" in length and 1 3/8" in diameter) of known volume into the well, and subsequent monitoring of the water level, as it returned to static level, using a RocTest Model CPR6 electronic water level indicator. In performing slug tests, it should be noted that "near well bore effects" caused by the sandpack surrounding the screen can affect slug test results, because the test does not incorporate the withdrawal of water from the well.

The subsequent data analysis for hydraulic conductivity determination involved techniques provided in "Seepage, Drainage and Flow Nets", 2nd Edition by Harry R. Cedergren. These techniques are intended for an observation well in saturated isotropic stratum of infinite depth where the radius of the intake point differs from the radius of the standpipe (Case C) (Appendix A, Ref. 3). For rising and falling head slug tests, the log of the head ratio (H_T/H_0) (dependent variable) is plotted with respect to the elapsed time (t) (independent variable). A simple linear regression was used to analyze the data and fit the best line to the plot of points for each well. From the resulting plot, the two values of the head ratio (H_T/H_0) can be determined at a start and end time (t_1 and t_2), and these values are known as H_1 and H_2, respectively. With these four values determined for a well the hydraulic conductivities can be calculated, as shown in Appendix E.

The values calculated for GW-1 and GW-2 (Table 3-2) correspond well with published values of hydraulic conductivities for the material in which the wells

TABLE 3-2
ATLANTIC ASBESTOS
HYDRAULIC CONDUCTIVITY (K) VALUES

WELL NUMBER		HYDRAULIC CONDUCTIVITY (cm/s)
GW-1	RISING HEAD	5.01 X 10^-4
	FALLING HEAD	8.34 X 10^-4
GW-2	RISING HEAD	3.58 X 10^-4
	FALLING HEAD	2.18 X 10^-3

TABLE 3-3
ATLANTIC ASBESTOS
MONITORING WELL CASING ELEVATIONS

WELL I.D.	STEEL CASING ELEVATION (FT ABOVE SEA LEVEL)	*PVC CASING ELEVATION (FT ABOVE SEA LEVEL)	GROUND ELEVATION (FT ABOVE SEA LEVEL)	STICKUP OF STEEL CASING (FT)	STICKUP OF PVC ** CASING (FT)
GW-1	294.44	294.42	292.03	2.41	2.34
GW-2	266.72	266.49	263.60	3.12	2.84
GW-3	265.94	265.90	263.71	2.23	2.14

	GROUNDWATER ELEVATIONS (FEET BELOW THE LAND SURFACE) GW-1,GW-2,GW-3			GROUNDWATER ELEVATIONS (FEET ABOVE SEA LEVEL)+ GW-1,GW-2,GW-3		
DATE	GW-1	GW-2	GW-3	GW-1	GW-2	GW-3
02/09/90	-	0.36	-	-	263.24	-
		0.26	-	-	263.34	-
02/13/90	-	0.26	-	-	263.34	-
02/19/90	-	0.36	-	-	263.24	-
02/20/90	-	0.46	11.73	-	263.14	251.98
02/23/90	18.98	-	-	273.05	-	-
	20.56	-	-	271.47	-	-
02/26/90	19.69	-	11.61	272.34	-	252.10
02/27/90	20.11	-	-	271.92	-	-
02/28/90	20.14	-	11.73	271.89	-	251.98
03/01/90	-	0.96	11.67	-	262.64	252.04
03/02/90	22.30	1.01	-	269.73	262.59	-
	22.25	-	-	269.78	-	-
	22.23	-	-	269.80	-	-
AVERAGE:	20.78	0.52	11.69	271.25	263.08	252.03

(-) = Measurement not taken at time.
(*) = Measurement taken at the top of the PVC top cap.
(**) = A uniform distance of .05 feet was subtracted from this number because measurement during surveying was not done with the bubble cap off, whereas water level measurements were taken from the edge of the PVC pipe with the cap off.
(+) Based on an assumed elevation above sea level from USGS topographic quadrangle map.

were screened. GW-1, which was screened in fractured rock from 28 to 18 feet, was determined to have a hydraulic conductivity of 8.34 X 10^{-4} cm/s, a value characteristic of fractured rocks (Appendix A, Ref. 4). GW-2, screened from 9 1/2 to 4 1/2 feet in clayey sand, has a hydraulic conductivity of 2.18 X 10^{-3} cm/s, comparable to values assigned to silty sand (Appendix A, Ref. 5). GW-3, screened from 21 1/2 to 11 1/2 feet in highly fractured rock, has an extremely high hydraulic conductivity. Repeatedly, during slug tests of this well, the static water level recovered so rapidly it was not possible to determine any change in the level with the instruments used.

Overall, correlation between the calculated conductivity values and the published conductivity values of the material found in the screened intervals corroborated by the boring logs is very good. The conductivity values are illustrative of the nature of the screened materials.

3.6 SAMPLING AND ANALYSIS

The following procedures describe the sampling and analysis of groundwater, surface water, sediment, air, sludge, and soil samples from the subsurface investigation. Subsequent to the installation and development of the monitoring wells, samples were collected during the period of February 19, 1990 through March 2, 1990, for analysis of the parameters indicated on Table 3-4. See Figure 3-1 for sampling locations.

3.6.1 ASBESTOS AIR SAMPLING

Air sampling for the presence of asbestos in the atmosphere was conducted using three Alpha 1 constant flow vacuum pumps equipped with 25mm filters. The pumps were designed to ensure constant flow regardless of load variations or other factors that would affect flow rate.

TABLE 3-4

SAMPLING PROGRAM SUMMARY

ATLANTIC ASBESTOS

MEDIA	TCL METALS	TCL VOLATILES	TCL SEMI-VOLATILES	TCL PEST/PCB	*ASBESTOS	SPIKE/DUP	WET LAB	TOTALS
GROUNDWATER (+)	4	4	4	4	-	1/1	4	6
SURFACE WATER	2	2	2	2	2	-	2	2
SEDIMENT	2	2	2	2	2	-	-	2
SLUDGE	4	4	4	4	4	-	-	4
SLUDGE	-	-	-	-	3	-	-	3
SOIL	4	4	4	4	-	1/1	-	6
AIR	-	-	-	-	4 (**)	-	-	3
FIELD BLANK	1	1	1	1	-	-	-	-
TRIP BLANK	-	1	-	-	-	-	-	-

NOTE: SEE PLATE A FOR MONITORING WELL AND SAMPLING POINT LOCATIONS.
TCL = TARGET COMPOUND LIST
WET LAB = TDS, TSS, COD, pH, and CONDUCTIVITY
SPIKE/DUP, TRIP BLANK, FIELD BLANK) - (SEE APPENDIX G FOR EXPLANATION).
AIR SAMPLING - (SEE SECTION 3.5 FOR METHOD DESCRIPTION).
*Asbestos - For surface water samples a modified .45 micron TSS analysis was used to detect fiber concentrations (see section 3.5.3 for complete description of procedure).
** - Asbestos air sampling total also includes a blank sample.
(+) Groundwater sample includes a blind QA/QC sample in addition to the three well samples.

TABLE 3-5
ATLANTIC ASBESTOS
ASBESTOS AIR SAMPLING SUMMARY TABLE

DATE: 3/01/90

PUMP #	LOCATION	RUNNING TIME (HRS)	AIR VOLUME (LITERS)	FIBERS (fibers/cc)
1	Downwind	6	1440	NO FIBERS DETECTED
2	Downwind	6	1434	BDL* (.001 f/cc)
3	Upwind	6	1425	BDL* (.001 f/cc)
Blank	Blank	0	----	NO FIBERS DETECTED

* Below Detectable Limit (Less than 5.5 Fibers Per 100 Fields).

TABLE 3-6
ATLANTIC ASBESTOS
SAMPLE COLLECTION SUMMARY

SAMPLE #	DATE COLLECTED	TIME COLLECTED	pH	COND. (mhos)	TEMP. (C)	NTU
GW-1	03/02/90	1220	7.46	273	9.0	14
GW-2	03/01/90	1304	6.85	180	5.8	>200
GW-3	03/01/90	1130	6.78	186	7.4	16
GW-4	03/01/90	1130	6.78	186	7.4	16
SD-1	02/14/90	1319	NA	NA	NA	NA
SD-2	02/14/90	1325	NA	NA	NA	NA
SW-1	03/02/90	1145	7.25	227	6.7	NA
SW-2	03/02/90	1252	7.39	219	6.9	NA
SS-1	02/14/90	1143	NA	NA	NA	NA
SS-2	02/14/90	1127	NA	NA	NA	NA
SS-3	02/14/90	1052	NA	NA	NA	NA
SS-4	02/14/90	1025	NA	NA	NA	NA
SL-1	02/14/90	1140	NA	NA	NA	NA
SL-2	02/14/90	1120	NA	NA	NA	NA
SL-3	02/14/90	1105	NA	NA	NA	NA
SL-4	02/14/90	1055	NA	NA	NA	NA
SL-5	02/14/90	1045	NA	NA	NA	NA
SL-6	02/14/90	1035	NA	NA	NA	NA
SL-7	02/14/90	1025	NA	NA	NA	NA

NA - Not applicable

The pumps were preprogrammed at a constant flow rate of four (4) liters per minute. They were field calibrated with a bubble tube prior to start up and were run continuously for 6 hours.

The wind direction and velocity were monitored during the sample collection period at 15 to 20 miles per hour from a northwesterly direction. Skies were clear with temperatures ranging from 25 to 30 degrees Fahrenheit. The exposed settling lagoon dredge piles were frozen due to sub-freezing temperatures prior to and during the air sampling.

Pump #1 was placed downwind of the exposed settling lagoon dredge pile near SL-4. Pump #2 was placed downwind of the dredge pile adjacent to settling lagoon C. Pump #3 was placed upwind of settling lagoon E. A fourth pump was on site but not activated. The filter was marked as sample #4 and returned to the laboratory as a field blank for quality control. Sampling details are highlighted in Table 3-5.

3.6.2 GROUNDWATER

Following development and equilibration of water levels within the three newly installed wells, representative groundwater samples were collected. Each well was purged of four borehole volumes before sampling. Dedicated PVC bailers were employed to purge and sample each well. Field measurements for pH, temperature, and specific conductivity were recorded upon recovery of samples (see Table 3-4). Samples were then placed in their appropriate containers, labelled, chilled to approximately 4° C, and stored in a cooler prior to shipment.

Turbid groundwater specimens (NTU > 100) scheduled to be analyzed for metals required special processing before shipment. Each one was filtered for suspended solids with an apparatus consisting of a vacuum pump, tubing, filter paper, and filter flask.

An eighty-quart capacity, steel Coleman cooler was used to protect the specimen containers during shipment to the laboratory via Federal Express. Samples for chemical analysis and appropriate chain of custody forms were delivered concurrently to Aquatec, Inc. of South Burlington, Vermont. Details of groundwater sampling are presented in Tables 3-4, 3-6 and 4-1.

3.6.3 SURFACE WATER

The NYSDEC work plan was amended with respect to surface water sampling. Originally, a total of 4 samples were to be taken, 2 from the intermittent stream in the vicinity of GW-2 and 2 in the vicinity of the lagoon mouth. The intermittent stream samples were omitted as it was felt by the NYSDEC representative onsite that the stream was purely the result of snowmelt and would not yield pertinent information if chemically analyzed.

In order to develop an understanding of the extent, magnitude and possible pathways of migration by the dumped substances and the mill's industrial waste, two surface water samples were taken from the northwest side of the lake, near the mouth of the lagoon. Field measurements for pH, temperature, and specific conductivity were recorded upon recovery of samples (see Table 3-4). Analysis was performed using the chemical parameters specified in Table 3-6. Samples were collected directly into pre-cleaned containers. The same protocols for field measurements and preservation utilized in the sampling of groundwater were applied for the collection of surface water samples.

3.6.4 SEDIMENT

Two sediment samples (SD-1 and SD-2) were collected from the vicinity of each surface water sample. This was achieved with a two inch I.D. stainless steel hand

auger. In each case, sediment was extracted from the upper two feet of the lake floor.

Upon recovery, samples were placed in pre-cleaned, 250 or 500 ml glass jars, labelled, chilled, and delivered to Aquatec, under chain of custody, for subsequent analysis for the parameters listed in Table 3-4.

3.6.5 SLUDGE

Seven sludge samples were taken using a two inch diameter stainless steel hand auger and a stainless steel hand shovel. Material was extracted from the upper 2 feet of each of the 6 unlined lagoons labelled A through F and to a depth of 6 inches from the exposed settling lagoon dredge matter (SL-4).

Sludge sample #1 was taken from settling lagoon A, the lagoon into which an effluent pipe directly empties wastewater from the mill. Sludge sample #2 was extracted from the downstream lagoon lettered C, about 100 feet from sampling location #1. A sludge sampling point (SL-3) 85 feet downstream from location #2 from lagoon E was also sampled. Sludge sampling point #4 was extracted from the exposed dredged sludge pile which is located on dry land about 45 feet southwest of sampling point #2 and southeast of lagoon D. Sample SL-5 was taken along the peninsula and around the bend about 130 feet downstream from sample location #3 from lagoon E. Sludge sample #6 (SL-6) was acquired from the bottom of the stream bed about 200 feet from the mouth also from lagoon F. Sludge Sample #7 (SL-7) was taken in the stream along the peninsula about 40 feet from the mouth, also from lagoon F.

Upon collection, samples were placed in pre-cleaned 250 or 500 ml glass jars, labelled, chilled, and delivered to Aquatec,Inc., under a chain of custody for subsequent analysis for the parameters listed in Table 3-4. Additional sampling information is found in Table 3-6.

information is found in Table 3-6.

3.6.6 SOIL

Soil samples were taken for both chemical and geotechnical analysis. One subsurface soil sample was analyzed for physical parameters (Grain Size or Atterberg Limits) in an attempt to characterize the composition and nature of the unconsolidated materials within the site area. It was selected to represent the various subsurface materials encountered on site and from subsurface intervals of interest. In addition, a total of four (SS-1 through SS-4) composite soil samples were collected at four locations. Soil sample SS-1 was taken at the large waste pile, while SS-2 was taken downgradient from SS-1 adjacent to GW-2. SS-3 and SS-4 were recovered from points downgradient of two smaller waste piles. All composite soil samples were acquired using a stainless steel hand shovel from the first six to twelve inches below ground surface. Upon collection the samples were placed into cleaned glass jars, labeled, chilled and sent to Aquatec, Inc. under chain of custody, for subsequent analysis for the parameters listed in Table 3-4. Sampling locations are illustrated on Plate A, located in the back pocket of this report.

3.6.7 ASBESTOS ANALYTICAL METHODS

AIR

Laboratory analysis for asbestos in air was performed by Shelbourne Laboratories, which is accredited under section 206 (d) of Title II of the USC chapter 15, TSCA as stated in 40 CFR763, April 30, 1987. The analytical method employed (7400) was an approved National Institute Occupational Safety and Health (NIOSH) procedure for Proficiency Analytical Testing (PAT) for counting asbestos fibers. Analysis was performed by Phase Contrast Microscopy (PCM) using an Olympus CH-2 microscope at 400x magnification. PCM fiber counting is based on particulate size

and shape, and is not intended as a means of identification. All fibers having a length to width ratio of five (5) microns or greater are counted. For a detailed explanation of analytical procedure 7400, see Appendix I. Asbestos air sampling data and results are reported in section 4.6.1.

SEDIMENT AND SLUDGE

The sediment and sludge samples were analyzed for asbestos by Shelbourne Laboratories, which is accredited as mentioned above. The samples were analyzed by Polarized Light Microscopy (PLM) employing the Stratified Point Counting Technique for Identifying and Quantifying Asbestos in Bulk Samples. The samples were analyzed to determine if asbestos was present at concentrations greater than 1 percent. They were homogenized and portions were dried in a drying oven at 50 degrees centigrade (122 degrees Fahrenheit) for 16 hours prior to analysis. For a detailed explanation of the analytical procedure used see Appendix I. Data and analytical results for asbestos in sediment and sludge are reported in sections 4.6.2.

SURFACE WATER

Two surface water samples were analyzed by Aquatec Inc. using a modified Total Suspended Solids procedure. This gravimetric test measured both asbestos and non-asbestos residue retained on a 0.45 micron filter. A portion of the mixed sample was filtered through a pre-weighed 0.45 micron cellulose and acetate filter. The filter was dried at 105 degrees centigrade (221 degrees Fahrenheit) for a prescribed period of time before reweighing and calculation of the residue weight. The reporting limit for this test is 100 mg/l (<0.01%) For a detailed explanation of the analytical procedure used, see Appendix I. Surface water data and analytical results for asbestos are reported in section 4.6.3.

3.6.8 CHEMICAL ANALYTICAL METHODS

The procedures utilized for chemical testing of water and sediment specimens

collected during the Phase II investigation and analyzed by Aquatec, Inc. are summarized in this section. Each sample was analyzed for the compounds listed on the Target Compound List (TCL), using the Contract Required Quantitative Limits (CRQL) as guidance values in compliance with NYSDEC Superfund and Contract Laboratory Protocol dated November 1987 or USEPA Contract Laboratory Protocol statement of work for organic (9/88) and inorganics (12/87), as directed by NYSDEC (Appendix F). All semivolatile and PCB/Pesticide samples were extracted for analysis within five days of the date the laboratory received the samples for water samples, and within ten days for soil/sediment samples. The Target Compound List is subdivided into four sections which include: pesticides/PCBs, semivolatiles, volatiles, and inorganics. All samples were analyzed by Aquatec and validated by Data Validation Services of Riparius, New York, in accordance with NYSDEC 1987 Contract Laboratory Protocols (CLP). Data Validation Services declared that "All samples were found to be in compliance for all parameters." However, some matrix spike recoveries were outside of preferred ranges.

3.6.9 GEOTECHNICAL METHODOLOGIES

The geotechnical analysis of the one split spoon sample collected during the Phase II investigation was performed by Buffalo Drilling Co., Inc., Buffalo, New York. The soil sample for geotechnical evaluation was prepared and tested in accordance with procedures outlined in the American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards (Appendix G). The following standard test methods were utilized in whole or in part:

- Particle Size Analysis (ASTM D422)
- Moisture Content (ASTM D2216)
- Classification of Soils for Engineering Purposes (ASTM D2487)

The soil tested was classified using the Unified Soil Classification System, which

classifies soils according to grain size distribution of the fraction less than three (3) inches in diameter, plasticity index, liquid limit and organic matter content, and also according to those properties that affect their use as construction materials. The soil sample (GW-2, SS#1) submitted by YEC, Inc. for testing received the classification CL (Lean Clay with sand). This classification was based on several parameters, such as, a liquid limit that is less than 50%, low to medium plasticity, and more than 50% of material passing through a #200 size sieve. The results of the geotechnical analysis showing the resulting moisture content, gradation analysis, sample description, and engineering classification are contained in Appendix G.

3.7 SURVEYING

A survey of locations and elevations of monitoring wells and sampling points was conducted by YEC, Inc., on April 13,1990. All horizontal distances and angles were measured using a Topcon GTS-3 Electronic Distance Meter. Well casing and ground surface elevations were determined utilizing a Topcon AT-F3 Differential Level Instrument.

Property lines were obtained from a Town of Red Hook Tax Assessment Map, 15-6373-00, dated January, 1990. Elevations were determined in feet above or below an assumed datum. An elevation of 263.0 feet was set for a point centerline of intersection of Spring Lake Road (Route 55) and Cokertown Road (Route 56), established at the time of the survey.

4.0 SITE ASSESSMENT

4.1 SITE HISTORY

From 1938 to 1970, the Ozurovich family owned the property (Appendix A, Ref. 6). In 1946, the Atlantic Asbestos Corporation (under the leadership of John Ozurovich) began construction of a facility to manufacture paper containing asbestos fibers and a low grade shipping paper (Appendix A, Ref.1). Asbestos used in the operation process was obtained by utilizing virgin and reclaimed asbestos fibers (Appendix A, Ref.8). Two ponds (one large enough to be termed a lake and one only a small pond) were created on the property by excavating marshland and then filling the excavations with water. In 1950, the paper mill became operational with the completion of the so-called "closed loop water recycling system" (Appendix A, Ref. 2). The manufacturing process required a large amount of water to create pulp from which paper was made. Water for pulping was pumped into the factory from a small pond. Effluent from manufacturing flowed into a series of lagoons, and subsequently into a larger pond. From this pond, flow back into the smaller pond for reuse was controlled by a gate valve. If the smaller pond overflowed its banks, the runoff would proceed downhill, across Spring Lakes Road, and into the presently-designated New York State wetlands and Class B(t) Lakes Kill (Appendix A, Ref. 7).

The plant operated without incident for many years. No incidents occurred until after the death of Mr. Ozurovich in 1965. In 1970, the parcel changed hands from Mrs. Ozurovich to the Atlantic Asbestos Corporation.

In the spring of 1974, complaints by neighbors began. Joseph Focca claimed that the large pond on site was flooding his property during periods of high runoff. Besides flooding his garage, the neighbor complained that many dead fish were deposited on his land. Atlantic Asbestos maintained that the deluge was an Act of God which did not occur before the Dutchess County Department of Public Works (DCPW) resurfaced and widened nearby County Route 56. In a letter dated April 25, 1977, Walter J. Fenn, owner of Atlantic Asbestos, freely admitted that "high water

filled up the small pond and caused overflowing" (Appendix A, Ref. 8).

On numerous occasions from 1977 until his death, the Dutchess County Health Department (DCHD) investigated Mr. Focca's reports (Appendix A, Ref.2). No Health Department documents discovered support Mr. Focca's claims. Although Mr. Focca's claims were repudiated by the DCHD, their many trips to Atlantic Asbestos led them to discover uncovered asbestos in the vicinity of the lagoons on the premises on April 15, 1977. This information was then passed on to NYSDEC (Appendix A, Ref. 1).

On August 3, 1978, DCDH conducted a walk-through of the site, noting no violations. The plant was not in operation at the time. It was observed by the Inspector that the potential for flooding of adjacent waterways existed.

On August 8, 1979, at the request of a resident, DCHD took a bacteriological sample from nearby Spring Lakes. It was analyzed for total coliform. Results were less than 200 per plate, indicating that the lake was free of coliform bacteria contamination. Ironically, the complaint lodged by the resident regarded the possible presence of asbestos in the lake. On August 14th, 1979, Atlantic Asbestos was listed as a NYSDEC Reported Hazardous Waste Site. On October 17th, 1979, water samples were taken at 4 locations around the site. Analysis indicated that total suspended solids in the lagoonal effluent exceeded levels found entering sewage treatment plants.

As a result of the August sampling, on November 28, 1979, NYSDEC determined that a State Pollution Discharge Elimination System (SPDES) Permit for the mill was required. Levels of BOD (Biochemical Oxygen Demand) and suspended solids at the lagoonal mouth were determined to be too high. Treatment would be required prior to discharge from the mill. As part of the permit process, effluent monitoring, a weir and a gauging station were required to be built upstream of the culvert that drains into the wetlands adjoining Saw Kill Creek. Construction of the weir and gauging station were to be completed by March 30, 1981. To date, there is still no gauging station.

On April 14, 1980, NYSDEC identified Atlantic Asbestos for the first time in a Hazardous Waste Disposal Site Report.

On July 17, 1980 the land and its buildings were bought by Mr. Barry Hull. Mr. Hull intended to recondition the old plant and resume operations by recycling newspaper to produce cardboard under the name of Red Hook Paper. As he was initially unaware of the SPDES permit restrictions on his facility, Mr. Hull requested additional time to meet the permit requirements. On June 4, 1981, NYSDEC granted Mr. Hull until August 15, 1981 to complete the required construction. In July, 1982, the original facility was destroyed by fire.

On August 1, 1983, a Potential Hazardous Waste Site Preliminary Assessment Report of Atlantic Asbestos was completed by the United States Environmental Protection Agency.

On September 24, 1984, Wehran Engineering submitted the results of the Phase I Investigation for the Atlantic Asbestos site. Phase I data was not sufficient to produce a final score using the Hazard Ranking System (Appendix A, Ref. 8).

In the summer of 1986, a site investigation by NYSDEC found open bags of asbestos stored near the mill building. The asbestos had been removed from storage in the mill building after the fire. At NYSDEC's insistence, Red Hook Paper arranged for the proper storage and subsequent removal on August 27, 1987 by Coachman Carting of Port Jervis, New York to an approved disposal site (Appendix A, Ref.1).

4.2 SITE AREA CHARACTERISTICS

4.2.1 ENVIRONMENTAL SETTING

During the 1960's and early 1970's, dumping of suspected hazardous material

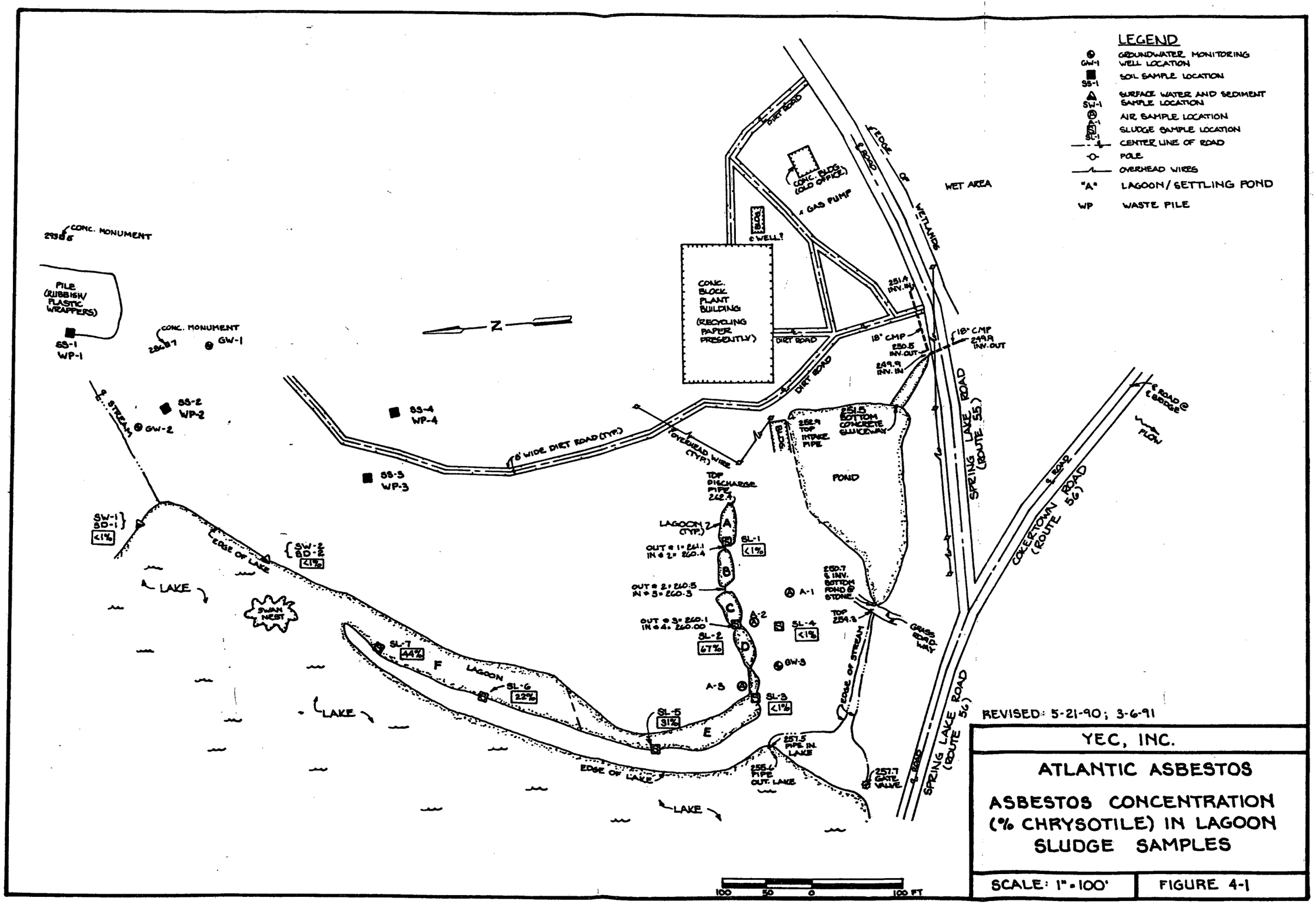
occurred at the site. This is presently distinguished by 4 mounds of trash located along a former logging road that runs north-to-south to the high ground overlooking the pond (see Appendix H).

Approaching the dumpsites from the south, on the logging road approximately 300 feet uphill from the mill, waste pile #4 is encountered. Approximately 15 one gallon paint/turpentine/wood preserver cans and household refuse were found. No sign of stressed vegetation is present.

Waste pile #3 is encountered on the west side of the road approximately 60 feet west of waste pile #4. Among its contents are 1 empty five gallon can of driveway sealer or roof tar and several empty one gallon paint cans. Tin beer cans are present, dating the pile to at least the early seventies. This pile is also slowly migrating downslope towards the pond. No sign of stressed vegetation is present.

Waste pile #2 is approximately 100 feet north of waste pile #3, also on the south side of the surveyor's/logger's road. This pile is the largest on site, measuring 150 feet long and 5 to 20 feet wide. Among the objects found were: a refrigerator; a rusted 55 gallon open top steel drum; tar paper shingles; household trash; an automobile anti-freeze container; tires; and aluminum cans commemorating the 75th (seventy-fifth) anniversary of Pepsi-Cola. The soda cans date the trash as having been dumped as early as 1973. This pile is also slowly migrating down slope towards the pond. No sign of stressed vegetation is present.

Approximately 50 feet northeast and downhill of waste pile #2 is waste pile #1. A concrete benchmark is approximately 20 feet to the south. This pile is smaller than #2 and contains additional household refuse, a five gallon container of pure asphalt, petroleum spirits and long asbestos fibers, a similar, but unlabeled container with a tarry substance adhered to its outside, five rusted one gallon paint containers, and numerous plastic containers of bleach and antifreeze with and without their caps. This pile is migrating down slope faster than the rest due to the steeper slope. No



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YEC, INC.

ATLANTIC ASBESTOS

ASBESTOS CONCENTRATION (% CHRYSOTILE) IN LAGOON SLUDGE SAMPLES

SCALE: 1" = 100'

FIGURE 4-1

sign of stressed vegetation is present.

A surface water system incorporating an effluent pipe from the paper mill, several lagoons and a lake and small pond serves to disperse paper waste derived from the mill. The effluent pipe empties into a series of lagoons that serve as crude settling ponds. Not all of the effluent settles out in the lagoons. A delta composed of grey paper waste and rotting organic matter has formed at the interface of the lake and the final lagoon. The same grey material was noticed floating on the pond during the time of surface water sampling.

Sludge from the lagoons has been analyzed and found to contain asbestos, PCB's, 2-methylnaphthalene, toluene, xylene, chloroform and naphthalene. All of these may be attributable to the product produced in raw or finished form, or to lubricants used on the machinery used to create the recycled paper. Not all sludge samples contained each of these substances. In some cases, concentrations were extremely low. Nevertheless, xylene and toluene in this form are currently listed as hazardous wastes in 6 NYCRR 371.4(b). A detailed discussion of the analysis of the sludge follows in Sections 4.5.7 and 4.6.2.

The lake spills over into a small stream which feeds the small pond. This smaller pond is used to supply the mill with water used during manufacturing. During periods of high water, the small pond drains into the Lakes Kill (also known as Saw Kill) (H-158), a Class B(T) stream (Appendix A, Ref. 9). The kill is the main supplier of water to two New York State-designated wetlands CM-12 and CM-26.

Water also flows from an intermittent stream into the northeast corner of the lake pond. This stream is down slope of several of the waste piles on site.

4.2.2 TOPOGRAPHY AND DRAINAGE

The Atlantic Asbestos site lies within the hill and valley area of northern Dutchess County. It is bordered on the east by the Taconic Mountains and on the west by the Hudson River. The hill and valley area ranges in elevation from about 400 - 500 feet above sea level on the hill tops and from about 200 - 300 feet above sea level in the valleys.

The site is located on a flat plain adjacent to Spring Lakes and partly on the geologic rise to the west of the lakes. The average elevation of the site is 275 feet above sea level. Behind the site to the northwest a hill rises to approximately 300 feet above sea level within one half mile. When surveyed by YEC, the lake and the small pond on the site were at elevations of 257.6 and 251.8 feet above mean sea level, respectively. These elevations can change throughout the dry and wet seasons.

Lakes Kill (also known as Saw Kill) lies adjacent to the site. It is bordered on both banks by a NYSDEC-designated wetland (CM-12). The Lakes Kill flows to the south, from Spring Lakes. As previously mentioned, a "closed-loop" surface water system incorporating an effluent pipe from the paper mill, several lagoons and the two ponds drains into the adjacent wetland through a culvert that runs beneath Dutchess County Route 55 (Spring Lakes Road). This happens only during periods of very high runoff.

4.2.3 SURFACE WATER USAGE

There are many fresh surface water bodies within a 3 mile radius of the site. All of them lie within the Hudson River watershed. The Spring Lakes (New York State Class B(T)) lie 1000 feet to the northeast. NYCRR Title 6, Section 701.19 states that waters of class B(T) are suitable for "primary contact recreation and any other uses except as a source of water supply drinking, culinary or food processing

purposes", and are also employed as trout spawning watercourses. The Lakes Kill (also Class B(T)) drains the Spring Lakes to the south. It is less than one quarter mile east of the site and is bordered on both banks by NYSDEC-designated wetlands CM-12. The small pond onsite drains into that wetland during periods of very high runoff. The Lakes Kill (also known as Saw Kill) flows south to drain into NYSDEC-designated wetland CM-26.

A water body not hydrologically related to the surface waters onsite or the nearby streams and lakes is an unnamed Class D tributary of Stoney Creek. It lies 2 1/2 miles to the west. Class D waters, according to NYCRR Title 6, Section 701.19, "are suitable for fishing", where "... water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose."

4.3 SITE HYDROGEOLOGY

In Dutchess County, groundwater occurs and is obtained from unconsolidated glacial deposits and from bedrock wells (Appendix A, Ref. 10). Water wells in the vicinity of Atlantic Asbestos are deeply sunk rock wells drilled into the Hudson River Formation (known also as the Normanskill Formation, Appendix A, Ref. 11). In the vicinity of Atlantic Asbestos, the Normanskill is composed of shales and sandstones. The shaly layers are highly fractured and thus easily transmit water. Hydraulic conductivities of 8.34×10^{-4} cm/s and 2.18×10^{-3} cm/s were assigned to GW-1 and GW-2, respectively, after the results of slug testing. These rather high values are common in wells screened in fractured rocks, such as GW-1, (Appendix A, Ref. 4 and 5) but the higher value found in GW-2 which was screened in clayey sand is attributable to its close proximity (<100 feet) to the lake and a stream flowing into the lake. GW-3, also screened in highly fractured rock, has an extremely high hydraulic conductivity. The water levels during slug testing of this well recovered so quickly that no data was available to compute the hydraulic conductivity, due to its close proximity to the lake and the highly fractured nature of the shale.

Groundwater flow at the site appears to be approximately .11 ft/ft to the west-northwest, as indicated by static water levels in monitoring wells, topographic observations in the field, and hydraulic gradient calculations. Hydraulic gradient calculations are only approximate for three reasons; (1) two of the wells (GW-1 and 2) are rather closely placed, approximately 125 feet apart, (2) the distance from each of these to the third well (GW-3) is over 700 feet, and (3) there are two rock wells in fractured bedrock (GW-1 and GW-3) and one in overburden (GW-2). Groundwater appears to be moving away from the high ground where GW-1 is located, toward a geologic valley south of the Spring Lakes. Groundwater and surface water accumulation may be connected in the vicinity of the small pond onsite. The water levels taken at various positions around the small pond near the mill coincide with static water levels taken in the nearest rock well, GW-3 (see Table 3-3). This is highly speculative due to the fractured nature of the rock onsite.

Background information concerning the area surrounding the site indicates that there are ample domestic water supplies close to the surface and that rock wells are common. A rock well, located approximately 1/2 mile west of the site, at an altitude of 600 feet above sea level was drilled 75 feet bgs. The static water level in the well was 10 feet below ground surface, with a depth to bedrock of 2 feet below the ground surface. Average yields from wells in the Normanskill Formation are 16 gpm. Hydrogen sulfide is prevalent in the groundwater. Unconsolidated deposits overlying the Normanskill Formation typically contain high iron concentrations averaging 0.35 ppm with a range of 0.03 to 2.0 ppm (Appendix A, Ref. 10).

4.4 GEOLOGY/SOIL CHARACTERISTICS

The Atlantic Asbestos site is underlain by allochthonous Ordovician age clastic and argillaceous turbidites of the Normanskill Group. It consists of the 30 to 350 meter thick shales of the Indian River and Mount Merino Formations and the 300 meter thick Austin Glen Graywacke. Indian River formation shales are deep red with

lenses of green. Mount Merino shales tend to be green or black and contain chert. The Austin Glen has an upper and a lower phase, with the lower containing thin-bedded, clastic-bearing graywackes and clastics interbedded with argillite. The upper phase contains graywackes, siltstones, and limey argillaceous sandstones (Appendix A, Ref. 11).

Due to several orogenic episodes, these rocks became foliated, faulted, and metamorphosed. Locally, dip can vary from near horizontal to overturned. Strike is to the west-southwest. Quartz veins infiltrated along fault planes in these rocks. These veins transmit water readily and locally are the sought after water source for bedrock wells.

During the Pleistocene (Wisconsin Epoch), the Mid-Hudson Valley was covered by an ice sheet approximately 1 to 2 miles thick. Glacier movement was from northeast to southwest. Deposits of mixed unconsolidated materials (till) were laid down over much of Dutchess County. About 15,000 years ago, during the Recent Epoch, the climate began to warm and the glacier retreated intermittently leaving stratified drift deposits, till, and preglacial lake sediments. Fine and coarse-grained stratified drift was deposited in the stream valleys. Due to isostatic rebound, land began to rise. Streams resumed eroding bedrock and glacial debris, as they do today. Atlantic Asbestos is located in an area of thin Pleistocene till atop a geologic rise.

There are three regional soils present on site. The soil covering the low ground near the ponds is known as the Wayland silt loam (We) (Appendix A, Ref.12). It is a deep, nearly level, poorly drained, medium to high lime loamy soil formed in silty alluvium on the lowest parts of flood plains. It is low in permeability with poor drainage and low erodibility. The dominant slope ranges from 0% to 3%.

The Wayland soil typically has a high water table (0.0 - 0.5 ft.) at or near the soil surface from November to June. Flooding is common, especially in the spring and during periods of heavy runoff. Runoff is slow and ponding can occur. Erosion is not

extensive due in part to the typical low slope. Average depth to bedrock is 5 feet or greater (Appendix A, Ref. 12).

There are two soil types covering the higher portions of the site: The Rock outcrop-Nassau shaly silt loam, rolling, and the Dutchess gravelly silt loam. The former consists of 40% rock outcrop and 40% Nassau soils. The rock outcrop portion of this complex is exposed shale, or soil which is too thin to support plant life. The Nassau component of this complex is a shallow, hilly, somewhat excessively drained, low lime soil formed in till that is 10 to 20 inches thick over bedrock. The permeability is moderate and the dominant slope ranges from 15 to 30%. The landscape is a series of uneven hills with strongly sloping sides. Each component contains numerous outcrops.

The Nassau soil has a seasonal high water table of greater than 6 feet. Erosion is very high. The general permeability is from 0.6 to 2.0 inches per hour at a depth of 0 to 15 inches. The average depth to bedrock is 10 to 20 inches.

The Dutchess soil has a seasonal high water table of greater than 6 feet. Erosion is moderate. The permeability ranges on average from 0.6 to 2.0 inches per hour from 0 to 39 inches and from 0.6 to 20.0 inches per hour at from 39 - 52 inches. The average depth to bedrock is from 40 to 84 inches.

4.5 ANALYTICAL RESULTS

The following subsections present the data obtained from analytical tests performed on samples collected during this Phase II investigation. Only those values found to be above the detection limit are presented in the analytical summaries or discussed within the following text. A complete presentation of laboratory analyses and quality control can be found in Appendix F.

The following media were sampled to determine the extent of contamination both on and offsite:

- o Groundwater
- o Surface Water
- o Soil
- o Sludge
- o Sediment
- o Air

Summary tables for the analytical results for each of these media were composed only for those analyses (inorganics, pesticides/PCBs, semivolatiles, and volatile organics) in which contaminants were detected. Summary tables for asbestos analytical results were also included in this report.

4.5.1 PREVIOUS SAMPLING AND ANALYSIS

In response to a complaint by a nearby resident, four liters of plant effluent were collected on October 17, 1979 and sent to a laboratory to test for several physical and chemical parameters. The results of the tests indicated that the pH of the wastewater was slightly higher (7.9) than that of regional surface waters (Appendix A, Ref. 8). Total suspended solids (445 mg/l, very high as per Appendix A, Ref. 13), fixed suspended solids (450 mg/l, extremely high) and total dissolved solids (154 mg/l, low) were abundant. The BOD and COD of the wastewater was lower than other typical effluent (Appendix A, Ref. 8).

A test for asbestos fibers in water was performed on a sample of plant effluent on August 27, 1988 by Electron Microscopy Service Laboratories Inc. The fiber analysis was done by Transmission Electron Microscopy (TEM), Selective Area Electron Diffraction (SAED) and Energy Dispersive X-Ray Microanalysis (EDX) ---

EPA Level II. No asbestos was detected (Appendix A, Ref. 2).

On April 5 and 6, 1989, drinking water samples were collected from Atlantic Asbestos and two nearby private homes (Jenkins and Horkan). The New York State Department of Health analyzed each for inorganics, volatile halogenated organics, aromatic purgeables, and pesticides and PCB's. The results indicated that iron content exceeded the Federal Drinking Water Standards for the sample collected from the wash sink at the Atlantic Asbestos well (Appendix A, Ref. 2).

4.5.2 PHASE II AIR QUALITY DATA

Prior to initiating any field activities at Atlantic Asbestos, an initial screening of ambient air quality upwind and downwind of areas of interest was performed. A NYSDEC-supplied HNU photoionization detector equipped with a 10.7 eV bulb was used. No readings above ambient background were detected.

Air quality readings were performed during drilling and sampling activities utilizing a HNU photoionization detector and also a MIE PDM-3 Miniram dust, aerosol, and mist monitor. There were no constant above-background values in the breathing zone during any investigative procedures.

4.5.3 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were collected from three monitoring wells (GW-1, GW-2, and GW-3). GW-1 was located upgradient from the large waste pile, while GW-2 was installed downgradient. GW-3 was placed adjacent to the settling lagoons. A fourth sample (taken from GW-3) was submitted to the laboratory as a blind (duplicate) for quality control. The samples were analyzed utilizing NYSDEC-CLP protocols for volatile organics, base/neutral and acid extractable organics,

pesticides/PCBs, and metals. The following discussion compares the NYSDEC Class GA (September 25, 1990) standards with the analytical results for the three monitoring wells sampled. Table 4-1 lists the wet lab results for the groundwater and surface water samples.

INORGANICS

Filtering of a groundwater sample that was taken for analysis of metals content was required by the NYSDEC if the turbidity of the unfiltered sample was greater than or equal to 100 NTU. Filtering is designed to remove suspended inorganics, so that elements detected in the filtered samples are known to be in solution. For GW-2, two samples were submitted for TCL Metal analysis. One of the samples was unfiltered (labeled GW-2), while the second sample was filtered and designated with an "F" (GW-2F). The filtering procedure utilized MSI 0.45 Micron Polypro Prefilters and a small vacuum pump.

It should be noted that there is a direct relationship between turbid water samples and high concentrations of inorganics in groundwater samples.
Table 4-2 shows the concentrations of inorganics in groundwater, including the contrasting data for the filtered and unfiltered samples of GW-2.

Many samples analyzed for TCL Metals exceeded the contract required detection limits (hereafter referred to as detection limit). In most cases, the unfiltered sample for GW-2 had far greater concentrations of inorganics than any other sample (see Table 4-2). The filtered sample of GW-2 compared well with results of other wells. Only the concentrations of iron ((GW-1, 2320 ug/L), (GW-2, unfiltered, 51700 ug/L), (GW-3, 1040 ug/L)) and manganese (GW-2, unfiltered, 1820 ug/L) violated the New York State Ambient Water Quality Standards (September 25, 1990) and Guidance Values.

Copper (76.3 ug/L) and lead (17.0 ug/L) were also found to be in excess of the detection limits in unfiltered GW-2 but did not exceed the New York State

TABLE 4-1
ATLANTIC ASBESTOS
WETLAB ANALYSIS OF GROUND AND SURFACE WATER SAMPLES

SAMPLE NO.	TOTAL DISSOLVED SOLIDS (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	CHEMICAL OXYGEN DEMAND (mg/L)	pH	CONDUCTIVITY (umhos/cm)
GW-1	234	16	<5	7.35	401
GW-2	167	306	14	6.92	291
GW-3	170	62	11	6.95	292
GW-4	165	37	12	6.95	284
SW-1	191	4 + <.01%	11	7.17	131
SW-2	197	110 + <.01%	82	7.00	321

* Analyses were performed in accordance with Methods for analysis of Water and Wastes, EPA 600/4/79-020, and Test Methods for Evaluating Solid waste, SW-846.
(a) - Water with a TDS between 0 and 1000 is considered fresh water.
(*) - TDS shall not exceed 500 mg/L (NYSDEC Title 6, Chapter X, Part 701.19 for class AA drinking water).
(+) - Modified Total Suspended Solids analysis for asbestos using a .45 micron filter and a detection limit of 1% or 10,000 ppm.

TABLE 4-2
ANALYTICAL SUMMARY OF INORGANIC ANALYSES OF GROUNDWATER SAMPLES
(ug/L)

Parameter	GW-1	GW-2	GW-2F	GW-3	GW-4	NYSDEC(1) (ug/L)
Aluminum	1120 E	20200 E	314 E	892 E	1000 E	NS
Antimony	U	U	U	U	U	3 GV
Arsenic	UN	UN	UNW	UN	UN	25
Barium	U	U	U	U	U	1000
Beryllium	U	U	U	U	U	3 GV
Cadmium	U	U	U	U	U	10
Calcium	76800	53200	57700	33800	33800	NS
Chromium	U	23.6	U	U	U	50
Cobalt	U	U	U	U	U	NS
Copper	U	76.3	U	U	U	200
Iron	2320	51700	415	1040	1070	300
Lead	3.2 BN	17.0 N	UNW	3.4 BN	3.0 BN	25
Magnesium	4160 B	12100	5310	9150	9220	35000 GV
Manganese	99.3	1820	15.7	50.5	38.6	300
Mercury	U	U	U	U	U	2
Nickel	U	U	U	U	U	NS
Potassium	U	4530 B	U	U	U	NS
Selenium	UNW	UN	UN	UN	UN	10
Silver	U	U	U	U	U	50
Sodium	4510 B	4120 B	3870 B	10000	10200	20,000
Thallium	U	U	UW	UW	UW	4 GV
Vanadium	U	U	U	U	U	NS
Zinc	U	267	27.9	39.4	22.3	300
Cyanide	U	U	NR	U	U	100

U - Indicates analyte was analyzed for but not detected.
B - The reported value is less than the CRDL but greater than the Instrument Detection Limit.
E - The reported value is estimated because of the presence of interference.
N - Spiked sample recovery not within control limits.
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
(1) NYSDEC Groundwater Standards for class GA water.
Ambient Water Quality Standards and Guidance Values (6 NYCRR Parts 701-702-703.6)(September 25, 1990).
GV Guidance Value
(NS) No Standard Available.
NR - Analyte not required to be analyzed for.
F - Sample was filtered sample due to NTU > 100 following purging.

NOTE:
Assumed Hardness = 100, and Assumed pH = 7.5

Groundwater Standards. Magnesium concentrations found in unfiltered GW-2 (12100 ug/L) and GW-3 (9150 ug/L) exceeded the detection limit, but did not exceed the groundwater guidance value set forth by the NYSDEC. Both unfiltered GW-2 (267 ug/L) and GW-3 (39.4 ug/L) had concentrations of zinc in excess of the detection limit, but in neither case do they exceed the NYSDEC standards for this element in groundwater. The spiked sample recoveries for arsenic, lead, and selenium were not within control limits for all of the samples. GW-2 had the highest concentrations of aluminum, chromium, copper, iron, lead, magnesium, manganese and zinc. GW-3 exhibited the highest concentration of sodium.

Even though iron and manganese were found to be in excess of the NYSDEC drinking water standards, they are not considered toxic heavy metals, and it is therefore concluded that there is no toxic heavy metal contamination in any of the three monitoring wells on this site.

SEMIVOLATILE ORGANICS

There were no reported concentrations of semivolatile organic compounds in excess of the detection limit for any of the groundwater samples. There was a tentatively identified compound detected in the sample from GW-1, 4-hydroxy-4-methyl 2-pentanone, also known as diacetone alcohol (Appendix A, Ref. 15). Its concentration was estimated to be 8 ug/L. This substance was also found in the associated blank. Its presence may be related to glassware cleaning procedures in the laboratory.

VOLATILE ORGANICS

The only reported concentration of a volatile organic compound found to be in excess of the detection limit was detected in GW-1. 2-butanone was found to have a concentration of 11 ug/L. This compound was also found in the associated blank. A tentatively identified compound, chlorodifluoromethane, was detected in all the monitoring well samples. The concentrations were estimated and found in the associated blanks. The estimated levels were: GW-1, 14 ug/L; GW-2, 24 ug/L; GW-3,

26 ug/L; trip blank, 9 ug/L; field blank, 21 ug/L. There are no NYSDEC criteria for these compounds. Chlorodifluoromethane is the common refrigerant, Freon 22, and is a low-temperature solvent (Appendix A, Ref. 15).

PESTICIDES/PCB'S

There were no reported concentrations of pesticides or PCB's found in any of the groundwater samples.

4.5.4 SURFACE WATER ANALYTICAL RESULTS

Two surface water samples (SW-1 and SW-2) were taken from the lake on the site and correspond to the two sediment samples (see Plate A) taken at the same locations. The samples were analyzed utilizing NYSDEC-CLP protocols for volatile organics, base/neutral and acid extractable organics, pesticides/PCB's, and metals.

INORGANICS

A turbid surface water sample taken for SW-2 produced inflated values of aluminum, iron, manganese, sodium and zinc (see Table 4-3). All of these elements, as well as calcium in both SW-1 and SW-2, were in excess of their respective detection limits. Of these reported concentrations, only aluminum (612 ug/L in SW-1, 1920 ug/l in SW-2) and iron (620 ug/L in SW-1, 3170 in SW-2) exceeded the NYSDEC Standards for a Class B waterbody for both samples. Zinc (50.1 ug/L) was found to be in violation of the NYSDEC standard for a class B waterbody in SW-2 only. Though the lake and the smaller pond have no state water body designations, a Class B designation was used since both can flow into other Class B water bodies such as the Lakes Kill. There are no NYSDEC criteria for a Class B waterbody for calcium, magnesium, manganese, and sodium. With the exception of zinc, none of these elements are considered toxic heavy metals.

TABLE 4-3
ANALYTICAL SUMMARY OF INORGANIC ANALYSES OF SURFACE WATER SAMPLES
(ug/L)

Parameter	SW-1	SW-2	NYSDEC (1) STANDARDS (ug/L)
Aluminum	612 E	1920 E	100
Antimony	U	U	-
Arsenic	UN	UN	190 (2)
Barium	U	U	-
Beryllium	U	U	11 or 1,100 (2)
Cadmium	U	U	1.1 (3)
Calcium	57100	47500	-
Chromium	U	U	207 (4)
Cobalt	U	U	5
Copper	U	U	11.8 (5)
Iron	620	3170	300
Lead	UNW	4.5 BN	3.2 (6)
Magnesium	5450	5840	-
Manganese	41.9	497	-
Mercury	U	U	.2 GV
Nickel	U	U	95.6 (7)
Potassium	U	U	-
Selenium	UN	UN	1.0
Silver	U	U	0.1 (8)
Sodium	4490 B	11500	-
Thallium	UW	UW	8
Vanadium	U	U	14
Zinc	U	50.1	30
Cyanide	U	U	5.2 (9)

U - Indicates analyte was analyzed for but not detected.
N - Spiked sample recovery not within control limits.
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
E - The reported value is estimated because of the presence of interference.
B - The reported value is less than the CRDL but greater than the Instrument Detection Limit.
* - Duplicate analysis not within control limits.
(-) - No Standard available
(1) - NYSDEC Ambient Water Quality Standards and Guidance Values(Parts 701-703). (For class B surface waters)
(2) - 11 ppm if Hardness is less than or equal to 75 ppm.
1,100 if Hardness is greater than 75 ppm.
(3) - exp(.7852(ln(ppm hardness))-3.490)
(4) - exp(0.819(ln(ppm hardness))+1.561)
(5) - exp(0.8545(ln(ppm hardness))-1.465)
(6) - exp(1.266(ln(ppm hardness))-4.661)
(7) - exp(.76(ln(ppm hardness))+1.06)
(8) - Ionic silver
(9) - As free CN, the sum of HCN and CN expressed as CN.

SEMIVOLATILE ORGANICS

Sample SW-2 had a reported concentration of 15 ug/L for 2-methylnaphthalene which exceeded the detection limit. There is no NYSDEC criteria for this compound. It is associated with insecticides, organic synthesis and solvents. It may be derived from solvent use by the recycling plant. There were no other reported concentrations of semivolatile organic compounds in excess of detection limits. There were several unknown and tentatively identified compounds reported for both SW-1 and SW-2. SW-1 had a reported concentration of 9 ug/L of 4-hydroxy-4-methyl 2-pentanone (diacetone alcohol) which was estimated and found in the associated blank. SW-2 contained an estimated 13 ug/L of 1-methylnaphthalene, a coal tar derivative used in organic synthesis and insecticides (Appendix A, Ref. 15).

VOLATILE ORGANICS

There were no reported concentrations of volatile organic compounds in excess of detection limits for either of the surface water samples. A tentatively identified compound, chlorodifluoromethane (Freon 22), was detected in both surface water samples. The concentrations were estimated to be 23 ug/L for SW-1 and 14 ug/L for SW-2. This substance also found in the associated blanks.

PESTICIDES/PCB'S

There were no reported pesticide/PCB concentrations for either SW-1 or SW-2.

4.5.5 SEDIMENT ANALYTICAL RESULTS

INORGANICS

Two sediment samples (SD-1 and SD-2) were collected in association with the two surface water samples (SW-1 and SW-2). A summary of the inorganic analysis of the sediment samples is presented in Table 4-4. No NYSDEC criteria have been specifically set for sediment samples. Therefore, a comparison was made between

TABLE 4-4
ANALYTICAL SUMMARY OF INORGANIC ANALYSES OF SEDIMENT SAMPLES
(mg/Kg)

Parameter	SD-1	SD-2	+Trace Element Concentration Expected in Soils(mg/Kg)
Aluminum	11900	23500	10,000-300,000
Antimony	UN	UN	-
Arsenic	2.2 N*	12.1 SN*	1.0-40
Barium	53.7	70.5	100-3500
Beryllium	U	U	.1-40
Cadmium	1.2	3.5	.01-7
Calcium	1730	2130	100-400,000
Chromium	11.6 E	21.9 E	5.0-3,000
Cobalt	U	16	1.0-40
Copper	13.9 U E	34.8 E	2.0-100
Iron	14900	41900	7,000-550,000
Lead	19.3	34.3	2.0-200
Magnesium	3230	7070	600-6,000
Manganese	92.9 E	270 E	100-4000
Mercury	U	U	.01-.08
Nickel	23.6	44.4	5.0-1,000
Potassium	U	U	400-30,000
Selenium	UWN	UWN	.1-2.0
Silver	U	U	.1-5.0
Sodium	U	U	750-7500
Thallium	U	U	.1-12
Vanadium	15.8	25.3	20-500
Zinc	57.4 E	110. E	10-300
Cyanide	U	U	-

\+ "The Soil Chemistry of Hazardous Materials", James Dragun, Ph.D. Hazardous Materials Control Research Institute, Silver Spring, Maryland.
U - Indicates analyte was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. instrument for the specific analysis.
N - Spiked sample recovery not within control limits.
S - Reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
* - Duplicate analysis not within control limits.

those elements with concentrations in excess of the detection limit and the typical range of concentrations for various elements in native soils (Appendix A, Ref. 14). Several inorganic elements were found to be above the detection limit, but only magnesium (SD-2) was outside the typical range of 600 to 6000 mg/Kg, with a concentration of 7070 mg/Kg. The spiked sample recovery for antimony, arsenic, and selenium was not within control limits for either sample. Because of interference, the concentrations of chromium, copper, manganese, and zinc were estimated for both of the samples. While magnesium was found to be outside the typical range for this element in native soils, it is not considered a toxic heavy metal and therefore it is concluded that there is no contamination of toxic heavy metals in either of these samples.

SEMIVOLATILE ORGANICS

There were no reported concentrations of semivolatile organic compounds in excess of the detection limits. There were, however, several unknown and tentatively identified compounds reported for both samples. The following compounds were tentatively identified: 4-hydroxy-4-methyl 2-pentanone (diacetone alcohol), benzaldehyde, and hexadecanoic acid. All of the concentrations for these compounds were estimated and several were found in the associated blank for each sample. Diacetone alcohol has been found in all samples, including blanks. Benzaldehyde is used in dye manufacturing, solvents, resin, cellulose ethers, benzoic acid and many other applications. Hexadecanoic acid is used in solvents. These compounds and their respective concentrations are listed in Table 4-5.

VOLATILE ORGANICS

There were no reported volatile organic compounds in excess of the detection limits for either sample. The only tentatively identified compound noted was 2-methylpropane, which was found in SD-1 with an estimated concentration of 29 ug/L. See Table 4-5 for the analytical results.

TABLE 4-5
SUMMARY TABLE OF SEMIVOLATILE ORGANIC ANALYSES OF SEDIMENT SAMPLES
(mg/Kg)

* TENTATIVELY IDENTIFIED COMPOUNDS	SD-1	SD-2
UNKNOWN	440 JB	610 JB
UNKNOWN	1700 JB	2800 JB
UNKNOWN	900 JB	1000 JB
UNKNOWN	490 JB	700 JB
UNKNOWN	420 J	980 J
UNKNOWN	540 J	750 J
UNKNOWN	300 J	1600 J
UNKNOWN	310 J	530 J
UNKNOWN	950 J	420 J
UNKNOWN	590 J	3300 J
UNKNOWN	-	690 J
UNKNOWN	-	420 J
UNKNOWN	-	670 J
UNKNOWN	-	680 J
UNKNOWN	-	3200 J
2-PENTANONE, 4-HYDROXY-4-MET (+)	5700 JBA	8500 JBA
BENZALDEHYDE	2000 JB	2100 JB
HEXADECANOIC ACID	1200 JB	2400 JB
UNKNOWN ALIPHATIC HYDROCARBON	930 J	2300 J
UNKNOWN ALIPHATIC HYDROCARBON	2000 J	2000 J
UNKNOWN ALIPHATIC HYDROCARBON	490 J	-

J - Indicates an estimated value.
B - The analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
A - This flag indicates that a TIC is a suspected aldol-condensation product. (TIC - Tentatively Identified Compound)
(+) - 4-HYDROXY-4-METHYL 2-PENTANONE

PESTICIDE/PCB'S

Neither sample had concentrations of pesticide/PCB's in excess of the contract quantitation limits.

4.5.6 SOIL ANALYTICAL RESULTS

INORGANICS

Four soil samples (SS-1, SS-2, SS-3, and SS-4) were collected and analyzed for 24 TCL Metals. A summary of the inorganic analysis of the soil samples is presented in Table 4-6. There are no specific NYSDEC criteria set for soils. Therefore, a comparison was made between those elements with concentrations in excess of the detection limit and the typical range of concentrations for various elements in native soils (Appendix A, Ref. 14).

10 TCL Metals analyzed for were found to be above the detection limit in one or more of the samples. All were found to be within the normal range of concentrations expected in soils except for magnesium (SS-2), which was reported as having a concentration of 6300 mg/Kg. The normal range for magnesium in soil is from 600 to 6000 mg/Kg. Magnesium, however is not considered a toxic heavy metal.

SEMIVOLATILE ORGANICS

There were no semivolatile compounds reported in excess of the detection limits for any of the samples. There were however, several unknown and tentatively identified compounds reported for some or all four samples. They are 4-hydroxy-4-methyl 2-pentanone and hexadecanoic acid. These compounds were found in the associated blank for each sample. Estimated concentrations in soil for 4-hydroxy-4-methyl 2-pentanone ranged from 3000 to 4500 mg/kg. For hexadecanoic acid, concentrations ranged from 350 to 470 mg/kg. An estimated 910 mg/kg of benzaldehyde was discovered in SS-1. All may have been detected due to their usage in laboratory work, although benzaldehyde is used in dye manufacture and may be a

TABLE 4-6

Tentatively Identified Volatile Organic Compounds and PCBs

Sample	Volatile Organic Compound (ug/Kg)	Pesticide/PCB's (ug/Kg)
SD-2	Chloroform/7J	-
	2-Methylpropane/29BJ	-
SS-1	2-Methylpropane/11BJ	-
SS-4	2-Methylpropane/80BJ	-
SL-2	-	Aroclor-1254/930Y

J - Indicates an estimated value.
B - The analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. instrument for the specific analysis.
Y - The reported Pesticide/PCB result is below the reported contract required quantitation limit.

TABLE 4-7
ANALYTICAL SUMMARY OF INORGANIC ANALYSES OF SOIL SAMPLES
(mg/Kg)

Parameter	SS-1	SS-2	SS-3	SS-4	SS-1S/FS	SS-1D	*Trace Element Concentration Expected in Soils(mg/Kg)
Aluminum	15200	17300	16500	15200	NR	15400	10,000-300,000
Antimony	UN	UWN	UWN	UN	UN	UN	.6-10
Arsenic	5.5 SN*	8.9 SN*	7.7 SN*	8.2 SN*	8.9 N*	3.6 SN*	1.0-40
Barium	62.2	37.9	U	48.5	262	61.1	100-3500
Beryllium	U	U	U	U	5.8	U	.1-40
Cadmium	3	3.4	3.6	2.8	8.4	2.4	.01-7
Calcium	1460	978	689	895	NR	1490	100-400,000
Chromium	12.7 E	14.4 E	14.3 E	16.1 E	32.2 E	13.7 E	5.0-3,000
Cobalt	9.2 B	15.6	9.9	9.3	63.2	9.3	1.0-40
Copper	20.7 E	21.2 E	33.7 E	23.1 E	47.6 E	22.5 E	2.0-100
Iron	25500	38300	38400	28300	NR	24600	7,000-550,000
Lead	17.3	34.6	24	96	26.4	18.7	2.0-200
Magnesium	3920	6300	5980	5190	NR	3980	600-6,000
Manganese	903 E	964 E	178 E	466 E	1080 E	771 E	100-4000
Mercury	U	U	U	U	0.52	U	.01-.08
Nickel	18.9	24.9	30.7	28.5	76.5	24.3	5.0-1,000
Potassium	893 B	U	513 B	U	NR	941	400-30,000
Selenium	UWN	UN	UN	UWN	UN	UWN	.1-2.0
Silver	U	U	U	U	8.9	U	.1-5.0
Sodium	U	U	U	U	NR	U	750-7500
Thallium	U	U	U	U	8.2	U	.1-12
Vanadium	18.8	19.1	15.4	18	67.8	20.1	20-500
Zinc	73.5 E	74.0 E	94.6 E	80.5 E	120 E	74.5 E	10-300
Cyanide	U	U	U	U	6.1	U	-

\+ "The Soil Chemistry of Hazardous Materials", James Dragun, Ph.D. Hazardous Materials Control Research Institute, Silver Spring, Maryland.

U - Indicates analyte was analyzed for but not detected.
B - The reported value is less than the CRDL but greater than the Instrument Detection Limit.
E - The reported value is estimated because of the presence of interference.
N - Spiked sample recovery not within control limits.
S - Reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
* - Duplicate analysis not within control limits.
NR - Analyte not required to be analyzed for.

TABLE 4-8
SUMMARY TABLE OF SEMIVOLATILE ORGANIC ANALYSES OF SOIL SAMPLES
(mg/Kg)

TENTATIVELY IDENTIFIED COMPOUNDS	SS-1	SS-2	SS-3	SS-4
UNKNOWN	1100 JB	950 JB	710 JB	1000 JB
UNKNOWN	580 JB	520 JB	410 JB	570 JB
UNKNOWN	360 JB	850 J	1200 J	330 JB
UNKNOWN	-	680 J	520 J	780 J
UNKNOWN	-	1200 J	390 J	560 J
UNKNOWN	-	-	-	340 J
UNKNOWN	-	-	-	590 J
UNKNOWN	-	-	-	700 J
UNKNOWN	-	-	-	610 J
UNKNOWN	-	-	-	350 J
UNKNOWN	-	-	-	610 J
UNKNOWN	-	-	-	3000 J
UNKNOWN	-	-	-	380 J
UNKNOWN ALIPHATIC HYDROCARBON	570 JB	1700 J	370 J	1400 J
UNKNOWN ALIPHATIC HYDROCARBON	1300 JB	2500 J	-	2400 J
UNKNOWN ALIPHATIC HYDROCARBON	450 JB	590 J	-	-
HEXADECANOIC ACID	470 JB	350 JB	-	-
BENZALDEHYDE	910 JB	-	-	-
2-PENTANONE, 4-HYDROXY-4-MET	4100 JBA	4500 JBA	3000 JBA	4500 JBA
UNKNOWN ALDEHYDE	-	370 J	-	-
Pyrene	-	80 J	-	-

(1) cannot be seperated from Diphenylamine
U - Indicates compound was analyzed for but not detected.
J - Indicates an estimated value.
B - The analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
A - This flag indicates that a TLC is a suspected aldol-condensation product. (85-115%), while sample absorbance is less than 50% of spike absorbance.

result of the paper recycling process (Appendix A, Ref. 15).

VOLATILE ORGANICS

No volatile organic compounds were found to be in excess of the detection limits in any of the above-mentioned samples. Two compounds found in SS-4 (methylene chloride, estimated 4 ug/L and 2-methylpropane, estimated 80 ug/L) were also found in the associated blank. One compound, 2-methylpropane, (estimated 11 ug/L) was found in sample SS-1 and in its associated blank.

PESTICIDE/PCB'S

There were no reported pesticide/PCB concentrations in excess of the contract quantitation limits for any of the soil samples.

4.5.7 SLUDGE ANALYTICAL RESULTS

INORGANICS

Four settling lagoon sludge samples, SL-1, SL-2, SL-3 and SL-4 (from dredged material), were collected and analyzed for 24 TCL Metals. The following elements were reported to be above their respective detection limits for samples SL-1 through SL-4: aluminum; iron; lead; magnesium (all but SL-1); nickel (all but SL-1); chromium and copper (estimated concentrations); and cyanide. SL-3 had the highest concentrations of aluminum (14,300 mg/Kg), iron (27,600 mg/Kg), lead (97.8 mg/Kg), magnesium (74,600 mg/Kg), nickel (677 mg/Kg), chromium (269 mg/kg), copper (114 mg/kg) and cyanide (15.5 mg/Kg). A summary of the inorganic analysis of the sludge samples is presented in Table 4-9.

There are no NYSDEC criteria for sludge, therefore inorganic analytical results are compared to data compiled from E.P.A. documents (Appendix A, Ref. 16). In the cases of aluminum, chromium, copper and cyanide, no comparable sludge data was available. Iron concentrations in SL-3 (27,600 mg/kg) and (SL-4 13,400 mg/kg) were greater than the mean municipal wastewater sludge concentration of 13,000 mg/kg.

TABLE 4-9
SUMMARY OF INORGANIC ANALYSIS OF SLUDGE SAMPLES
ATLANTIC ASBESTOS
(mg/Kg)

Parameter	SL-1	SL-2	SL-3	SL-4
Aluminum	4180	1710	14300	7040
Antimony	76.0 U N	50.9 U N	102 U N	54.1 U N
Arsenic	9.8 U WN	7.0 U WN*	16.2 U N*	8.2 U N*
Barium	U	U	U	U
Beryllium	U	U	U	U
Cadmium	U	U	U	U
Calcium	U	U	U	U
Chromium	25.9 E	34.8 E	269 E	159 E
Cobalt	U	U	U	U
Copper	90.7 E	88.7 E	114 E	85.6 E
Iron	5530	2150	27600	13400
Lead	29.3	22.1	97.8	57.3
Magnesium	3890 B	6730	74600	39200
Manganese	71.5 E	63.2 E	465 E	457 E
Mercury	U	U	U	1.4
Nickel	U	50	677	309
Potassium	U	U	U	U
Selenium	49 UN	3.5 U WN	8.1 U WN	41 U N
Silver	U	U	U	U
Sodium	U	U	U	U
Thallium	U	U	U	U
Vanadium	U	U	U	U
Zinc	162 E	119	380 E	201 E
Cyanide	11.1	6.5	15.5	10.8

U - Indicates analyte was analyzed for but not detected.
B - The reported value is less than the CRDL but greater than the Instrument Detection Limit.
E - The reported value is estimated because of the presence of interference.
N - Spiked sample recovery not within control limits.
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
* - Duplicate analysis not within control limits.

The concentrations of manganese in SL-3 (465 mg/kg) and SL-4 (457 mg/kg) were greater than the mean of 380 mg/kg. The concentrations of nickel in SL-3 (677 mg/kg) were higher and slightly lower in SL-4 (309 mg/kg) than the mean of 380 mg/kg. Magnesium content in all except SL-1 were considerably higher than the mean value (5,000 mg/kg) in municipal sludge, ranging from 6,730 mg/kg to 74,600 mg/kg. Lead and copper content in site samples was considerably lower than that for municipal samples. The spike recovery for antimony, arsenic and selenium was not within control limits for all of the samples. Due to interference, concentrations of chromium, copper, manganese and zinc were estimated for all of the sludge samples. With the exception of nickel, lead and cyanide, none of the above substances in high concentrations are considered toxic heavy metals. Chromium is not considered toxic here because the analysis was for total chromium, not hexavalent.

SEMIVOLATILE ORGANICS

All of the four sludge samples so analyzed exhibited concentrations of 2-methylnaphthalene above the detection limits. Concentrations ranged from 140,000 ug/kg in SL-1 to 13,000 ug/kg in SL-3. Naphthalene was also reported in all samples, ranging from 20,000 ug/kg in SL-1 to 1400 ug/kg in SL-4. Due to the presence of interference, the concentrations of naphthalene for all four samples was estimated. The concentrations of bis(2-ethylhexyl)phthalate were estimated in samples SL-1 (8,700 ug/kg), SL-2 (3,400 ug/kg) and SL-3 (4,100 ug/kg). There was no reported concentration of this compound for SL-4. There were several unknown and tentatively identified compounds detected for all of the samples. Among those reported are: 1-methylnaphthalene, (SL-1 (85,000 ug/Kg), SL-2 (18,000 ug/Kg), hexadecane, (SL-1 having the highest concentration at 67,000 ug/Kg), heptadecane,(SL-1 having the highest concentration at 82,000 ug/Kg), and octadecane, (SL-1 having the highest concentration at 63,000 ug/Kg).

All of the concentrations for the unknown and tentatively identified compounds were estimated due to the presence of interference. Their presence in the sludge may be due to their use in solvents or lubricants used at the mill. A summary of the

TABLE 4-10
SUMMARY OF SEMI-VOLATILE ANALYSIS OF SLUDGE SAMPLES
ATLANTIC ASBESTOS
(ug/Kg)

COMPOUND	SL-1	SL-2	SL-3	SL-4
Phenol	U	U	U	U
bis (2-Chloroethyl) ether	U	U	U	U
2-Chlorophenol	U	U	U	U
1,3-Dichlorobenzene	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U
Benzyl alcohol	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U
2-Methylphenol	U	U	U	U
bis (2-Chloroisopropyl) ether	U	U	U	U
4-Methylphenol	U	U	U	U
N-Nitroso-di-n-propylamine	U	U	U	U
Hexachloroethane	U	U	U	U
Nitrobenzene	U	U	U	U
Isophorone	U	U	U	U
2-Nitrophenol	U	U	U	U
2,4-Dimethylphenol	U	U	U	U
Benzoic acid	U	U	U	U
bis (2-Chloroethoxy) methane	U	U	U	U
2,4-Dichlorophenol	U	U	U	U
1,2,4-Trichlorobenzene	U	U	U	U
Naphthalene	20000 J	3900 J	2000 J	1400 J
4-Chloroaniline	U	U	U	U
Hexachlorobutadiene	U	U	U	U
4-Chloro-3-methylphenol	U	U	U	U
2-Methylnaphthalene	140000	27000	13000	49000
Hexachlorocyclopentadiene	U	U	U	U
2,4,6-Trichlorophenol	U	U	U	U
2,4,5-Trichlorophenol	U	U	U	U
2-Chloronaphthalene	U	U	U	U
2-Nitroaniline	U	U	U	U
Dimethylphthalate	U	U	U	U
Acenaphthalate	U	U	U	U
2,6-Dinitrotoluene	U	U	U	U
3-Nitroaniline	U	U	U	U
Acenaphthene	U	U	U	U
2,4-Dinitrophenol	U	U	U	U
4-Nitrophenol	U	U	U	U
Dibenzofuran	U	U	U	U
2,4-Dinitrotoluene	U	U	U	U
Diethylphthalate	U	U	U	U
4-Chlorophenyl-phenylether	U	U	U	U
Fluorene	U	U	U	U
4-Nitroaniline	U	U	U	U
4,6-Dinitro-2-methylphenol	U	U	U	U
N-Nitrosodiphenylamine (1)	U	U	U	U
4-Bromophenyl-phenylether	U	U	U	U
Hexachlorobenzene	U	U	U	U
Pentachlorophenol	U	U	U	U

CONTINUED ON NEXT PAGE...

TABLE 4-10 CON'T

COMPOUND	SL-1	SL-2	SL-3	SL-3
Phenanthrene	U	U	U	U
Anthracene	U	U	U	U
Di-n-butylphthalate	U	U	U	U
Fluoranthene	U	U	U	U
Pyrene	U	U	U	U
Butylbenzylphthalate	U	U	U	U
3,3'-Dichlorobenzidine	U	U	U	U
Benzo(a) anthracene	U	U	U	U
Chrysene	U	U	U	U
bis(2-Ethylhexyl)phthalate	8700 J	3400 J	4100 J	U
Di-n-octylphthalate	U	U	U	U
Benzo (b) fluoranthene	U	U	U	U
Benzo (k) fluoranthene	U	U	U	U
Benzo (a) pyrene	U	U	U	U
Indeno (1,2,3-cd) pyrene	U	U	U	U
Dibenz (a,h) anthracene	U	U	U	U
Benzo (g,h,i) perylene	U	U	U	U
* TENTATIVELY IDENTIFIED COMPOUNDS				
Unknown Aliphatic Hydrocarbon	60000 J	24000 J	33000 J	37000 J
Unknown Aliphatic Hydrocarbon	58000 J	19000 J	37000 J	69000 J
1-Methylnaphthalene	85000 J	18000 J	-	-
Unknown Dimethynaphthalene	70000 J	-	-	41000 J
Hexadecane	67000 J	29000 J	46000 J	44000 J
Heptadecane	82000 J	32000 J	42000 J	43000 J
Octadecane	63000 J	25000 J	38000 J	40000 J
Unknown Aliphatic Hydrocarbon	52000 J	18000 J	53000 J	69000 J
Unknown	160000 J	17000 J	40000 J	-
Unknown Aliphatic Hydrocarbon	64000 J	51000 J	69000 J	45000 J
Unknown	71000 J	19000 J	44000 J	-
Unknown Aliphatic Hydrocarbon	53000 J	22000 J	52000 J	50000 J
Unknown	79000 J	33000 J	35000 J	-
Unknown Aliphatic Hydrocarbon	57000 J	-	81000 J	50000 J
Unknown Aliphatic Hydrocarbon	73000 J	-	51000 J	59000 J
Unknown Aliphatic Hydrocarbon	84000 J	-	120000 J	48000 J
Unknown Polycyclic Hydrocarbon	84000 J	39000 J	62000 J	49000 J
Unknown Polycyclic Hydrocarbon	87000 J	41000 J	73000 J	60000 J
Unknown Aliphatic Hydrocarbon	53000 J	-	38000 J	44000 J
Unknown	130000 J	56000 J	100000 J	-
Unknown	-	18000 J	-	-
Unknown	-	27000 J	-	-
Unknown Dimethoxy C-10 Aroma	-	160000 J	-	38000 J
Unknown Diethylbiphenyl	-	150000 J	-	38000 J
Unknown C-4 Alkylphenanthren	-	18000 J	-	-
Unknown Aliphatic Hydrocarbon	-	-	54000 J	43000 J
Unknown Aliphatic Hydrocarbon	-	-	35000 J	38000 J
Unknown Aliphatic Hydrocarbon	-	-	-	56000 J

U - Indicates compound was analyzed for but not detected.
J - Indicates an estimated value.

TABLE 4-11
ATLANTIC ASBESTOS
SUMMARY OF VOLATILE ORGANIC ANALYSIS OF SLUDGE SAMPLES
(ug/Kg)

Compound	SL-1	SL-2	SL-3	SL-4
Chloromethane	U	U	U	U
Bromomethane	U	U	U	U
Vinyl Chloride	U	U	U	U
Chloroethane	U	U	U	U
Methylene Chloride	57 BJ	18 BJ	120 BJ	U
Acetone	U	7 J	U	U
Carbon Disulfide	U	U	U	U
1,1-Dichloroethene	U	U	U	U
1,1-Dichloroethane	U	U	U	U
1,2-Dichloroethene (Total)	U	U	U	U
Chloroform	U	31	U	U
1,2-Dichloroethane	U	U	U	U
2-Butanone	U	U	U	U
1,1,1-Trichloroethane	U	U	U	U
Carbon Tetrachloride	U	U	U	U
Vinyl Acetate	U	U	U	U
Bromodichloromethane	U	U	U	U
1,2-Dichloropropane	U	U	U	U
cis-1,3-Dichloropropene	U	U	U	U
Trichloroethene	U	U	U	U
Dibromochloromethane	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U
Benzene	U	U	U	U
trans-1,3-Dichloropropene	U	U	U	U
Bromoform	U	U	U	U
4-Methyl-2-Pentanone	U	U	U	U
2-Hexanone	U	U	U	U
Tetrachloroethene	U	U	U	U
1,1,2,2-Tetrachloroethane	U	U	U	U
Toluene	6100	U	5000	U
Chlorobenzene	U	U	U	U
Ethylbenzene	U	U	U	U
Styrene	U	U	U	U
Xylene (total)	190	U	U	U
* TENTATIVELY IDENTIFIED COMPOUNDS				
Unknown Hydrocarbon	230 J	-	-	-
Decahydronaphthalene	200 J	-	-	-
2-Methylpropane	280 BJ	39 BJ	600 BJ	86 BJ
Unknown	-	-	-	78 J

U - Indicates compound was analyzed for but not detected.
J - Indicates an estimated value.
B - The analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

semivolatile organic analysis of sludge is presented in Table 4-10.

VOLATILE ORGANICS

The following compounds were reported as being above the contract quantitation limits for volatile organic compounds: toluene, SL-1 (6100 ug/Kg), SL-3 (5000 ug/Kg), xylene (total), SL-1 (190 ug/Kg), and chloroform, SL-2 (31 ug/Kg). Methylene chloride was found in the associated blank of samples SL-1 through 3. The concentration was estimated due to the presence of interference. Acetone was detected in SL-2 but may be the result of laboratory contamination. The concentration was estimated. There were several unknown and tentatively identified compounds detected. 2-methylpropane was detected in the associated blank {SL-1, 280 ug/Kg, SL-2, 39 ug/Kg, SL-3, 600 ug/Kg, SL-4, 86 ug/Kg} for each of the samples. The concentration was estimated due to interference. Decahydronaphthalene was tentatively identified in SL-1 (200 ug/Kg). The concentration was estimated. A summary of the organic analysis of sludge is presented in Tables 4-6 and 4-11.

PESTICIDES/PCB

There were no reported concentrations of Pesticides or PCB's that exceeded the contract detection limits. Chromatographic peaks characteristic of Arochlors 1248, 1254, and 1260 were detected in the extract of SL-2. The PCB concentration was quantified as Arochlor 1254 as the laboratory determined that this most accurately reflected the concentration found in the sample. The reported concentration was found to be below the adjusted contract reporting limit. See Table 4-6 for details.

4.6 ASBESTOS ANALYTICAL RESULTS

The following subsections present the data obtained from analytical tests performed on air, sediment, sludge, and surface water samples for the presence of asbestos fibers. A map displaying chrysotile asbestos concentrations is found in Figure 4-1. The analytical data is presented in Table 4-11. A complete presentation

of laboratory analyses and quality control can be found in Appendix I.

4.6.1 ASBESTOS IN AIR

Three air samples were collected for asbestos analysis. Air sample 1 was collected from an area adjacent and downwind of the exposed settling lagoon dredge pile #4. Sample A-2 was taken downwind of the exposed dredge pile adjacent to settling lagoon #3. The upwind sample was taken upgrade from settling lagoon #5. The analysis was performed using the Phase Contrast Microscopy method of fiber counting. Only results greater than 5.5 fibers per 100 fields are reported (See Appendix I for detailed discussion of analytical methods). There were no positive reported results for any of the air samples. It should be noted, however, that the sludge piles were frozen at the time of the sampling. This would effect the final results of the analysis. Any asbestos fibers that may have been in the sludge piles at that time would not have been airborne while the piles were frozen.

4.6.2 ASBESTOS IN SEDIMENT AND SLUDGE

Two sediment samples were tested for asbestos. SD-1 and SD-2 were both taken from the large pond on site and correspond to the two surface water sampling points (see Figure 4-1 and Plate A). Analysis was performed by Polarized Light Microscopy and only results greater than 1% are reported (See Appendix I for detailed discussion of analytical methods). There were no reported results for either of the two sediment samples.

A total of seven sludge samples were analyzed for asbestos using the same analytical method employed in the sediment analysis. Four of the seven samples were reported as positive for asbestos (greater than 1%). A qualitative differentiation (between asbestos types and other fibers) was also determined for each of the samples

TABLE 4-12
SUMMARY TABLE FOR SEDIMENT AND SLUDGE ASBESTOS ANALYSIS
(%)

	% SOLIDS	*RESULTS
SLUDGE #1	24	No Asbestos detected
SLUDGE #2	48	Positive for Asbestos (67% Chrysotile)
SLUDGE #3	30	No Asbestos detected
SLUDGE #4	62	No Asbestos detected
SLUDGE #5	50	Positive for Asbestos (31% Chrysotile) (<1% Amosite) (<1% Crocidolite)
SLUDGE #6	33	Positive for Asbestos (22% Chrysotile)
SLUDGE #7	49	Positive for Asbestos (44% Chrysotile) (3% Amosite)
SEDIMENT #1	75	No Asbestos detected
SEDIMENT #2	80	No Asbestos detected

* - Analysis was performed using Polarized Light Microscopy (PLM).
"No asbestos Detected" means that <1% fibers were detected.

that were in excess of the reporting limit. SL-2, which was removed from the settling lagoon about 140 feet downstream from the plant discharge pipe, was reported positive for Chrysotile (67%). SL-5 was taken along the peninsula from settling lagoon #4 and was reported positive for Chrysotile (31%), Amosite (<1%), and Crocidolite (<1%). Sludge sample 6 was reported positive for Chrysotile (22%). It was removed from the stream bed about 200 feet from the mouth of the lagoon. SL-7, which was taken in the stream along the peninsula about 40 feet from the mouth of the lagoon, was positive for Chrysotile (44%) and Amosite (3%). See Table 4-12 for details.

4.6.3 ASBESTOS IN SURFACE WATER

An asbestos determination was performed on surface water samples SW-1 and SW-2 using a modified total suspended solids procedure. This test measures both the asbestos and non asbestos residue retained on a 0.45 micron filter. The reporting limit for this analysis is <0.01% (100 mg/L). There were no reported results for either of the surface water samples. See Table 3-5 for details.

4.7 CONCLUSIONS AND RECOMMENDATIONS

4.7.1 CONCLUSIONS

The conclusions of the Atlantic Asbestos Site Phase II investigation are as follows:

GROUNDWATER

The groundwater underlying the site has levels of iron and manganese that exceed the NYSDOH and NYSDEC Ambient Water Quality Standards, but this is primarily due to the turbidity of the sample GW-2. While iron and manganese are not toxic heavy metals it should be noted that upon oxidation both will precipitate which could cause undesirable tastes, turbidity, staining of plumbing fixtures, and deposits

on food. Chromium and aluminum content in unfiltered GW-2 exceed typical values found in groundwater. If the unfiltered sample for GW-2 is discounted and the filtered sample is compared to groundwater standards, only the iron content in any of the samples is in contravention of drinking water standards. It is concluded that in view of the above, there is no contamination of toxic heavy metals in the groundwater sampled.

A tentatively identified volatile organic compound, chlorodifluoromethane (Freon 22), was detected in all ground water samples. The estimated levels were: GW-1, 14 ug/L; GW-2, 24 ug/L; GW-3, 26 ug/L. The trip blank and field blank contained similar concentrations. There are no NYSDEC criteria for these compounds. Chlorodifluoromethane is the common refrigerant, Freon 22, and is a low-temperature solvent (Appendix A, Ref. 15). It may be considered an atmospheric or laboratory-derived contaminant.

There were no pesticide or PCB compounds found in samples of groundwater.

SURFACE WATER AND SEDIMENT

Two surface water and two sediment samples were taken from the lake on the site. SW-1 and SD-1 were collected from the edge of the pond about 240 feet downstream from the mouth of the lagoon. SW-2 and SD-2 were taken from the pond about 115 feet downstream from the lagoon mouth.

Both pairs of samples had concentrations of several TCL Metals that were reported in excess of the detection limits. The paired samples SW-2 and SD-2 had the higher concentrations of aluminum, iron, magnesium, manganese, and zinc than those for SW-1 and SD-1. SD-2 had higher concentrations of aluminum, iron, magnesium and zinc than SW-2. An examination of the total suspended solids in SW-2 reveals a much more turbid sample than that of SW-1 (110 mg/L vs. 4 mg/L). The level of manganese in SW-2 exceeded the concentration of that found in the sediment. The concentrations of aluminum and iron exceeded the NYSDEC standards for a class B

waterbody in both surface water samples. The zinc content in SW-2 exceeded the NYSDEC standard for a class B surface water.

There is no NYSDEC criteria for sediment, therefore a comparison was made between those elements found in the sediment and the typical range of values for these elements found in native soils (Appendix A, Ref.14). Only magnesium (SD-2) was found to exceed the upper limit of this range. Although there were violations of the NYSDEC standards, those elements (with the exception of zinc) are not considered toxic heavy metals. The level of zinc found in SW-2 exceeds the standard by a factor of 1.67 and is not considered a problem at this concentration. It is concluded therefore that there is no contamination of toxic heavy metals in the surface water or sediment samples.

Sample SW-2 had a reported concentration of 15 ug/L for 2-methylnaphthalene. Its presence may be due in part to its use as an insecticide or as a result of the use of solvents in the paper recycling plant. There were several unknown and tentatively identified compounds reported for both SW-1 and SW-2. SW-1 had a reported concentration of 9 ug/L of 4-hydroxy-4-methyl 2-pentanone (diacetone alcohol), which was estimated and found in the associated blank. Its presence may be related to glassware cleaning procedures in the laboratory. SW-2 contained an estimated 13 ug/L of 1-methylnaphthalene, occurring in association with the 2-methylnaphthalene. Both are coal tar derivatives (Appendix A, Ref. 15).

A tentatively identified semi-volatile compound, chlorodifluoromethane (Freon 22), was detected in both surface water samples. The concentrations were estimated to be 23 ug/L for SW-1 and 14 ug/L for SW-2. This substance also found in the associated blanks. This substance is so commonly found that it may be considered an atmospheric or laboratory-derived contaminant.

An analysis for asbestos fibers was performed on both the sediment and surface water samples. There was no asbestos detected in any of the samples.

SOIL

Four soil samples were collected from several areas around the site. SS-1 was taken downgradient of the large waste pile (see Figure 4-1) and had the highest concentrations of barium, calcium, and potassium. SS-2 was collected about 40 feet southeast of GW-2 had the highest concentrations of aluminum, cobalt, magnesium, and vanadium. SS-3 was taken from an area downgradient of a waste pile and exhibited the highest concentrations of cadmium, copper, iron and nickel. SS-4 was removed from a waste pile upgradient from SS-3. It had the highest concentrations of chromium and lead. There are no NYSDEC criteria for soils, therefore a comparison was made between those elements reported to be above the contract quantitation limits and the typical range of values for these elements found in native soils (Appendix A, Ref. 14). Only magnesium (in SS-2) was found to be above the range of values. As magnesium is not considered a toxic heavy metal, it is concluded that there is no contamination of toxic heavy metals in the soil samples.

Several unknown and tentatively identified semivolatile compounds, 4-hydroxy-4-methyl 2-pentanone (diacetone alcohol) and hexadecanoic acid were found in all 4 soil samples. These compounds were found in the associated blank for each sample. Estimated concentrations in soil for 4-hydroxy-4-methyl 2-pentanone ranged from 3000 to 4500 mg/kg. For hexadecanoic acid, concentrations ranged from 350 to 470 mg/kg. In addition, an estimated 910 mg/kg of benzaldehyde was discovered in SS-1. All may have been detected due to their usage in laboratory work, although benzaldehyde is used in dye manufacture, as a solvent for oils and resins and may be a result of the paper recycling process (Appendix A, Ref. 15).

Two volatile organic compounds found in SS-4 (methylene chloride, estimated 4 ug/L and 2-methylpropane, estimated 80 ug/L) were also found in the associated blank. One compound, 2-methylpropane, (estimated 11 ug/L) was found in sample SS-1 and in its associated blank. Isobutane is another name for 2-methylpropane. It is a common laboratory instrument calibration fluid (Appendix A, Ref. 15). As these substances were found in the laboratory blanks as well in the samples, their presence

is probably due to post-sampling contamination.

There was no pesticide or PCB contamination in any of the samples.

SLUDGE

Four of the seven sludge samples were analyzed for TCL metals, semivolatile organic compounds, volatile organic compounds, pesticides, PCB's and asbestos fibers. The remaining three sludge samples, SL 5-7, were analyzed for asbestos fibers only. SL-3, which was extracted about 220 feet downstream from the plant discharge pipe, had the highest levels of TCL metals of all four samples so tested. As there are no NYSDEC criteria for sludge, inorganic analytical results were compared to data compiled from E.P.A. documents (Appendix A, Ref. 16). In the cases of aluminum, chromium, copper and cyanide, no comparable sludge data was available. Iron and manganese concentrations in two sludge samples were greater than the mean municipal wastewater sludge concentration (13,000 mg/kg). The concentrations of nickel in SL-3 (677 mg/kg) were higher and slightly lower in SL-4 (309 mg/kg) than the mean of 320 mg/kg. Magnesium content in all except SL-1 were considerably higher than the mean value. Chromium (269 mg/kg), copper (114 mg/kg) and cyanide (15.5 mg/Kg) concentrations in SL-3 may merit attention, especially in the absence of any comparative data. Lead and copper content in site samples was considerably lower than that for municipal sludge. With the exception of nickel, lead and cyanide, none of the above substances are considered toxic heavy metals (Appendix A, Ref.15). Chromium is not considered toxic here because the analysis was for total chromium, not hexavalent.

Toluene, xylene, chloroform and 2-methynaphthalene were detected in sludge samples. Toluene was detected in both SL-1 (6100 ug/kg) and SL-3 (5000 ug/kg). Xylene (190 ug/kg) was found in SL-1 only. Chloroform (31 ug/kg) was found in SL-2. SL-1 which was collected from the settling lagoon about 40 feet from the plant effluent pipe had the highest concentrations of these solvents. All four samples

(SL-1 through SL-4) had reported concentrations of 2-methylnaphthalene that exceed the detection limits. SL-1 with a concentration of 140,000 ug/kg had the highest concentration of the four. This substance was also found in SW-2. It is associated with insecticides, organic synthesis and solvents. It may be derived from solvent use by the recycling plant. Bioaccumulation of 2-methylnaphthalene is known to occur in certain aquatic species such as the Rainbow Trout. This could have an adverse environmental impact should offsite migration occur. It is likely that solvents or lubricants used in the paper recycling process are being introduced to the surrounding surface water and possibly wetlands through the effluent pipe. There were no reported pesticides or PCB's in excess of the detection limits.

Four of the seven sludge samples analyzed for asbestos fibers tested positive for chrysotile (>1%). SL-2, which was taken about 140 feet down-stream from the plant discharge outlet, had the highest reported percentage of asbestos fibers (67% chrysotile). SL-7, which was sampled about 40 feet from the point where the lagoon and large pond merge, tested positive for chrysotile (44%). It should be noted that when chrysotile is present in a matrix of cellulose an underestimation of the percent present may occur (Appendix I). It is therefore conceivable to obtain negative results for chrysotile in a sample that contains cellulose fibers in the matrix.

In view of the presence of toluene, xylene, chloroform, 2-methylnaphthalene and asbestos in the samples, and the presence of 2-methylnapthalene in the surface water, it is concluded that the sludge requires further investigation and possible removal.

AIR

None of the three air samples taken were reported positive for asbestos fibers. Because of the frozen condition of the sludge dredge piles, it is felt that the test results may be inconclusive. Any asbestos fibers would not be airborne and therefore any negative results may be suspect.

4.7.2 RECOMMENDATIONS

Based on the results of this investigation, it is recommended that additional investigations be conducted at the site, including:

1) A grid sampling and retesting of the lagoons to determine the extent of asbestos contamination.

2) Additional testing of the sediment from the lake and pond and the adjacent wetlands. Special attention should be given to the delta forming at the mouth of the lagoon where it empties into the large pond. Wetland sampling should be conducted in late winter or early spring after a significant runoff has occurred. Samples should be taken in the vicinity of high water marks near the culvert that enters the wetland from the small pond onsite.

3) The determination of the nature, extent and quantity of contaminated sludge and sediment. This should include locating sludge that had been buried onsite by Atlantic Asbestos, Inc.

4) Resampling of the air in the vicinity of the lagoons for asbestos fibers.

5) A study be undertaken to create a satisfactory means of disposing of the sludge.

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DEPARTMENT OF CONSERVATION
WATER RESOURCES COMMISSION

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Ground-Water Resourses of Dutchess County, New York

By

E. T. SIMMONS, I. G. GROSSMAN, AND R. C. HEATH
Geologists, U. S. Geological Survey

Prepared by the
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GROUND-WATER RESOURCES OF DUTCHESS COUNTY, NEW YORK

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ABSTRACT

Dutchess County encompasses an area of about 800 square miles in the southeastern part of New York State. The climate is humid continental. The mean monthly temperature is about 49°F and the mean annual precipitation is about 45 inches.

Ground water is obtained from unconsolidated surficial deposits and from bedrock. The unconsolidated deposits consist chiefly of unstratified till, and stratified clay, silt, sand, and gravel. The till ranges in thickness from less than 1 foot to more than 100 feet and underlies most of the uplands and some valley areas. The stratified deposits generally range in thickness from a few feet to as much as 200 feet and are chiefly restricted to valley areas. In the major valleys, large supplies adequate for municipal and industrial needs can be obtained from stratified deposits of sand and gravel. In upland areas, small supplies for domestic and farm needs may be obtained from large-diameter wells penetrating till.

The consolidated rocks range in age from Precambrian to Ordovician and in degree of metamorphism from highly metamorphosed rocks in the southeast to slightly altered rocks in the northwest. Argillaceous rocks are the most abundant. Other consolidated rocks in the county consist of limestone, dolomite, quartzite, granite, and gneiss. The average yield from wells in bedrock ranges from about 10 gpm (gallons per minute) for wells drawing water from quartzite, granite, and gneiss to 22 gpm for wells drawing from limestone.

Water from the Stockbridge limestone and the overlying unconsolidated deposits is hard and comparatively high in dissolved solids. Elsewhere, ground water is softer and lower in dissolved solids but is more likely to contain troublesome quantities of iron.

Ground water is the principal source of supply for farms, rural homes, and summer camps. It is also used for an increasing number of industrial and public supplies. The total use of ground water in the county in 1950 is estimated to have averaged about 7 million gallons a day. There are no known areas of appreciable size in which the supply is being depleted, and the overall supply is not only adequate for present requirements but is capable of supporting substantially larger demands.

GEOGRAPHY

Location and Setting

Dutchess County is in southeastern New York State, about halfway between New York City and Albany. It is one of a row of counties east of the Hudson River that border on the New England States. The county is bordered on the east by the State of Connecticut, on the south by Putnam County, on the west by the Hudson River, and on the north by Columbia County and the Commonwealth of Massachusetts.

Dutchess County is rectangular in outline and has an area of 816 square miles. It extends about 34 miles in a north-south direction and 22 miles in an east-west direction. Most of it lies between meridians 73°30' and 73°59' west longitude and parallels 41°30' and 42°04' north latitude. The population of the county in 1950 was 136,781, about 40 percent of which was concentrated in the cities of Poughkeepsie and Beacon.

Topography

The surface of Dutchess County is moderately irregular, consisting of an almost continous alternation of hills and valleys (pl. 1). Flat areas, though present in most parts of the county, are generally small and occupy a minor proportion of the area. The county is divided on the basis of topography into two relatively distinct parts. The smaller of these consists of the area in the northwestern part of the county west of Wappinger Creek and longitude 73°45'W. This area is characterized by numerous small, irregularly shaped hills, most of which range in height from about 20 to about 100 feet above the intervening valleys. Scattered throughout the area, however, are a few small, regularly shaped hills that rise 200 to 300 feet or more above the adjacent valleys. Altitudes in this area range from about 40 feet above sea level near the Hudson River to about 900 feet above sea level at Old Round Top. Drainage is not so well developed as in the remainder of the county, as indicated by the presence of numerous swamps.

The remainder of the county--that is, east of longitude 73°45' W. in the northern part of the county and east and south of Wappinger Creek in the central and southern parts of the county--is characterized by numerous regularly shaped hills and low mountains. These are larger and generally higher than those in the northwestern part. Many of the hills in this area range in altitude from 500 to 1,000 feet above the floors of the valleys. The highest altitudes generally occur along the southern and eastern boundaries of the county. South Beacon Mountain, near the southwest corner of the county reaches an altitude of 1,602 feet above sea level. Brace Mountain, in the extreme northeast corner, reaches an altitude of 2,311 feet above sea level, the highest point in the county. South Beacon Mountain and the other mountains in the southern part of the county mark the northern limit of the Hudson Highlands, a belt of northeast-trending mountains under-

lain by resistant granite and gneiss. Brace Mountain and the other mountains along the eastern border of the county are a part of the Taconic Mountains (Fenneman, 1938, p. 1). Drainage is well developed in this area and swamps, though present, are not common.

Although hills and low mountains are the most characteristic topographic features of the eastern and southern parts of the county, the area includes several relatively extensive lowlands. The most prominent of these include the valley of Fishkill Creek, immediately north of the Hudson Highlands; the more or less continuous lowland, locally referred to as the Harlem Valley, near the eastern border of the county which includes the valleys of Swamp River, Tenmile River, and Webatuck Creek; and the area in the vicinity of Pine Plains near the northern boundary of the county. The otherwise flat surfaces of the lowlands are interrupted in many places by low hills 50 to 200 feet high. The flat surfaces of the lowlands range in altitude from about 400 to about 600 feet above sea level. The lowlands are underlain by limestone, and they owe their existence to the fact that the limestone is more susceptible to solution and other weathering processes than are the shale, quartzite, and crystalline rocks that underlie the remainder of the county.

Drainage

All of Dutchess County except the eastern part is in the Hudson River drainage basin (fig. 2). The Hudson River stands approximately at sea level and its stage rises and falls in response to ocean tides as far north as the locks of the barge canal at Troy, 50 miles north of the county. The largest streams in the county tributary to the Hudson are Wappinger Creek and Fishkill Creek. Wappinger Creek flows 32 miles across the county, from Pine Plains in the northeast to New Hamburg in the southwest. It has a total fall of 460 feet and an average fall of about 14 feet per mile. Fishkill Creek drains most of the central and southern parts of the county. It flows southwesterly from the vicinity of North Clove to the Hudson River at Beacon. It has a total fall of about 600 feet in 26 miles, or an average fall of about 23 feet per mile. Two of the major tributaries of the Hudson flow outside the county throughout most of their courses. Roeliff Jansen Kill, which drains a small area in the north-central part of the county, enters the Hudson River in Columbia County. The East Branch of the Croton River, which drains a small area in the southeastern part of Dutchess County, flows southward through Putnam County and southwestward into the Hudson River in Westchester County. Small areas are drained by Crum Elbow Creek, Landsman Kill, Stony Kill, and other small streams which generally flow southwestward into the Hudson River.

A small area of about 200 square miles in the eastern part of the county is drained by the Tenmile River, which flows eastward to the Housatonic River in Connecticut.

Consolidated Rocks

The bedrock underlying the county is composed of highly metamorphosed rocks of Precambrian age, and partially metamorphosed rocks of Paleozoic age. The older rocks, those of Precambrian age, consist mainly of granite and gneiss. The younger rocks, of Paleozoic age, consist of a larger variety of rock types, including quartzite, limestone, dolomite, marble, shale, phyllite, slate, and schist. Differences in age, degree of metamorphism, and lithology influence the water-bearing properties of the consolidated rocks. Thus, as an aid in understanding the occurrence of ground water in these rocks in different parts of the county, each of the principal types, as differentiated in table 2, is discussed separately in the following paragraphs.

Undifferentiated granite and gneiss.--Almost a tenth of Dutchess County is underlain at or near the surface by masses of northeast-trending igneous and metamorphic rocks of Precambrian age consisting chiefly of granite and gneiss. The largest mass underlies the southern part of the county from the Hudson River to the Connecticut State line. This mass ends abruptly 2 to 3 miles north of the southern border of the county against a series of subparallel major faults (pl. 2). Erosion of less resistant Paleozoic rocks north of the faults has resulted in a row of granite and gneiss spurs which are prominent topographic features in the southern part of the county.

The second largest mass of granite and gneiss underlies the group of prominent hills east of Dover Plains. Smaller bodies of granite and gneiss crop out at Corbin Hill, north of Pawling; at Stissing Mountain, west of Pine Plains; northeast of Beacon; and south of Sprout Creek, a few miles southeast of Poughkeepsie (pl. 2). The elongate mass northeast of Beacon has been called the Matteawan granite (Mather, 1843, pl. 18) and the Glenham gneiss (Gordon, 1911, p. 18). In the southwestern part of the county, the granite was subdivided into the Canada Hill granite and Storm King granite by Berkey and Rice (1921). The gneiss, which contains some schist and limestone, was called "Grenville gneiss and schists" by Berkey and Rice. However, in an earlier study of the southwestern part of the county, Gordon (p. 11) grouped together all the granite and gneiss along the southwestern border of the county under the term "Precambrian gneisses."

Balk (1932 and 1936) mapped the same rocks in the eastern part of the county and made a detailed study of their structure. In his reports, and in a report by Barth (1936), the granite and gneiss were combined into one major group, undifferentiated Precambrian gneiss. Because these rocks have not been further subdivided in the eastern part of the county and because there appear to be no significant differences in their water-bearing properties, the granites and the gneisses are grouped together in this report as "undifferentiated granite and gneiss."

In physical appearance, most of the granite and gneiss consists of light and dark minerals presenting a speckled appearance (granite) or arranged in layers (gneiss). The light minerals consist chiefly of quartz, feldspar, and white mica (muscovite). The dark minerals include black mica (biotite), garnet, and hornblende. Extensive and readily accessible exposures of gneiss can be seen in road cuts along the Taconic State Parkway near the Putnam County line. These rocks are more resistant to weathering than the younger Paleozoic rocks, as is reflected by the more rugged topography and higher altitudes in areas where they crop out. Most of the layers (foliation) in the granite and gneiss strike northeast, approximately parallel to the long axis of the Hudson Highlands, and dip steeply to the southeast. Exceptions occur near thrust faults where the strike and dip of the foliation parallel the faults. Most of the large and prominent spurs underlain by granite and gneiss in the southern part of the county point northeastward, and the long axes of the smaller bodies also are alined in that direction.

Cheshire quartzite.--A compact, strong quartzite, which is so tough that it is deliberately avoided by some drillers, crops out at a few localities in Dutchess County. This quartzite has been called the Poughquag quartzite by Berkey and some other geologists working in New York. It is called the Cheshire quartzite in this report, after its type locality at Cheshire, Berkshire County, Mass. (Emerson, 1917, p. 32-34). The quartzite unconformably overlies the Precambrian granite and gneiss and is the oldest Paleozoic rock in the county. In the southern and eastern parts of the county the quartzite forms the flanks of the higher ridges that are underlain by granite and gneiss. In the east-central part of the county, quartzite underlies several areas along the southern and western borders of the granite and gneiss in the vicinity of Dover Plains. Quartzite is present also in the southern part of Stissing Mountain in the north-central part of the county.

The Cheshire quartzite ranges in thickness from a few feet to about 600 feet. A thickness of about 250 feet has been reported at Stissing Mountain (Knopf, 1956, p. 11). The base of the formation may be conglomeratic and the top contains shaly beds in some places. In general, the quartzite is less strongly metamorphosed in the west than in the east. Some outcrops in the western part of the county still retain original sedimentary features, including bedding, crossbedding, and ripple marks. In the southeast, however, the original bedding has been destroyed by fracturing and recrystallization.

Where the Cheshire quartzite is composed almost entirely of quartz, it is white. Where small amounts of feldspar, mica, and other impurities are mixed with the quartz, it is pink or buff.

The Cheshire is not important as a source of ground water because of its small areal extent and because it underlies steeply sloping hillsides which are sparsely settled. Only five wells in the county are known to tap quartzite; these are listed in table 13.

Stockbridge limestone.--Over the Cheshire quartzite is a thick sequence of carbonate rocks, which underlie a much greater part of the county than the quartzite. In the east, carbonate rocks lie beneath the broad Harlem Valley, which contains Tenmile River and its principal tributaries and which extends almost without interruption from the Putnam County line to the Columbia County line. In the south, the valley of Fishkill Creek is underlain by limestone which extends from Beacon northeastward to the head of the creek. Other areas in the western and central parts of the county also are underlain by elongate masses of carbonate rocks (pl. 2).

Several different names have been applied to the carbonate rocks in different parts of the county, including Barnegat limestone (Mather, 1843, p. 410), Fishkill limestone (Gordon, 1911, p. 70), and Wappinger limestone (Gordon, p. 48). Knopf (1956, p. 1817) found that the carbonate rocks near Stissing Mountain range in age from Early Cambrian to Early Ordovician and divided them into the Stissing dolomite, Pine Plains formation, Briarcliff, dolomite, Halcyon Lake formation, and Rochdale limestone. Because there appear to be no essential differences in the water-bearing properties of the carbonate rocks, all are included in this report under the Stockbridge limestone, after the locality in Massachusetts where they were first described (Emmons, 1842, p. 154-156).

The carbonate rocks range in composition from almost pure calcium carbonate (limestone) to almost pure calcium-magnesium carbonate (dolomite). Limestone is more abundant in the upper part of the sequence and dolomite is more common in the lower part. Table 3 lists an analysis of a typical sample of dolomite from the Stockbridge limestone.

This analysis shows that more than 10 percent of the dolomite consists of impurities, chiefly silica and alumina. In some localities these impurities are abundant enough to form sandy and shaly beds in the Stockbridge.

Table 3.--Chemical composition of dolomite 1/ from the Stockbridge limestone

Determination	Percent by weight
Lime (CaO)	29.07
Magnesia (MgO)	16.29
Carbonic acid (H_2CO_3)	40.76
Alumina (Al_2O_3)	2.33
Ferric oxide (Fe_2O_3)	.47
Silica (SiO_2)	10.17
Total	99.09

1/ Collected at the Stoneco quarry of the Clinton Point Stone Co. about 4 miles south of Poughkeepsie. Analysis from Ries (1901, p. 779).

The metamorphism of the Stockbridge limestone generally increases in intensity from northwest to southeast. In the northwest and west, the formation is relatively undisturbed and original bedding is easily visible. Fossils have been found in the formation as far south as Clove Valley. Farther east, however, as in the Valley of Swamp River, the formation has been metamorphosed to a marble and the beds are severely folded. Balk noted that the folding is greater in the thin layers than in the thicker ones and that it is greatest near thrust faults. In the southeastern part of the county, the marble has been so severely deformed by plastic flow that it appears to be wrapped around stronger rocks. South of Pawling, the marble contains masses of schist that are folded and faulted into the limestone.

The deformation of the Stockbridge limestone makes it difficult to determine its thickness. In southwestern Putnam County, where the formation is relatively undisturbed, the thickness is about 1,000 feet. At Stissing Mountain, near Pine Plains in the north-central part of Dutchess County, the thickness of the different limestones and dolomites measured by Knopf (1946, p. 1211) totals 2,800 feet. The thickness of the carbonate rocks is

probably about 1,000 feet in most places in the county. The Stockbridge limestone weathers readily and commonly forms valley and lowland areas. In the valley of Fishkill Creek, solution cavities filled with clay and sand have been reported.

Hudson River formation.--The Hudson River formation is the most extensive bedrock unit in the county. As may be seen from plate 2, it extends from the Hudson River in the west to the Connecticut State line in the east, interrupted by only a few relatively narrow limestone belts. The name "Hudson River slate group" was first used by Mather (1840, p. 212, 256-258) for the slaty rocks in the southeastern part of the State. Gordon (1911) mapped these rocks in the Poughkeepsie quadrangle as the "Hudson River group." Berkey and Rice (1921) mapped the same rocks in southwestern Dutchess County as "Hudson River shales and phyllites." In the southeastern part of the county these rocks are referred to as "Hudson River pelite" in publications by Balk (1936) and Barth (1936). In the Copake quadrangle in southeastern Columbia County, the names Elizaville shale (mainly Cambrian, possibly including some Lower Ordovician), Berkshire schist (Ordovician), and Trenton black slate (Ordovician) have been used by Weaver (1957, pl. 1) for rocks that extend southward into northeastern Dutchess County. Ruedemann (1942) divided the predominantly argillaceous rocks in the Catskill quadrangle, in northwestern Dutchess County, into the Nassau beds and Schodack shale (including Bomoseen grit) of Cambrian age, and the Deepkill shale and Normanskill shale (including the Mount Merino member and the Austin Glen member) of Ordovician age. As used in this report, the Hudson River formation includes all the argillaceous and schistose rocks in Dutchess County.

Although the Hudson River formation is preponderantly argillaceous, it includes a large variety of rock types. The lower part of the unit contains much sandstone ("grit") and is locally called bluestone by some well drillers. The unit also contains chert and beds of sandstone, limestone, and conglomerate. Quartz veins are very abundant. The shale itself is locally black, gray, red, or green.

The metamorphism of the Hudson River formation increases in intensity from northwest to southeast, just as in the Stockbridge limestone. At Red Hook, in the northwestern part of the county, the unit is a shale. The shale grades imperceptibly southeastward into a slate and then into a lustrous phyllite. Between the valley of Wappinger Creek and the headwaters of Fishkill Creek, it is chiefly a phyllite. Farther southeast, between Fishkill Creek and the Harlem Valley it is predominantly a garnet-bearing schist. In the extreme southeastern part of the county, east of Pawling, it is a gneissic schist. The gneissic schist in this area contains amphibolite lenses and pegmatite intrusions.

The change in metamorphism is accompanied by a change in mineral composition. In the relatively unmetamorphosed phases of the formation in the northwestern and central parts of the county, the chief minerals are quartz and mica. In the strongly metamorphosed phase in the southeast, feldspar is an important additional constituent. Table 4 includes chemical analyses of rocks from various parts of the Hudson River formation, ranging from the relatively unmetamorphosed "slate" near Lagrangeville to the highly metamorphosed gneiss east of Pawling. There appear to be no radical chemical differences among the different samples. From the standpoint of mineral composition, however, the gneiss shows a greater percentage of feldspar (plagioclase) and a smaller percentage of white mica (muscovite) than does the slate and phyllite.

The structure of the Hudson River formation, like the mineral composition, changes progressively from northwest to southeast. In the relatively unmetamorphosed rocks between the valleys of Wappinger Creek and Fishkill Creek small closely spaced subparallel joints resulting from slaty cleavage are numerous. The spacing of these joints ranges from a fraction of an inch to several inches, and is wider in the more sandy parts of the formation. Openings of the bedding-plane type can be recognized in this area and to the northwest. In the southeastern part of the county, slaty cleavage is absent and the rocks are massive. Joints that are present are spaced from a few inches to several feet apart, rather than inches or fractions of an inch.

The thickness of the Hudson River formation is unkown because the beds in the southeast and east have been severely folded and faulted and because elsewhere individual beds can not be traced over long distances. The apparent thickness of the formation in Dutchess County ranges from a few feet to several thousand feet. Most wells of average depth drilled in this unit are not likely to penetrate other rocks unless they are drilled near the contact with the underlying limestone.

Table 4.--Chemical and mineral composition, in percent by weight, of slate, phyllite, schist, and gneiss of the Hudson River formation

Constituent	Chemical composition			
	Slate 1/	Phylitte 2/	Schist 3/	Gneiss 4/
SiO_2	66.85	55.40	54.21	66.39
TiO_2	.56	.99	1.03	.74
Al_2O_3	13.68	22.33	23.80	15.20
Fe_2O_3	1.79	1.30	1.42	2.41
FeO	3.92	6.82	6.95	3.96
MnO	.10	.14	.20	.15
MgO	4.15	2.35	1.94	1.64
CaO	.10	.38	.36	1.83
Na_2O	2.08	1.02	1.34	3.48
K_2O	2.89	5.45	4.19	2.73
P_2O_5	.10	.20	.11	.16
CO_2	.18	<.05	--	--
H_2O+	3.48	3.55	4.28	.88
H_2O-	.16	.05	.04	.03
C	--	Absent	--	--
Total	100.04	100.03	99.87	99.60

Table 4.--Chemical and mineral composition, in percent by weight, of slate, phyllite, schist, and gneiss of the Hudson River formation (Continued)

Mineral composition				
Mineral	Slate 1/	Phyllite 2/	Schist 3/	Gneiss 4/
Quartz	43.2	24.6	10.9	31.6
Plagioclase	12.8	--	10.9	36.0
Muscovite	33.0	40.8	46.4	11.3
Biotite	--	24.0	--	18.3
Apatite	.2	--	.3	.4
"Hydroxides"	10.1	--	--	--
Garnet	--	7.0	10.0	1.0
Apatite+calcite	--	.5	--	--
Magnetite	--	--	--	1.2
Magnetite and ilmenite	--	--	3.9	--
Chloride	--	--	9.6	--
Total	99.3	96.9	92.0	99.8

1/ Olive-gray slate collected 1.5 miles west of Lagrangeville. Plagioclase reported as albite. Analyst, A. Willman. (From Barth, 1936, p. 799.)

2/ Garnetiferous phyllite from Chestnut Ridge, west of Dover Plains. Analysts, Ellestad and Barth. (From Barth, 1936, p. 802.)

3/ Augen schist collected southwest of Dover Plains. Plagioclase reported as oligoclase (23 An.) "Rest" reported as CaO= -0.5. Total reported as 100.0 although actual total is 92.0. Analyst, A. Willman. (From Barth, 1936, p. 804.)

4/ Quartz-oligoclase-biotite gneiss 5 miles east of Pawling and about 1 to 1.5 miles east of Connecticut State line. Plagioclase reported as An 25. "Rest" reported as Al_2O_3 = -0.7, Fe_2O_3 = +1.2, CaO = -0.4, H_2O = -0.4. Analyst, A. Willman. (From Barth, 1936, p. 812.)

Unconsolidated Deposits

Unconsolidated material deposited chiefly by glaciers and glacial melt water in Pleistocene time, lies on the bedrock in Dutchess County. Minor amounts of stream-laid material of Recent age mantle the Pleistocene deposits in a few narrow, discontinuous valley areas and in some lakes and swamps. The unconsolidated deposits are widespread and relatively thick, at least in lowland areas. The greatest thickness occurs in the gorge of the Hudson River, where borings for the Catskill Aqueduct of New York City penetrated several hundred feet of fill, most of which is probably of glacial origin. The deepest boring was at the Storm King crossing, near the Putnam County line, where bedrock reportedly was encountered at a depth of 608 feet below river level. If this reported depth is correct, the deepest part of the bedrock gorge probably is somewhat below 608 feet because it is unlikely that the drill was situated at exactly the deepest point. The layers penetrated by these borings ranged in composition from a mixture of clay and boulders to sand and gravel.

The Pleistocene drift is divided into three units, shown on plate 3: (1) till (unstratified drift), consisting of a mixture of rock materials deposited directly by the ice; (2) lacustrine deposits, consisting of silt and clay laid down in lakes; and (3) sand and gravel deposited in lowlands and in lakes from glacial melt water.

Till.--Till consists of a heterogeneous mixture of rock fragments of all sizes from microscopic particles of clay to large boulders several feet in diameter. As may be seen on plate 3, it is the most widespread of the Pleistocene deposits.

The till was laid down directly from the glacial ice, which was thick enough to pass over the highest peaks in the county, as well as the highest peaks of the Catskill and Taconic Mountains. The ice moved in a southerly direction, as indicated by the alinement of grooves and striations on exposed rock surfaces. Erosion was the dominant process in upland areas. Thus, the present-day cover of glacial debris in these areas is generally thin (less than 30 feet thick) or absent. Exceptions exist where thick deposits of till were laid down beneath the ice in the form of elliptical hills known as drumlins. These hills may contain as much as 200 feet of clay till. In lowland areas, the dominant process was that of deposition and the glacial deposits in these areas are relatively thick. For example, well Du 758, about 2 miles southwest of Wappingers Falls, penetrated 140 feet of unconsolidated material before reaching the Hudson River formation.

The rock fragments composing the till were derived mainly from the bedrock in the immediate area. In areas underlain by shale, slate, phyllite, and schist, the till consists largely of clay. In areas underlain by limestone, dolomite, or marble, the till contains numerous calcareous pebbles. Six mechanical analyses were made by the U.S. Department of Agriculture (Secor and others, 1955, p. 128) of samples of soil in the county

derived from glacial till. These samples consisted mainly of calcareous sandstone and some admixed shale, slate, limestone, and igneous erratics. The samples were collected from progressively greater depths. The analyses show that more than half of each sample consisted of silt and clay, and that the content of sand and fine gravel increased slightly from a low of 36.3 percent (by weight), at a depth of 0 to 10 inches, to a high of 43.0 percent, at a depth of 68 to 144 inches. In some areas, lenses of relatively clean sand may occur in till. However, sand lenses in till are generally thin and of small areal extent. Most of the till is clayey and some of it may even be cemented or compacted to form a tough aggregate referred to as "hardpan" by local drillers.

Lacustrine deposits.--Stratified drift deposited in glacial lakes underlies several areas in the county, notably along the Hudson River and in the lowland north of the Hudson Highlands in the southwestern part of the county. The approximate extent of these deposits where they compose the uppermost unconsolidated deposit is shown on plate 3. As may be seen from the plate, they underlie an irregularly shaped and relatively extensive area in the northwestern corner of the county, from the mouth of Crum Elbow Creek north to the county line. In the southwestern part of the county, they underlie numerous small areas from Poughkeepsie south to the Highlands.

Woodworth (1905, p. 175) believed that the lacustrine deposits along the Hudson River were laid down in one large lake, called glacial Lake Albany, which was dammed by a single tongue of stagnant ice. Cook (1942, p. 192) suggests, on the other hand, that the deposits were laid down in a complex series of small lakes rather than in a single lake. These lakes were largely restricted to the area adjacent to the Hudson River in the western part of the county. Thus, lacustrine deposits either are not present in the eastern part of the county or, if present, occupy relatively small areas and are covered by other unconsolidated deposits which obscure their presence.

The lacustrine deposits in the western part of the county contain layers of silt and clay that were deposited in those parts of the lakes in which the water was relatively quiet. The deposits also contain interbedded layers of sand and silt that were laid down near the mouths of streams entering the lakes. At the time the lakes drained, the lacustrine deposits formed a terrace that sloped westward toward the present channel of the Hudson River. The altitude of the terrace ranges from about 220 feet near its eastern margin to about 120 feet near the river. This terrace has been considerably modified by postglacial stream erosion.

Sand and gravel.--Stratified drift consisting principally of sand and gravel underlies extensive areas in the major stream valleys and in some tributary valleys. As shown in plate 3, the most extensive deposits are in the valleys drained by Fishkill Creek, Sprout Creek, Swamp River, Tenmile River, and Wappinger Creek.

Most of the sand and gravel consists of stream-laid deposits, called outwash, laid down by melt water streams. The deposits range from layers of relatively clean sand to layers composed of a mixture of sand and gravel. The alternation of layers of coarse and fine material reflect changes in the conditions under which the beds were laid down.

Stratified sand and gravel in the county occurs in four principal forms: kames, kame terraces, valley trains, and deltas. Kames, in the form of small conical hills, are relatively common in the extreme southern part of the county at the northern margin of the Hudson Highlands. They are present also between the Hudson River and U.S. Highway 9, about 3 miles south of Poughkeepsie. Kame terraces, relatively flat topped deposits of sand and gravel on the sides of valleys are prominent in the valley of Swamp River. They have also been observed by Woodworth (1905, p. 121) along the Hudson River between Poughkeepsie and the mouth of Wappinger Creek. Valley-train deposits are long and narrow deposits of sand and gravel underlying valley floors. These deposits underlie parts of many of the principal stream valleys, including those of Wappinger Creek, Fishkill Creek, Webatuck Creek, Crum Elbow Creek, and Tenmile River (pl. 3). Delta deposits laid down where melt water streams entered glacial lakes, have been mapped at New Hamburg, at the mouth of Wappinger Creek, by Woodworth (p. 119) and have been observed also in the Valley of Swamp River. There are large deltas also at Rhinebeck and Red Hook. Deposits of sand and gravel in the principal stream valleys of the county are discussed in greater detail in the section devoted to the occurrence of water in unconsolidated deposits.

GROUND WATER

Source and Movement

Ground water occurs in all the consolidated and unconsolidated deposits of Dutchess County. Records of 675 wells (table 13) and about 50 springs (table 9) provide information on its occurrence in the different deposits.

Practically all ground water in the county is derived from local precipitation. An inch of rain, or snow having a water content equivalent to 1 inch of rain, falling on an area of 1 square mile yields about 17 million gallons of water. The average annual precipitation is about 45 inches, or about 1.6 billion gallons per day, on the 816 square miles of the county.

A large part of the precipitation returns to the atmosphere by evaporation, is transpired by vegetation, or runs off to streams. The remainder percolates into the ground. The amount of precipitation entering the ground depends chiefly on (1) the porosity, permeability, and water content of the surficial deposits, (2) the slope of the land, (3) the amount and kind of vegetal cover, and (4) the intensity and amount of precipitation. It is

The rate at which water moves through deposits, and thus the readiness with which it is available for withdrawal from wells, is controlled by the permeability of the material. Permeability, which is related to the size and degree of interconnection of pore spaces and other openings, is normally very low in bedrock, till, and fine-grained unconsolidated deposits, such as silt and clay. It is moderately high in deposits of coarse sand and in deposits of sand and gravel.

In view of these significant differences between the water-bearing characteristics of the unconsolidated deposits and those of the bedrock, the following discussion of the occurrence of ground water in Dutchess County is divided into two sections, one devoted to the unconsolidated deposits and one devoted to the bedrock.

Occurrence of Water in Unconsolidated Deposits

Unconsolidated surficial deposits overlie the bedrock almost everywhere in Dutchess County. These are divided into two units on the basis of their water-bearing characteristics. The first consists of unstratified deposits termed "till," which predominate in upland areas, and the second consists of stratified deposits of gravel, sand, silt, and clay, which predominate in valley areas.

Deposits in Uplands

Till, a mixture of rock materials ranging in size from clay to large boulders, is the principal unconsolidated deposit on the hills (pl. 3). Although till is generally unsorted and unstratified, in a few areas it contains lenses or irregular bodies of sand and gravel. Till overlying limestone generally consists of clay mixed with grains, pebbles, and cobbles of limestone, whereas till overlying slate and schist consists principally of clay mixed with a little quartz sand, and a small percentage of sandstone pebbles and cobbles. Granite and gneiss are generally overlain by a sandy till containing an abundance of large boulders. Till generally ranges in thickness from 10 to 20 feet on hilltops to 20 to 40 feet on the slopes. However, in a few valley areas and other places it is more than 100 feet thick. Its greatest thicknesses are generally found in drumlins-- low, elliptical hills shaped by the Pleistocene ice sheet. Osborne Hill, about 4 miles north-northeast of Beacon in the southwestern part of the county (pl. 1), is believed to be a drumlin. Well Du 455, on the east side of this hill, penetrated about 120 feet of till, as shown in the log in table 12.

Glacial till is not a productive water-bearing deposit because of its poor sorting and high clay content. Water in usable quantities can generally be obtained from till only from large-diameter wells, which provide a large area for the infiltration of water and a large volume for the storage of water between periods of use. The average yield of the six wells for which

In view of the extremely low permeability of the clay and silt, the deposit will not yield water in usable quantities to wells and springs. In those areas in which clay and silt is the only or the principal unconsolidated deposit, ground-water supplies can be obtained only from the underlying bedrock. Although clay and silt is not important as a source of water, it exerts considerable influence on the occurrence of water. On the terraces adjacent to the Hudson River in the northwestern part of the county the clay and silt retards or prevents recharge to the underlying bedrock. Conversely, in the lower parts of many of the valleys the clay and silt retards upward leakage of water from the underlying beds of sand and gravel and bedrock. In these areas the water in the sand and gravel and in the bedrock occurs under artesian conditions, and in a few places is under sufficient pressure to flow at the land surface.

The sand and gravel is the most productive water-bearing deposit in the county. Plate 3 shows that this material underlies most of the lower part of the main valleys and many of the larger tributary valleys. The sand and gravel appears to have been laid down by swift-flowing streams of glacial melt water which were heavily laden with rock debris derived from the melting ice. As both the character and the amount of rock debris carried by the streams varied considerably from time to time, the thickness, character, and extent of the sand and gravel deposits vary considerably within relatively short distances. The beds of sand and gravel are associated with beds of silt and clay almost everywhere. In some areas wells penetrate as many as two or three distinct layers of sand and gravel, which are interbedded with layers of silt and clay. The layers of sand and gravel are generally less than 25 feet thick, although in some areas they are as much as 50 feet thick.

Deposits of sand and gravel are utilized extensively as a source of water supply. In these deposits small-diameter driven wells with screened drive points will generally yield water in sufficient quantity for domestic, farm, and small commercial needs. The moderate to large quantities of water needed by municipalities and industries can generally be obtained from large-diameter drilled wells. According to the quantity of water required and the character of the deposit, such wells may be either screened or finished with open-end casings. A comparison of the yield of screened and unscreened wells is shown in table 5. The yield of unscreened wells for which records were collected ranged from 3 to 200 gpm and averaged 38 gpm. The yield of screened wells ranged from 20 to 800 gpm and averaged 318 gpm.

The thickest section of unconsolidated deposits in the county underlies the present channel of the Hudson River. These deposits range in character from clay and silt to gravel and boulders. Berkey and Rice (1921, pl. 47a) indicate that more than 100 feet of sand underlies the river in the southeastern part of the county, about 0.1 mile north of the Putnam County line. The sand underlies about 100 feet of silt and clay and is underlain in turn by clay and by gravel, cobbles, and boulders. The sand is not continuous across the river but lenses out laterally. It also

lenses out both upstream and downstream, as shown by the results of drilling for the Delaware Aqueduct at Chelsea, about 10 miles north of the Putnam County line. Here much of the material consists of clay and other fine sediments. No wells are known to draw water from the stratified deposits underlying the channel of the river in Dutchess County.

Occurrence of Water in Consolidated Rocks

Joints, faults, bedding planes, and other openings serve as main channels for the storage and movement of water in the bedrock. The yield of wells in bedrock is determined primarily by the size, abundance, and continuity of these openings. Joints are the most important openings because they are numerous and widespread. Most of the major joints in Dutchess County dip relatively steeply and strike northeast, in conformity with the regional geologic structure. Cross joints and randomly oriented joints also are abundant locally. The spacing of joints generally ranges from a fraction of an inch in parts of the Hudson River formation to several feet in the more massive rocks such as the undifferentiated granite and gneiss and quartzite.

Faults are fractures along which recognizable differential movement of appreciable extent has taken place. They occur in all the consolidated rocks in Dutchess County, and their trend is northeast. Many of these faults, in whole or in part, are buried beneath unconsolidated material because they form weak zones beneath valley areas. The location of the more important faults mapped in the county is shown on the bedrock map (pl. 2). Some faults have been filled with minerals of igneous origin and their permeability may not differ much from that of the surrounding rocks. However, a brecciated fault that has not been cemented may be very permeable. Such a fault apparently was penetrated by well Du 630, which was drilled for the city of Beacon. The log of this well (table 12) shows that after penetrating about 90 feet of unconsolidated material, the drill entered a zone of decayed rock fragments mixed with clay. Disintegrated limestone mixed with clay was present to a depth of 370 feet. The exact depth to bedrock in the well is uncertain because of the disintegration of the rock. Of the total yield of 1,400 gpm, about 600 gpm was reportedly obtained from the bedrock. When the well was pumped, the bedrock, which was reported to be very soft, caved continuously.

The consolidated rocks in Dutchess County generally yield small to moderate supplies of water. The average yield of about 450 wells, as summarized in table 6, is about 17 gpm and the range is from 0 to 220 gpm. The yield of wells tapping the bedrock depends on several factors, the most important of which are (1) type of bedrock, (2) type of overlying unconsolidated deposits, (3) topographic position, and (4) occurrence of joints and other secondary openings.

Table 8.--Yield of wells in bedrock in relation to topography

Type of bedrock	Topography	Yield (gpm)			Number of wells
		Average	Range		
			Low	High	
Hudson River formation	Hilltop	14	0	40	30
	Hillside	16	0.5	120	168
	Valley	17	2	135	116
Stockbridge limestone	Hilltop	10	1	20	7
	Hillside	17	3	80	45
	Valley	26	1	220	71
Undifferentiated granite and gneiss	Hilltop	4	3	5	2
	Hillside	11	1	45	15
	Valley	13	7	30	5
All bedrock combined	Hilltop	1/12	0	40	39
	Hillside	1/16	0.5	120	228
	Valley	1/20	1	220	192
	All locations combined	1/17	0	220	459

1/ Weighted average.

Poughkeepsie.--Poughkeepsie (population 41,000) is supplied with water from the Hudson River. Treatment consists of coagulation, settling, filtration, and chlorination. Consumption is reported to be about 5 mgd.

Red Hook.--Water for the village of Red Hook (population about 1,000) is obtained entirely from ground-water sources. Four drilled wells (see Du 101, table 13) supply about 50,000 gpd.

Rhinebeck.--Rhinebeck (population 1,697) is supplied by the Rhinebeck Water Co. from two drilled wells, Du 64 and Du 65. The water is chlorinated. Average consumption is about 200,000 gpd and maximum consumption is 500,000 gpd.

Staatsburg.--Staatsburg (population 600) obtains water from the Staatsburg Water Co. for 500 of its inhabitants. The company obtains the supply from Indian Kill, which is impounded in a reservoir with a capacity of 30 million gallons. Treatment consists of coagulation, filtration, and chlorination. Two auxiliary wells (see Du 71, table 13) supply an average of about 30,000 gpd. The combined system supplies 120,000 gpd.

Tivoli.--Tivoli (population 761) is supplied by six drilled wells (see Du 87 and Du 764, table 13). The system serves about half the population with 20,000 gpd.

Wappingers Falls.--Wappingers Falls (population 3,426) is supplied by two drilled wells, Du 84 and Du 85, situated about a mile northeast of the village. Consumption averages about 120,000 gpd. Water from the wells is softened. A chemical analysis of water from well Du 84 is given in table 10.

Wassaic.--About 75 percent of Wassaic (population 300) is supplied by the Wassaic Water Co. from well Du 95, and two springs, Du 55Sp and Du 56Sp. Consumption is reported to average 18,000 gpd. Treatment consists of chlorination.

Several State and Federal institutions in Dutchess County have developed their own water supplies. The U.S. Veterans Hospital at Castle Point obtains water from two sources. Ground water is drawn from four wells (see well Du 861, table 13). The yield of these wells is inadequate and additional water is obtained from the Hudson River. The Harlem Valley State Hospital at Wingdale obtains enough water from Swamp River to supply 5,000 patients. Wassaic State School obtains water from one of several wells on the site, including Du 793 which reportedly yields 625 gpm.

In some cases privately owned ground-water systems supply relatively large groups of consumers. The Fairview Heights Improvement Co. supplies water from a spring and three wells (see well Du 670, table 13) to about 100 homes and a meatpacking company. Springwood, Inc. obtains water from two wells (see well Du 697) for a group of homes and apartment houses at Hyde Park. Seitz Terrace, in Poughkeepsie, obtains water for about 100 persons from well Du 438.

Table 13.--Records of selected wells in Dutchess County

Location: See section entitled "Explanation of Tables."

Altitude above sea level: Approximate altitude from topographic maps.

Type of well: Drl, drilled; Drv, driven.

Water level: Reported average water level. Plus sign (+) preceding figure indicates level to which water rises above land surface.

Use: Com, commercial; Dom, domestic; Ind, industrial; PS, public supply.

Remarks: gpd, gallons per day; gpm, gallons per minute; (a) water analysis in table 10; (b) log of well in table 12.

Well number	Location	Owner or occupant	Altitude above sea level (feet)	Type of well	Depth below land surface (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing formation	Water level below land surface (feet)	Method of lift	Yield (gallons per minute)	Use	Remarks
Du 1	13Y, 4.3N, 5.8W	Edward Lasher	80	Drl	69	6	44	Hudson River formation	8	Force	20	Farm	
Du 2	13Y, 3.7N, 6.2W	J. M. Coon	190	Drl	75	6	54	do.	25	None	2	None	Yield inadequate. Well destroyed.
Du 4	13Y, 3.2N, 6.0W	W. H. Radder	200	Drl	77	6	50	do.	12	--	35	Dom	
Du 7	13Y, 3.7N, 6.7W	Edward Sturges	220	Drl	210	6	6	do.	20	Suction	20	Dom	
Du 8	13Y, 3.8N, 7.1W	J. Rockefeller	280	Drl	144	6	12	do.	12	do.	40	Dom	
Du 9	13Y, 3.6N, 7.6W	Charles Deneger	220	Drl	112	6	8	do.	17	Jet	3	Farm	No increase in yield below a depth of 70 ft.
Du 12	13Y, 4.0N, 9.0W	Roland Redmond	60	Drl	321	8 to 6	99	do.	34	None	--	None	Well abandoned.
Du 13	13Y, 4.0N, 8.7W	do.	100	Drl	320	10 to 8	43	do.	39	--	4	None	do.
Du 14	13Y, 4.1N, 8.0W	Village of Tivoli	120	Drl	60	10	40	do.	20	Turbine	60	PS	Average consumption is 4,000 gpd. (b).
Du 15	13Y, 4.9N, 8.6W	Albert Sengsteck	180	Drl	79	6	23	do.	26	Force	4	Dom	
Du 16	13Y, 5.1N, 8.8W	Howland Davis	160	Drl	202	6	9	do.	--	do.	36	Dom	
Du 18	13Y, 4.8N, 7.3W	G. L. Cole	180	Drl	127	6	62	do.	7	--	20	Farm	
Du 19	13Y, 4.5N, 6.7W	J. Heinshon	180	Drl	67	6	40	do.	14	Force	20	Farm	
Du 20	13Y, 3.2N, 4.1W	George Hubbard	180	Drl	60	6	25	do.	5	Suction	20	Dom	
Du 25	13Y, 1.0N, 6.7W	C. Schaffer	200	Drl	137	6	19	do.	32	None	10	Dom	Yield 0.75 gpm when well was 90 ft deep. (b).
Du 26	13Y, 1.9N, 6.3W	Malcolm Cooper	200	Drl	197	6	57	do.	2	do.	20	Farm	
Du 28	13Y, 3.3N, 7.6W	H. Schweiger	200	Drl	54	6	13	do.	30	Force	5	Dom	
Du 32	13Y, 1.7N, 7.9W	Samuel Robbins	200	Drl	98	6	15	do.	35	do.	12	Farm	
Du 35	13Y, 1.4N, 8.3W	William Blohm	160	Drl	78	6	10	do.	2	Jet	2	Dom	
Du 36	13Y, 1.6N, 8.2W	C. Sottery	160	Drl	132	6	--	do.	17	Suction	5	Dom	Yield 2.5 gpm when well was 27 ft deep. (a).
Du 38	13Y, 0.8N, 8.3W	R. Bolander	160	Drl	74	6	18	do.	--	--	5	Com	
Du 39	13Y, 0.1N, 8.5W	Duncan Watt	180	Drl	97	6	11	do.	13	Suction	8	Dom	
Du 40	13Y, 1.5N, 8.7W	A. C. Zabriskie	120	Drl	620	6	40	do.	60	do.	3	Dom	Listed in U. S. Geol. Survey Water-Supply Paper 102 (see well 147, p. 178).
Du 41	13Y, 0.9N, 6.3W	Ira Barringer	200	Drl	110	6	52	do.	6	--	40	Dom	
Du 42	13Y, 1.9N, 5.4W	H. Fraleigh	200	Drl	84	6	14	do.	12	--	30	Dom	
Du 43	13Y, 2.4N, 7.2W	Percy Sherman	260	Drl	132	6	40	do.	12	--	17	Dom	
Du 44	13Y, 2.3N, 7.6W	Harold Wheeler	240	Drl	88	6	17	do.	3	--	30	Dom	
Du 45	13Y, 2.3N, 4.6W	J. J. Rall	180	Dug	12	48	--	Pleistocene deposit	8	Suction	2	Dom	
Du 46	13Y, 2.8N, 3.6W	G. Osborne	340	Drl	86	6	5	Hudson River formation	24	--	12	Dom	
Du 48	13Y, 1.1N, 3.0W	A. Singher	380	Drl	229	6	--	do.	40	Force	15	Farm	(a).
Du 50	13Y, 1.9N, 2.8W	P. Clemets	360	Drl	62	6	28	do.	--	--	5	Dom	Well supplies two homes.
Du 51	13Y, 2.7N, 2.7W	F. C. Walcott	290	Drl	118	6	15	do.	14	Suction	5	Farm	
Du 53	13Y, 0.5N, 2.6W	John Odak	540	Drl	84	6	15	do.	20	--	4	Dom	
Du 54	13Y, 1.0N, 2.3W	Clinton Gallagher	580	Drl	118	6	6	do.	6	Suction	4	Farm	Yield 2 gpm when well was 40 ft deep.
Du 55	13Y, 1.7N, 1.3W	E. A. Trotter	500	Drl	107	6	85	do.	15	Force	5	Dom	

Table 13.--Records of selected wells in Dutchess County (Continued)

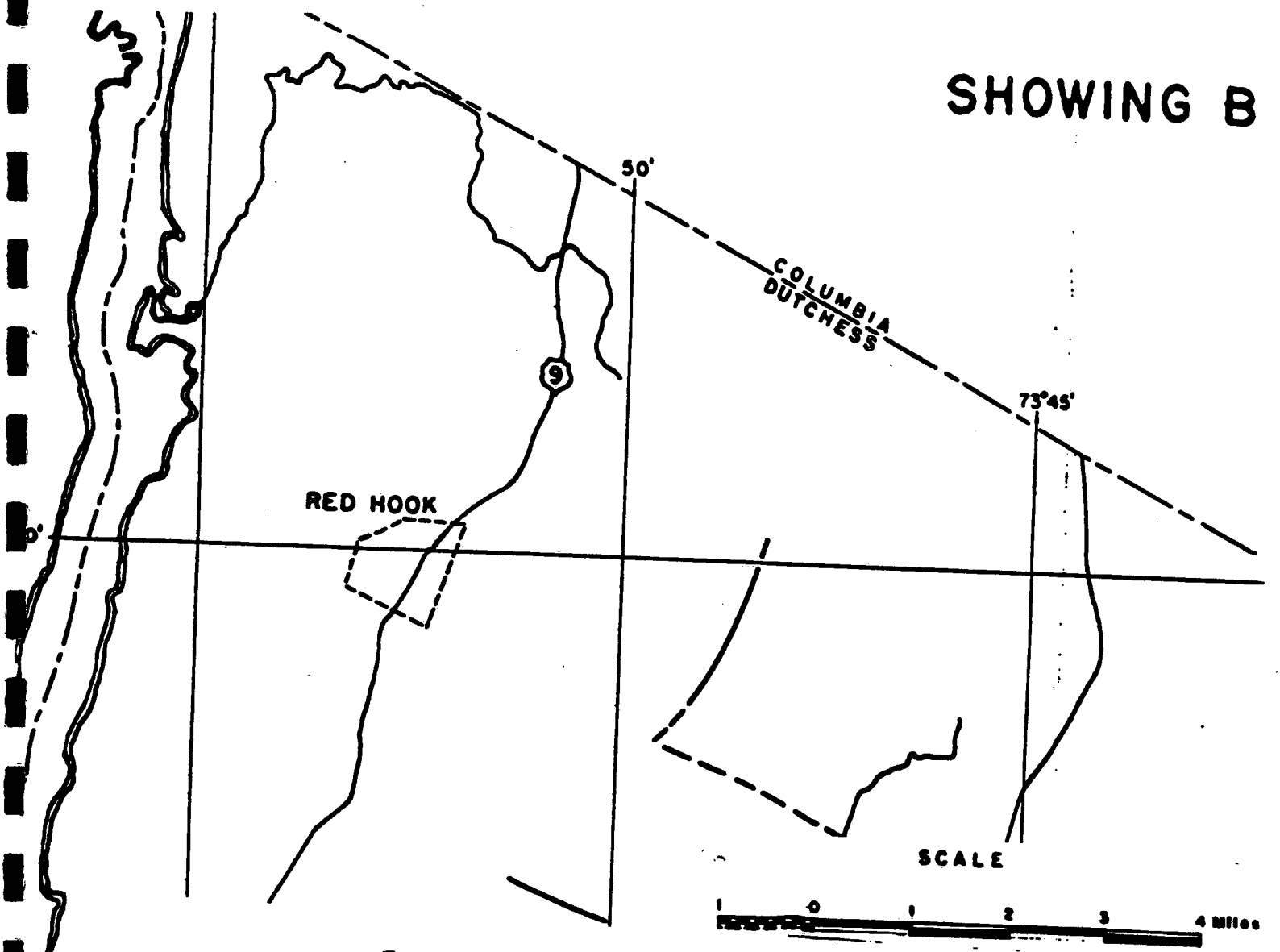
Well number	Location	Owner or occupant	Altitude above sea level (feet)	Type of well	Depth below land surface (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing formation	Water level below land surface (feet)	Method of lift	Yield (gallons per minute)	Use	Remarks
Du 56	13Y, 2.0N, 1.4W	J. Cunningham	600	Dri	75	6	2	Hudson River formation	10	Suction	4	Dom	Yield 2 gpm when well was 40 ft deep.
Du 57	13Y, 1.3N, 1.1W	George Degenhardt	660	Dri	104	6	20	do.	18	--	8	Dom	Yield 2 gpm when well was 20 ft deep. (a).
Du 58	13Y, 1.3N, 0.2W	B. Rollins	380	Dri	150	6	25	do.	20	Suction	3	Farm	
Du 59	13Y, 0.1S, 7.8W	Mrs. Cahallen	240	Dri	80	6	--	do.	30	--	3	Dom	
Du 60	13Y, 0.7S, 6.8W	Dairymen's League Co-op. Assn. Inc.	220	Dri	280	8	--	do.	40	Turbine	60	Com	Average consumption is 12,000 gpd.
Du 61	15Y, 14.2N, 1.9W	Clifford Porter	420	Dug	8	96	7	Pleistocene till	2	Suction	--	Farm	Temperature 55°F, May 1949.
Du 62	15Y, 6.2N, 0.1W	A. McGregor	300	Dri	100	6	14	Stockbridge limestone	22	Force	--	Farm	
Du 63	14Y, 10.7S, 8.8E	Williston Manufacturing Corp.	470	Dri	200	6	14	do.	--	do.	--	Ind	Standby well; spring Du 38Sp is principal source of supply. (a).
Du 64	14Y, 12.4N, 7.1W	Rhinebeck Water Co.	260	Dri	300	8	--	Hudson River formation	19	Turbine	135	PS	(a) (b).
Du 65	14Y, 12.4N, 7.1W	do.	260	Dri	300	8	--	do.	--	do.	65	PS	
Du 66	14Y, 13.7N, 8.5W	William Hetherington	160	Dri	192	8	15	do.	+5	--	70	Dom	Yield 6.5 gpm when well was 170 ft deep.
Du 67	14Y, 14.2N, 8.0W	L. B. Barber	160	Dri	60	6	10	do.	30	Force	3	Dom	
Du 68	15Y, 10.1N, 9.1W	A. W. Springer	140	Dri	120	6	42	Stockbridge limestone	--	--	--	Dom	
Du 69	15Y, 15.9N, 8.4W	Fairview Improvement Co.	380	Dri	250	6	20	Hudson River formation	24	--	12	Dom	(b).
Du 70	15Y, 14.0N, 6.4W	Aartsen Van Wagenen	200	Dri	113	6	38	do.	--	--	8	Dom	Yield 0.5 gpm when well was 60 ft deep.
Du 71	14Y, 7.2N, 8.2W	Staatsburg Water Co.	240	Dri	305	10 to 8	22	do.	14	Turbine	120	PS	(a).
Du 73	14Y, 6.8S, 10.1E	School District No. 8	500	Dri	97	6	45	Stockbridge limestone	12	--	6	Dom	
Du 74	14Y, 13.2N, 6.9W	Crow Hill Farm Camp	280	Dri	125	6	12	Hudson River formation	12	--	15	Com	Drawdown 28 ft after pumping 15 gpm for 5 hrs.
Du 75	14Y, 15.2N, 7.0W	Sunset Rest	200	Dri	147	6	24	do.	10	--	10	Com	Drawdown 32 ft after pumping 10 gpm for 5 hrs.
Du 76	13Y, 0.4S, 4.7E	Shekomeko Valley Farm	400	Dri	435	10 to 8	68	do.	22	--	9	Farm	Well has been pumped at 9 gpm for 8 hrs.
Du 77	15Y, 12.5N, 6.9W	Henry Siegel	200	Dri	120	6	57	Stockbridge limestone	--	--	15	Dom	(b).
Du 78	15Y, 10.6N, 9.6W	International Business Machines Corp.	100	Dri	400	6	34	do.	--	--	40	Ind	Well has been pumped at 40 gpm for 9.5 hrs. (b).
Du 79	13Y, 7.5S, 4.5E	John Fastert	700	Dri	145	6	53	Hudson River formation	20	--	15	Dom	Drawdown 105 ft after pumping 15 gpm for 2 hrs.
Du 80	13Y, 6.2S, 1.0E	Camp Laurel	600	Dri	200	4½	44	do.	--	--	12	Com	
Du 81	13Y, 3.7S, 9.2E	Silver Acre Farm	1,180	Dri	164	6	13	do.	25	--	6	Farm	Drawdown about 140 ft after pumping 6 gpm for 1 hr.
Du 82	14Y, 15.8S, 5.1E	Interchurch Camp Society, Inc.	740	Dri	52	8 to 6	22	Granite and gneiss, undiff.	18	--	8	Dom	Drawdown 30 ft after pumping 8 gpm for 6 hrs.
Du 83	14Y, 16.0N, 2.4W	Ephraim Feinstein	570	Dri	115	6	3	Hudson River formation	15	--	18	Dom	Drawdown 65 ft after pumping 18 gpm for 7 hrs. (b).
Du 84	15Y, 7.5N, 8.9W	Village of Wappingers Falls	150	Dri	80	16 to 8	--	Pleistocene sand and gravel	--	Centrifugal	160	PS	Average pumpage from wells Du 84 and Du 85 is about 120,000 gpd. (a).
Du 85	15Y, 7.5N, 8.9W	do.	150	Dri	80	16 to 8	--	do.	--	do.	150	PS	Temperature 51°F, October 1949.
Du 86	14Y, 6.7S, 3.5E	R. McKinney	480	Dug	16	30	--	do.	11	None	--	None	Temperature 53°F, June 1949.
Du 87	13Y, 4.4N, 7.9W	Village of Tivoli	140	Dri	36	6	36	do.	13	--	20	PS	Drawdown 17 ft after pumping 20 gpm for 10 hrs. Well originally drilled 4 ft into bedrock; screened between depths of 30 and 36 ft. Two other similar wells at this location. (a) (b).
Du 90	13Y, 15.2S, 10.3E	Wassaic State School	460	Dri	1007	8	--	do.	5	--	--	None	Well finished with screen. Abandoned because of a decrease in yield. (a) (b).
Du 91	14Y, 8.4S, 10.9E	Pawling Girl Scout Camp	620	Dri	255	6	17	Hudson River formation	6	--	5	Dom	Drawdown 119 ft after pumping 5 gpm for 2 hrs.
Du 92	14Y, 6.8N, 0.9W	New York State Dept. of Public Works	482	Dri	199	6	43	Stockbridge limestone	--	Jet	15	Dom	

Table 13.--Records of selected wells in Dutchess County (Continued)

Well number	Location	Owner or occupant	Altitude above sea level (feet)	Type of well	Depth below land surface (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing formation	Water level below land surface (feet)	Method of lift	Yield (gallons per minute)	Use	Remarks
Du 94	13Y, 14.4S, 4.4E	Town of Millbrook	660	Dug	20	48	--	Pleistocene gravel	--	Centrifugal	--	PS	Well draws water through bottom and from 2 lines of open-jointed tile 18 inches in diameter. One line extends 75 ft. to the east and the other extends 100 feet to the north. Each tile is surrounded by a layer of gravel.
Du 95	13Y, 13.6S, 10.0E	Wassaic Water Co.	460	Dug	15	60	--	Pleistocene sand and gravel	7	Suction	26	PS	Well dry in summer.
Du 96	13Y, 1.9S, 5.0E	Pine Plains Water Co.	480	Dug	15	108	--	do.	--	Centrifugal	50	PS	
Du 97	13Y, 1.8S, 5.2E	do.	560	Drl	375	8	50+	Stockbridge limestone	30	Force	50	PS	(a).
Du 98	13Y, 5.5S, 1.6E	M. M. Leavitt	500	Drl	300	--	--	Hudson River formation	--	do.	55	Dom	Well flowed when drilled. Supplies swimming pool.
Du 99	13Y, 10.8S, 10.1E	Amenia Water Co.	540	Drl	70	8	--	Pleistocene gravel	+1	Turbine	180	PS	Drawdown 9 ft after pumping 130 gpm for 8 hrs. Average consumption is 100,000 gpd. (a) (b).
Du 100	13Y, 10.8S, 10.2E	do.	600	Drl	46	8	--	do.	+1	do.	100	PS	Well is auxiliary supply. Temperature 51°F, June 1946. (a).
Du 101	14Y, 16.7N, 6.3W	Village of Red Hook	227	Drl	277	10	40	Hudson River formation	22	do.	100	PS	Drawdown 80 ft after pumping 100 gpm for 24 hrs. Yield diminished considerably during dry period in 1949. Two other similar wells at this location. (a).
Du 104	14Y, 1.3N, 9.6W	F. D. Roosevelt National Historic Site	178	Drl	400	6	83	do.	--	--	15	Dom	(a) (b).
Du 105	14Y, 1.3N, 9.6W	do.	180	Drl	212	6	80	do.	--	Turbine	10	Dom	Well has been pumped at 10 gpm for 24 hrs.
Du 106	15Y, 15.7N, 8.7W	Schatz Manufacturing Co.	260	Drl	555	6	23	do.	--	Force	11	Ind	Temperature 54°F, July 1949.
Du 107	14Y, 16.1N, 3.4W	John Juranie	520	Drl	60	6	4	do.	20	Jet	12	Dom	
Du 109	14Y, 15.3N, 3.3W	F. W. Battenfeld & Son	380	Drl	125	6	20	do.	30	do.	3	Dom	
Du 110	14Y, 14.4N, 7.5W	Joseph Chard	163	Drl	60	6	16	do.	0.5	Suction	20	Dom	Well flows during periods of heavy precipitation. Temperature 51°F, May 1948.
Du 111	14Y, 14.4N, 7.6W	Rhinebeck Block Co.	160	Drl	100	6	18	do.	9	Jet	10	Ind	
Du 112	14Y, 13.9N, 5.4W	M. K. Weaver	320	Drv	18	1¼	--	Pleistocene gravel	--	Suction	3	Dom	Temperature 50°F, May 1948. Average consumption is 500 gpd.
Du 114	14Y, 13.6N, 5.2W	Rhinebeck School Dist. 9	320	Drl	90	6	10	Hudson River formation	--	do.	3	Dom	Temperature 50°F, May 1948.
Du 115	14Y, 14.3N, 3.2W	Cyrus McCormick	680	Drl	158	6	--	do.	--	Force	--	Dom	
Du 116	14Y, 14.2N, 2.2W	W. F. Pink	435	Drl	50	6	10	do.	--	do.	--	Dom	Temperature 50°F, May 1948.
Du 117	14Y, 10.5N, 6.2W	W. Ackert	380	Drl	175	6	8	do.	10	--	3	Dom	
Du 121	14Y, 6.5N, 7.7W	R. Neilson	280	Drl	105	6	11	do.	14	Jet	8	Dom	
Du 122	14Y, 5.4N, 7.9W	A. T. Haines	280	Dug	20	36	--	Pleistocene till	16	Suction	1	Farm	Average consumption is 1,000 gpd.
Du 124	14Y, 4.6N, 8.1W	Strever's Garage	250	Drv	18	1¼	--	Pleistocene sand and gravel	--	do.	3	Com	Average consumption exceeds 500 gpd.
Du 126	14Y, 3.6N, 8.5W	Howard Velie	240	Drv	15	1¼	--	do.	--	do.	2	Dom	
Du 127	14Y, 3.0N, 8.6W	G. Wrann	240	Drl	90	6	21	Hudson River formation	18	do.	--	Dom	
Du 128	14Y, 16.0N, 7.1W	Edwin DuBois	200	Drl	129	6	90	do.	14	do.	5	Dom	(b).
Du 129	14Y, 7.1S, 2.5E	R. McKinney	480	Drl	65	6	2	do.	18	do.	--	Farm	
Du 130	13Y, 0.1S, 1.0W	R. Campbell	670	Drl	45	6	12	do.	6	--	3	Dom	
Du 131	14Y, 16.4N, 7.6W	Louis Wasner	200	Drl	73	6	24	do.	10	Suction	15	Dom	
Du 132	14Y, 16.3N, 7.6W	Russell Leavy	200	Drl	93	6	--	Pleistocene gravel	--	--	20	Dom	
Du 134	14Y, 15.3N, 7.8W	Ralph Pitcher	180	Drl	156	10 to 8	5	Hudson River formation	--	--	30	Com	Average consumption is 5,000 to 10,000 gpd.
Du 135	14Y, 15.2N, 7.6W	Elmer Wilbur	180	Drl	110	6	60	do.	--	Force	50	Farm	Well supplies water for irrigation.
Du 136	14Y, 15.4N, 5.2W	William Brandt	405	Drl	160	6	21	do.	--	--	2	Dom	
Du 137	14Y, 13.1N, 9.4W	Vincent Astor	150	Drl	60	6	10	do.	--	--	5	Dom	

MAP OF DUTCHESS COUNTY, NEW YORK

SHOWING BEDROCK UNITS



EXPLANATION

Cheshire quartzite
(Early Cambrian)
Unimportant as a water-bearing formation because of small areal extent.

Hudson River formation
(Ordovician)
Chiefly slate and phyllite in west and schist in east. Yields small supplies of water.

Undifferentiated granite and gneiss
(Precambrian)
Medium- to coarse-grained igneous and metamorphic rocks. Yields small supplies of water.

Stockbridge limestone
(Ordovician and Cambrian)
Limestone, dolomite and marble. Most productive bedrock aquifer.

MAP OF DUTCHESS COUNTY, NEW YORK
SHOWING PRINCIPAL UNCONSOLIDATED DEPOSITS

EXPLANATION

Sand and gravel

Principally stratified deposits laid down in lowland areas by glacial melt waters. Yields moderate to large supplies of water.

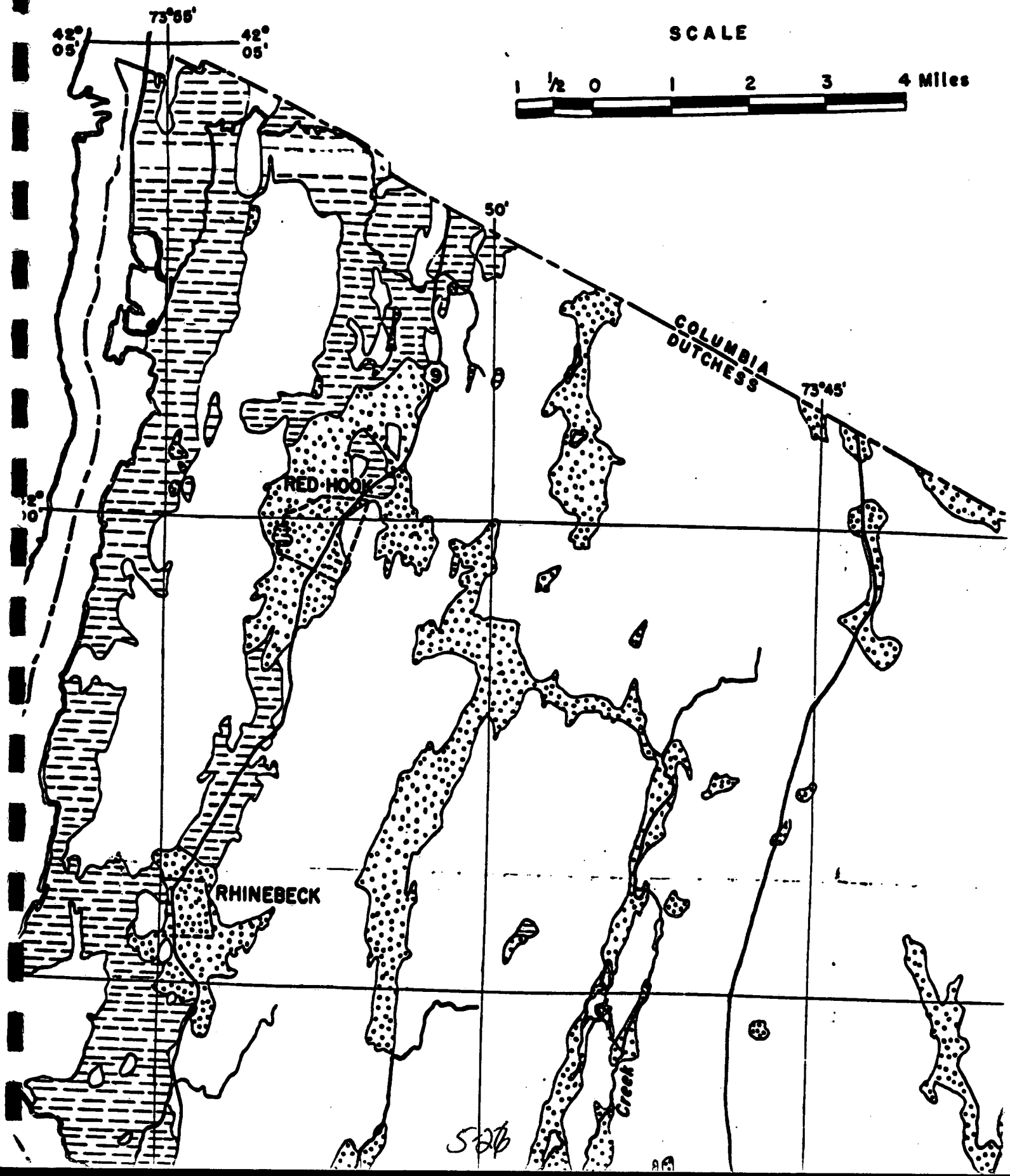
Lacustrine deposits

Fine-grained stratified deposits laid down in glacial lakes. Yields little or no water. Generally acts as a confining bed where underlain by permeable deposits.

Till

Chiefly unstratified mixture of clay, sand, gravel, and boulders. Widespread on steep slopes and hilltops. Yields small supplies of water to large-diameter dug wells.

L SURVEY


73°55'
42° 05'
42° 05'
SCALE
1 ½ 0 1 2 3 4 Miles
50'
COLUMBIA
DUTCHESS
73°45'
RED HOOK
RHINEBECK
Creek

DATE STARTED 2-19-90
FINISHED 3-01-90
SHEET 1 OF 1

YEC, INC.

SUBSURFACE LOG

HOLE NO. GW-1
SURFACE ELEV 292.03'
G.W. DEPTH 271.25'

PROJECT Atlantic Asbestos #314019

LOCATION Upper Red Hook, Dutchess County, NY

DEPTH-FT	CORE INTERVAL	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER (0-6, 6-12, 12-18, 18-24)	DESCRIPTION	NOTES
	0-6"				Highly weathered gr shale w/qtz. veins. Fragmented and mixed with br sd and si w/little gravel. 6"-4.5" Highly weathered gr shale w/qtz veins.	Bedrock at 0-6". First 3' bored with 5 7/8 rollerbit. 3'-27.5' cored with NX core barrel. 3'-28' also rollerbitted with 3 7/8 rollerbit. All coring and rollerbit-ting advanced with a track mounted drill rig. HNU readings < 1ppm above background.
5	4.5' to 7.5'				4.5'-7.5' highly weathered gr shale w/qtz. veins. Br weathered fracture surfaces and hollow weathered pockets around qtz. contacts w/shale. Last 5" more competent. RQD = 13%	
10	7.5' to 12.5' RCV-3'				7.5'-12.5' Gr shale w/qtz. veins, less weathered. Br-rust colored weathered fracture surfaces. Last 3" grades into bl-gr organic rich shale. Less weathered. RQD= 62%	
	12.5' to 17.5' RCV-5'				12.5'-17.5' Gr-bl organic rich shale w/qtz veins. Highly weathered and fractured. RQD = 39%	
15	17.5' to 22.5' RCV-4.5'				17.5'-22.5' Gr shale w/qtz veins. Fracture surfaces brown and weathered. First 3' of core very competent but rest highly weathered and fractured. RQD = 56%	
20	22.5' to 27.5' RCV-5'				22.5'-27.5' Gr-bl organic rich shale w/qtz. veins w/br weathered fracture surfaces. RQD = 25%	
					Bottom of boring at 28 feet. (27.5-28' rollerbitted)	

CLASSIFICATION MJM, YEC INC.

METHOD OF INVESTIGATION ASTM D-1586/NX CORE

DATE
STARTED 2-6-90
FINISHED 2-7-90
SHEET 1 OF 1

YEC, INC.

SUBSURFACE LOG

HOLE NO. GW-2
SURFACE ELEV 263.60'
G.W. DEPTH 263.08'

PROJECT Atlantic Asbestos # 314019

LOCATION Upper Red Hook (T) Dutchess County, NY

DEPTH-FT	LOG WELL	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	0-2'	SS	1	1	3			RCV-1.5 feet. moist light br. si and sd, tr cl. (0-1.5 feet)	HNU readings < 1ppm above background.
				2	3				
	5-7'	SS	2	9	12			RCV-2 feet. 5-6.5' dry,lt br,f-si and sd,loose tr gravel.	
				38	12				
				10	14				
	7-9'	SS	3	18	17			6.5-7.0' moist br sd, some si. last 4" saturated	
10	9-11'	SS	4	41	87			SS#3 (7-9') RCV-1.75' 7-8' dr br si and md gr sd, grading gr cl at 8'. 8-8.75' wet f-sd and si w/some gravel SS#4 (9-11') RCV-.5' 9-9.5' f-md gr sd(br) w/ weathered shale.- (saturated) refusal at 9.5 feet at gr,extremely shale	Borings advanced with a track mounted drill rig using 4.25" ID HSA.

CLASSIFICATION MJM, YEC INC.

METHOD OF INVESTIGATION ASTM D-1586

DATE STARTED 2-19-90
FINISHED 2-21-90
SHEET 1 OF 1

YEC, INC.

SUBSURFACE LOG

HOLE NO. CW-3
SURFACE ELEV 263.71'
G.W. DEPTH 252.03'

PROJECT Atlantic Asbestos 314019
Phase II Investigation

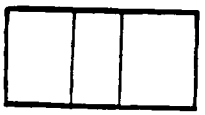
LOCATION Upper Red Hook
Dutchess County, NY

DEPTH-FT	SAMPLE/CORE INTERVAL	SAMPLE TYPE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	DESCRIPTION	NOTES
	0-2'	SS		4	4			Dry Br. sd and si, w/some rounded pebbles.	4.25" ID HSA Borings advanced with track mounted drill rig to 5', then a CME-55 drill rig was used to complete the well. ss = split spoon sample
				4	4				
5	5-7'	SS		7	11				
				7	6			Dry Br. f-md sd w/angular shale fragments.	
10	9.5-12.0							Refusal at Bedrock at 10 feet. RCV. - 2.5' gr highly weathered shale w/qtz. veins. Extremely fractured. RQD = 15%	
	12.0-16.5'							RCV. - 4.5' RQD = 7% Gr highly weathered/fractured shale w/qtz. veins. First 1' (12'-13') composed entirely of weathered qtz. representing a larger qtz. vein.	
	16.5'-21.0'							RCV - 4.5' Gr highly weathered and fractured shale w/ small qtz. veins. RQD = 50%	

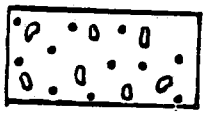
CLASSIFICATION MJM, YEC, INC.
METHOD OF INVESTIGATION ASTM D-1586/NX CORE

WELL CONSTRUCTION LOG EXPLANATION

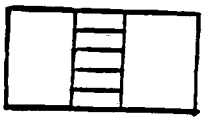
4 INCH OD PROTECTIVE STEEL CASING



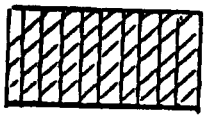
2 INCH DIAMETER SCHEDULE 40 PVC RISER



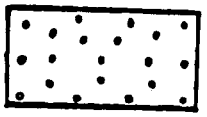
CEMENT/BENTONITE GROUT



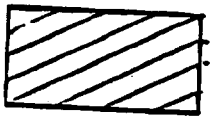
2 INCH DIAMETER .01 INCH SLOT SCHEDULE 40 PVC SCREEN



BENTONITE PELLETS



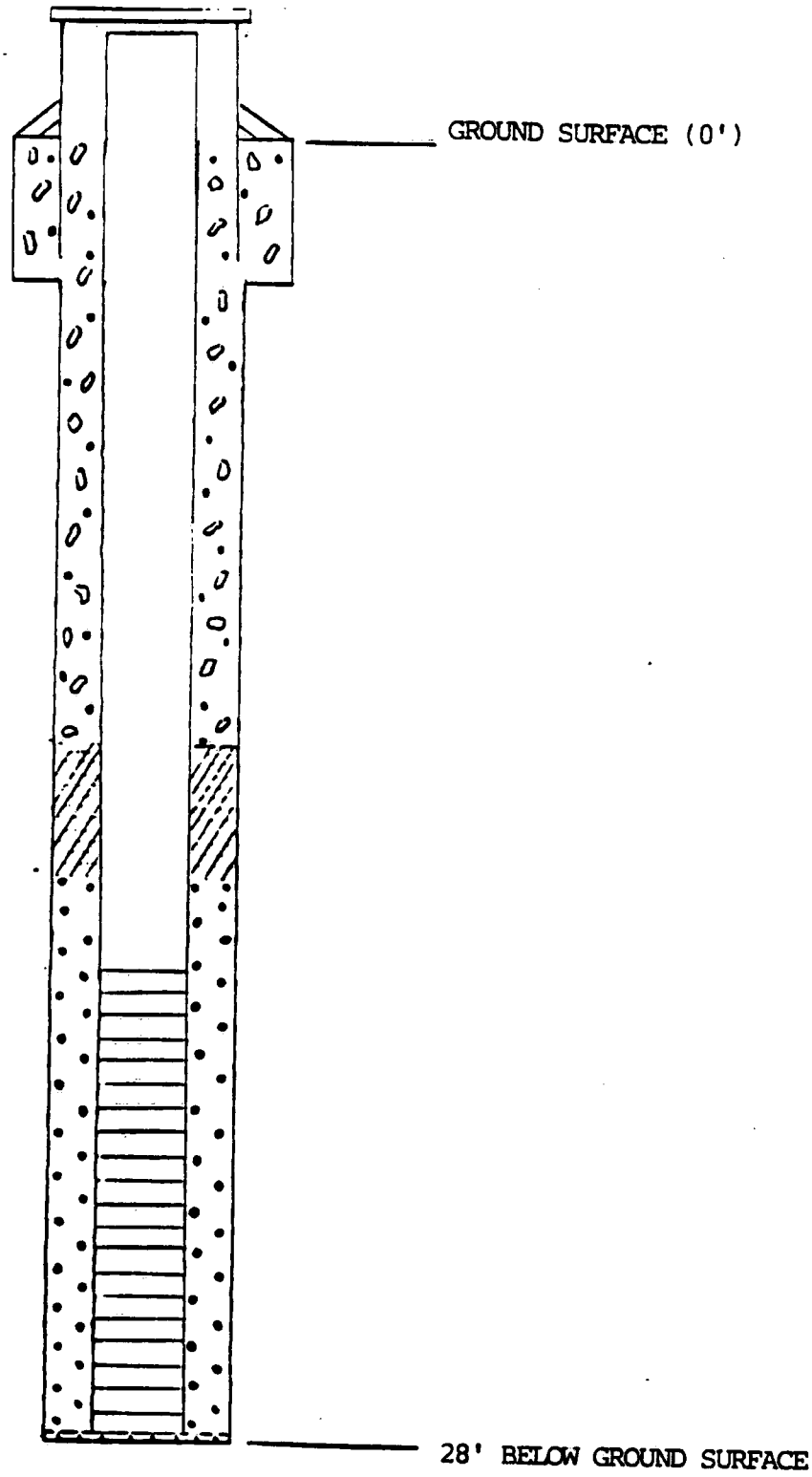
SILICA SAND PACK



CONCRETE

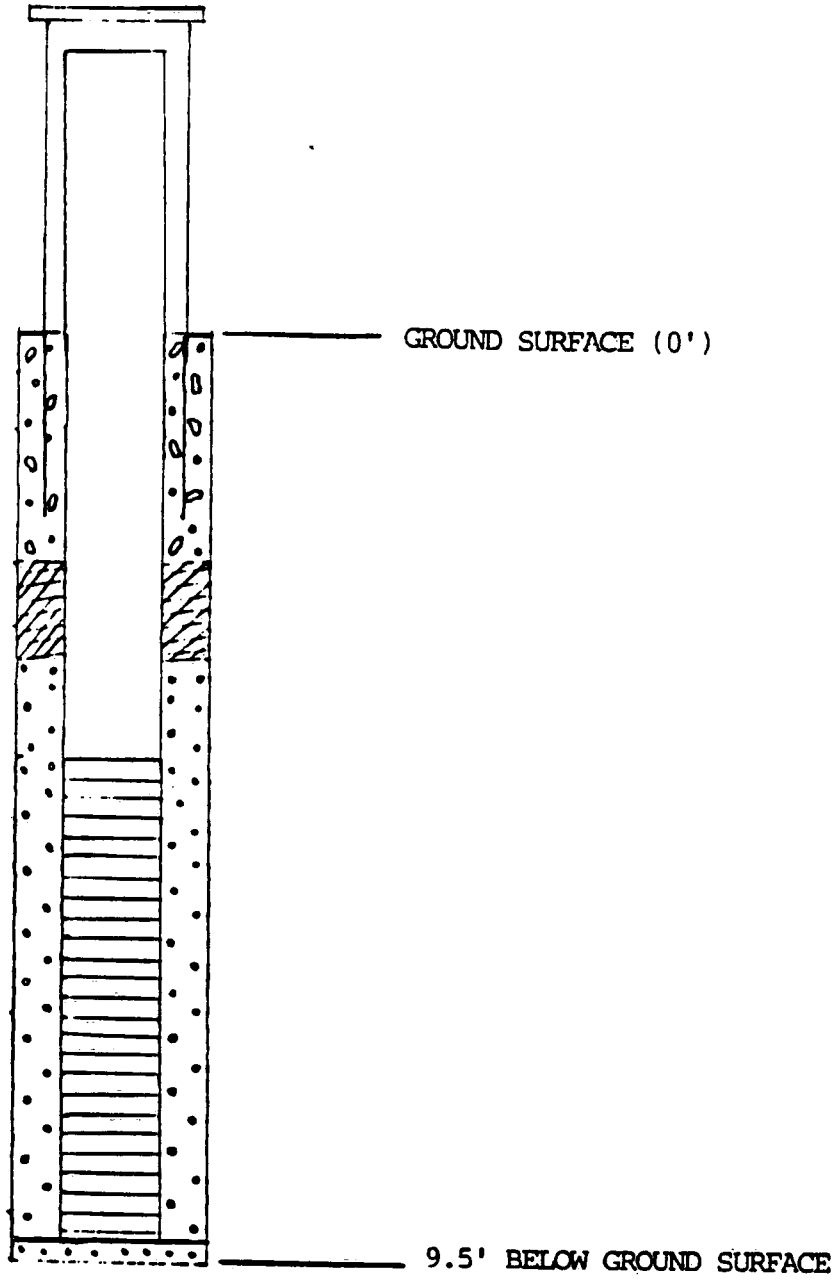
YEC, INC. 1990

GW-1 WELL CONSTRUCTION DIAGRAM



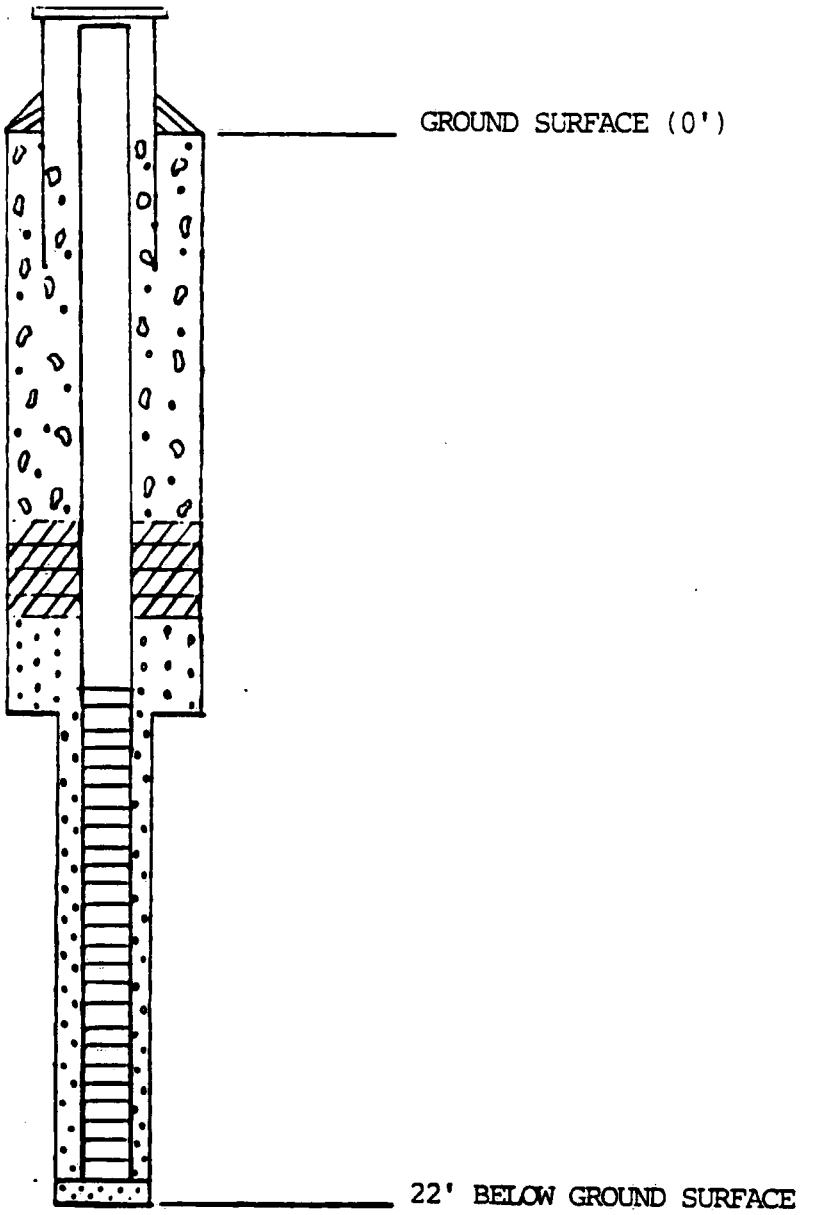
ATLANTIC ASBESTOS NYSDEC SUPERFUND SITE PHASE II INVESTIGATION #314019	Vert. Scale: 1"=4'	DRN: MJM
	Horiz. Scale: NTS	AP'VD:
	YEC, INC. Project #A0019-8	

GW-2 WELL CONSTRUCTION DIAGRAM



ATLANTIC ASBESTOS NYSDEC SUPERFUND SITE PHASE II INVESTIGATION # 314019	Vert.Scale: 1"=2'	DRN: MJM
	Horiz. Scale: NTS	AP'VD:
	YEC, INC. PROJECT# A0019-8	

GW-3 WELL CONSTRUCTION DIAGRAM



ATLANTIC ASBESTOS NYSDEC SUPERFUND SITE PHASE II INVESTIGATION # 314019	Vert. Scale: 1"=4'	DRN: MJM
	Horiz. Scale: NTS	AP'VD:
	YEC, INC. PROJECT # A0019-8	

APPENDIX F

CHEMICAL ANALYTICAL DATA

ANALYTICAL RESULTS

aquatec
ENVIRONMENTAL SERVICES
75 Green Mountain Drive, So. Burlington, VT 05403
TEL. 802/656-1074

Appendix F

NARRATIVE

aquatec
ENVIRONMENTAL SERVICES
75 Green Mountain Drive, So. Burlington, VT 05403
TEL. 802/656-1074

aquatec INC. ENVIRONMENTAL SERVICES

75 GREEN MOUNTAIN DRIVE, SOUTH BURLINGTON, VERMONT 05403, TELEPHONE (802) 658-1074

March 29, 1990

Y.S. Edward Chen, Ph.D., P.E.
YEC, Inc.
Forest View Professional Building
10 Pine Crest Road
Valley Cottage, NY 10989

Re: Analytical Services Subcontract
Aquatec Project No. 89150
Case No. 20374, SDG No. 111156
ETR No's. 20374 and 20380

Dear Dr. Chen:

Enclosed are the results of analyses performed on Atlantic Asbestos site water samples received from YEC, Inc.

The samples were received intact on March 2 and 3, 1990. For the samples received, laboratory numbers were assigned and designated as follows:

YEC Sample No.	Aquatec Sample No.	Aquatec ETR No.	Sample Matrix
MWAA-2	111156	20374	Water
MWAA-2	111157		Filtrate
MWAA-3	111158		Water
MWAA-4	111159		Water
Field Blank	111168	20380	Water
Trip Blank	111169		Water
MWAA-1	111170		Water
SWAA-1	111171		Water
SWAA-2	111172		Water

Additional quantities of sample MWAA-2 were submitted to the laboratory for quality control (QC) analysis. Subsamples of MWAA-2 (Lab No. 111156) designated for QC analysis were independently logged into the laboratory for the purpose of internal sample tracking. The QC samples were assigned laboratory numbers 111156MS (matrix spike), 111156MD (matrix spike duplicate), and 111156DP (duplicate).

The matrix spike recoveries for arsenic, lead, and selenium were out of the specified tolerances in the matrix analysis of MWAA-2 (Lab No. 111156MS). The analytical data has been qualified accordingly.

A-000001

An asbestos determination was performed on samples SWAA-1 and SWAA-2 using a modified Total Suspended Solids procedure previously approved by YEC, Inc. The gravimetric test performed measured both asbestos and non-asbestos residue retained on a 0.45 micron filter. The reporting limit for this test is 100 mg/l (<0.01%).

Sincerely,

Neal Z. Van Wyck for

Joseph K. Comeau, Ph.D.
Vice President
Chemistry Division

JKC/lam

Enclosure

89150B29MAR90

aquatec
ENVIRONMENTAL SERVICES
75 Green Mountain Drive, So. Burlington, VT 05403
TEL. 802/658-1074

ANALYTICAL REPORT

YEC, Inc.
10 Pine Crest Road
Valley Cottage, NY 10989

Date : 03/28/90
ETR Number : 20374
Project No.: 89150
No. Samples: 7
Arrived : 03/02/90

Attention : Dr. Y.S. Ed Chen

Atlantic Asbestos Waters SDG:111156

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No.	Sample Description		
111156	MWAA-2, liquid:		
	Method No.	Parameter	Result
	120.1	Conductivity (umhos/cm)	291
	160.1	Total Dissolved Solids	167
	160.2	Total Suspended Solids	306
	410.1	Chemical Oxygen Demand	14
	150.1	pH (std. units)	6.92
111158	MWAA-3, liquid:		
	120.1	Conductivity (umhos/cm)	292
	160.1	Total Dissolved Solids	170
	160.2	Total Suspended Solids	62
	410.1	Chemical Oxygen Demand	11
	150.1	pH (std. units)	6.95
111159	MWAA-4, liquid:		
	120.1	Conductivity (umhos/cm)	284
	160.1	Total Dissolved Solids	165
	160.2	Total Suspended Solids	37
	410.1	Chemical Oxygen Demand	12
	150.1	pH (std. units)	6.95

< Last Page >

Submitted By : Neal E. VanWyck

Aquatec Inc.

aquatec
ENVIRONMENTAL SERVICES
75 Green Mountain Drive, So. Burlington, VT 05403
TEL. 802/658-1074

ANALYTICAL REPORT

YEC, Inc.
10 Pine Crest Road
Valley Cottage, NY 10989

Date : 03/28/90
ETR Number : 20380
Project No.: 89150
No. Samples: 7
Arrived : 03/03/90

Attention : Dr. Y.S. Ed Chen

Atlantic Asbestos Waters SGD:111156

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No.	Sample Description		
111170	MWAA-1, Liquid:		
	Method No.	Parameter	Result
	120.1	Conductivity (umhos/cm)	401
	160.1	Total Dissolved Solids	234
	160.2	Total Suspended Solids	16
	410.1	Chemical Oxygen Demand	<5
	150.1	pH (std. units)	7.35
111171	SWAA-1, Liquid:		
	QSIA	TSS (0.45 um filtration)	<0.01%
	120.1	Conductivity (umhos/cm)	331
	160.1	Total Dissolved Solids	191
	160.2	Total Suspended Solids	4.0
	410.1	Chemical Oxygen Demand	11
	150.1	pH (std. units)	7.17
111172	SWAA-2, Liquid:		
	QSIA	TSS (0.45 um filtration)	<0.01%
	120.1	Conductivity (umhos/cm)	321
	160.1	Total Dissolved Solids	197
	160.2	Total Suspended Solids	110
	410.1	Chemical Oxygen Demand	82
	150.1	pH (std. units)	7.00

< Last Page >

Submitted By : Neal E. VanWijk

Aquatec Inc.

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

SOW No.: _____

EPA Sample No.	Lab Sample ID.
MWAA-2	111156
MWAA-2S	111156MS
MWAA-2D	111156DP
MWAA-2 FILTERED	111157
MWAA-3	111158
MWAA-4	111159
FIELD BLANK	111168
MWAA-1	111170
SWAA-1	111171
SWAA-2	111172

Were ICP interelement corrections applied? Yes/No NO

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Neal E. Van Wyck

Date: 3/29/90

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBW

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111156PB

Level (low/med): _____ Date Received: -

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	73.4	U	E	P
7440-36-0	Antimony	11.0	U		F
7440-38-2	Arsenic	3.7	U	N	F
7440-39-3	Barium	4.1	U		P
7440-41-7	Beryllium	1.5	U		P
7440-43-9	Cadmium	4.3	U		P
7440-70-2	Calcium	309	U		P
7440-47-3	Chromium	7.1	U		P
7440-48-4	Cobalt	13.3	U		P
7440-50-8	Copper	8.1	U		P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	1.2	U	N	F
7439-95-4	Magnesium	271	U		P
7439-96-5	Manganese	2.9	U		P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	18.5	U		P
7440-09-7	Potassium	464	U		P
7782-49-2	Selenium	1.5	U	N	F
7440-22-4	Silver	3.0	U		A
7440-23-5	Sodium	362	U		P
7440-28-0	Thallium	3.6	U		F
7440-62-2	Vanadium	10.5	U		P
7440-66-6	Zinc	7.2	U		P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111156

Level (low/med): _____ Date Received: 03/02/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20200		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	53200			P
7440-47-3	Chromium	23.6			P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	76.3			P
7439-89-6	Iron	51700			P
7439-92-1	Lead	17.0		N	F
7439-95-4	Magnesium	12100			P
7439-96-5	Manganese	1820			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	4530	B		P
7782-49-2	Selenium	50.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	4120	B		P
7440-28-0	Thallium	10.0	U		F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	267			P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2S

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111156MS

Level (low/med): _____ Date Received: 03/02/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18700		E	P
7440-36-0	Antimony	75.7			F
7440-38-2	Arsenic	10.3		N	F
7440-39-3	Barium	2110			P
7440-41-7	Beryllium	49.0			P
7440-43-9	Cadmium	50.8			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	205			P
7440-48-4	Cobalt	511			P
7440-50-8	Copper	315			P
7439-89-6	Iron	44400			P
7439-92-1	Lead	50.1		N	F
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2260			P
7439-97-6	Mercury	1.0			CV
7440-02-0	Nickel	507			P
7440-09-7	Potassium				NR
7782-49-2	Selenium	10.0	U	N,W	F
7440-22-4	Silver	50.1			A
7440-23-5	Sodium				NR
7440-28-0	Thallium	38.1			F
7440-62-2	Vanadium	505			P
7440-66-6	Zinc	742			P
	Cyanide	107			

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2D

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111156DP

Level (low/med): _____ Date Received: 03/02/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21300		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N,W	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	53900			P
7440-47-3	Chromium	21.3			P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	75.0			P
7439-89-6	Iron	44400			P
7439-92-1	Lead	19.8		N	F
7439-95-4	Magnesium	12100			P
7439-96-5	Manganese	1750			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	4990	B		P
7782-49-2	Selenium	50.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	4410	B		P
7440-28-0	Thallium	10.0	U		F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	254			P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2 FILTERED

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111157

Level (low/med): _____ Date Received: 03/02/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	314		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N,W	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	57700			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	415			P
7439-92-1	Lead	5.0	U	N,W	F
7439-95-4	Magnesium	5310			P
7439-96-5	Manganese	15.7			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	3870	B		P
7440-28-0	Thallium	10.0	U	W	F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	27.9			P
	Cyanide				NR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111158

Level (low/med): _____ Date Received: 03/02/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	892		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	33800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	1040			P
7439-92-1	Lead	3.4	B	N	F
7439-95-4	Magnesium	9150			P
7439-96-5	Manganese	50.5			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	10000			P
7440-28-0	Thallium	10.0	U	W	F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	39.4			P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111159

Level (low/med): _____ Date Received: 03/02/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1000		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	33800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	1070			P
7439-92-1	Lead	3.0	B	N	F
7439-95-4	Magnesium	9220			P
7439-96-5	Manganese	38.6			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	10200			P
7440-28-0	Thallium	10.0	U	W	F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	22.3			P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111168

Level (low/med): _____ Date Received: 03/03/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	434		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	5000	U		P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	651			P
7439-92-1	Lead	5.0	U	N,W	F
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese	26.6			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	5000	U		P
7440-28-0	Thallium	10.0	U		F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	20.0	U		P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111170

Level (low/med): _____ Date Received: 03/03/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1120		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	76800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	2320			P
7439-92-1	Lead	3.2	B	N	F
7439-95-4	Magnesium	4160	B		P
7439-96-5	Manganese	99.3			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N,W	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	4510	B		P
7440-28-0	Thallium	10.0	U		F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	20.0	U		P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111171

Level (low/med): _____ Date Received: 03/03/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	612		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	57100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	620			P
7439-92-1	Lead	5.0	U	N,W	F
7439-95-4	Magnesium	5450			P
7439-96-5	Manganese	41.9			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	4490	B		P
7440-28-0	Thallium	10.0	U	W	F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	20.0	U		P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 111156

Matrix (soil/water): WATER Lab Sample ID: 111172

Level (low/med): _____ Date Received: 03/03/90

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1920		E	P
7440-36-0	Antimony	60.0	U		F
7440-38-2	Arsenic	10.0	U	N	F
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	47500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	3170			P
7439-92-1	Lead	4.5	B	N	F
7439-95-4	Magnesium	5840			P
7439-96-5	Manganese	497			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	5000	U		P
7782-49-2	Selenium	5.0	U	N	F
7440-22-4	Silver	10.0	U		A
7440-23-5	Sodium	11500			P
7440-28-0	Thallium	10.0	U	W	F
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	50.1			P
	Cyanide	10.0	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111156V

Level: (low/med) LOW Date Received: 03/02/90

Moisture: not dec. _____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111156V

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec. _____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.10	24	BJ
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FORM I VOA-TIC

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111158

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111158V

Level: (low/med) LOW Date Received: 03/02/90

Moisture: not dec. _____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111158

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111158V

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.00	26	BJ
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111159

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111159V

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec. _____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111159

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111159V

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.05	23	BJ
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111168

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111168V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FIELD BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111168

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111168V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec. _____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.10	21	BJ
2.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111169

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111169V

Level: (low/med) LOW Date Received: 03/03/90

Moisture: not dec. _____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111169

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111169V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.10	9	BJ
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111170

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111170V

Level: (low/med) LOW Date Received: 03/03/90

Moisture: not dec. _____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	11	B
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111170

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111170V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	0.95	14	BJ
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111171

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111171V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec. _____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111171

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111171V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.00	23	BJ
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111172

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111172V

Level: (low/med) LOW Date Received: 03/03/90

Moisture: not dec._____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	J
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	2	J
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
		4	J

FORM I VOA

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111172

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111172V

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec. _____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.00	14	BJ
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FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKN9

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: DKMB002AV

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: DKMB002AV

Level: (low/med) LOW Date Received: 00/00/00

Moisture: not dec._____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM I VOA

1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKN9

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: DKMB002AV

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: DKMB002AV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec._____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.05	26	J
2.				
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FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKP2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: DKMB002DV

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: DKMB002DV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. _____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	3	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM I VOA

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKP2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: DKMB002DV

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: DKMB002DV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec._____ Date Analyzed: 03/07/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-45-6	CHLORODIFLUOROMETHANE	1.05	23	J
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FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MS

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MS

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111156MSV

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec. _____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene		
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene		
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene		
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM I VOA

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MSD

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MD

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D111156MDV

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec. _____ Date Analyzed: 03/06/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane		
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane		
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene		
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene		
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
		5	U

FORM I VOA

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156

Sample wt/vol: 1003 (g/mL) ML Lab File ID: A111156I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156

Sample wt/vol: 1003 (g/mL) ML Lab File ID: A111156I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156

Sample wt/vol: 1003 (g/mL) ML Lab File ID: A111156I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I SV-TIC

1/87 Rev.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111158

Sample wt/vol: 1007 (g/mL) ML Lab File ID: A111158I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111158

Sample wt/vol: 1007 (g/mL) ML Lab File ID: A111158I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111158

Sample wt/vol: 1007 (g/mL) ML Lab File ID: A111158I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I SV-TIC

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111159

Sample wt/vol: 1003 (g/mL) ML Lab File ID: A111159I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111159

Sample wt/vol: 1003 (g/mL) ML Lab File ID: A111159I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111159

Sample wt/vol: 1003 (g/mL) ML Lab File ID: A111159I2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

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Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111168

Sample wt/vol: 1002 (g/mL) ML Lab File ID: A111168I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111168

Sample wt/vol: 1002 (g/mL) ML Lab File ID: A111168I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	5	J
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FIELD BLANK

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111168

Sample wt/vol: 1002 (g/mL) ML Lab File ID: A111168I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I SV-TIC

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-1

ame: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

x: (soil/water) WATER Lab Sample ID: 111170

le wt/vol: 1004 (g/mL) ML Lab File ID: A111170I2S

el: (low/med) LOW Date Received: 03/03/90

sture: not dec._____ dec._____ Date Extracted: 03/06/90

raction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

leanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111170

Sample wt/vol: 1004 (g/mL) ML Lab File ID: A111170I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MWAA-1

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

trix: (soil/water) WATER Lab Sample ID: 111170

mple wt/vol: 1004 (g/mL) ML Lab File ID: A111170I2S

vel: (low/med) LOW Date Received: 03/03/90

Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

traction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

C Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

mber TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.83	8	JBA
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111171

Sample wt/vol: 1004 (g/mL) ML Lab File ID: A111171I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-1

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111171

Sample wt/vol: 1004 (g/mL) ML Lab File ID: A111171I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111171

Sample wt/vol: 1004 (g/mL) ML Lab File ID: A111171I2S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) 123-4

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 2	2-PENTANONE, 4-HYDROXY-4-MET	4.77	9	JAB
2.	UNKNOWN	33.45	18	J
3.	UNKNOWN	35.38	9	JU
4.	UNKNOWN	36.80	9	J
5.	UNKNOWN	36.90	18	J
6.	UNKNOWN	38.10	15	J
7.	UNKNOWN	38.48	27	J
8.	UNKNOWN	39.38	17	J
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-2

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111172

Sample wt/vol: 1014 (g/mL) ML Lab File ID: A111172S

Level: (low/med) LOW Date Received: 03/03/90

Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/14/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	49	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	4	J
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	15	
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	49	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	49	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111172

Sample wt/vol: 1014 (g/mL) ML Lab File ID: A111172S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/14/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	49	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	49	U
100-02-7	4-Nitrophenol	49	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	49	U
534-52-1	4,6-Dinitro-2-methylphenol	49	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	49	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SWAA-2

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111172

Sample wt/vol: 1014 (g/mL) ML Lab File ID: A111172S

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/14/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 12 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN TRIMETHYLBENZENE	11.02	9	J
90-12-0	1-METHYLNAPHTHALENE	18.78	13	J
	UNKNOWN CYCLOHEXENECARBOXYLA	29.50	23	J
4.	UNKNOWN	29.95	12	J
	UNKNOWN CYCLOHEXENECARBOXYLA	30.35	10	J
	UNKNOWN	32.72	21	J
7.	UNKNOWN	33.47	13	J
8.	UNKNOWN ALIPHATIC HYDROCARBO	33.73	9	J
	UNKNOWN PNENANTHRENECARBOXYL	34.60	45	J
	UNKNWON ALIPHATIC HYDROCARBO	38.92	15	J
1.	UNKNOWN	40.65	30	J
	UNKNOWN	41.42	15	J
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKG4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: AB0306G4I2S

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AB0306G4I2S

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKG4

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: AB0306G4I2S

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AB0306G4I2S

Level: (low/med) LOW Date Received: 00/00/00

Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKG4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: AB0306G4I2S

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AB0306G4I2S

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.83	15	JA
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FORM I SV-TIC

1/87 Rev.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MS

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MS

Sample wt/vol: 1003 (g/mL) ML Lab File ID: B111156MSS

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol		
111-44-4	bis(2-Chloroethyl)ether		
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol		
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane		
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	10	U
111-91-1	bis(2-Chloroethoxy)methane	50	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene		
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene		
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MS

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MS

Sample wt/vol: 1003 (g/mL) ML Lab File ID: B111156MSS

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	50	U
51-28-5	2,4-Dinitrophenol	10	U
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MSD

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MD

Sample wt/vol: 1011 (g/mL) ML Lab File ID: A111156MD2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec. _____ dec. _____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	49	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	49	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	49	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MSD

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MD

Sample wt/vol: 1011 (g/mL) ML Lab File ID: A111156MD2S

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	49	U
83-32-9	Acenaphthene	49	U
51-28-5	2,4-Dinitrophenol	10	U
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	49	U
534-52-1	4,6-Dinitro-2-methylphenol	49	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

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1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156

Sample wt/vol: 1003 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/02/90

Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111158

Sample wt/vol: 1005 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-4

Name:AQUATEC, INC. Contract:89150

b Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

ix: (soil/water)WATER Lab Sample ID: 111159

mple wt/vol: 1013 (g/mL)ML Lab File ID: _____

l: (low/med) LOW Date Received: 03/02/90

isture: not dec._____ dec._____ Date Extracted: 03/06/90

traction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

Cleanup: (Y/N)N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L	Q
319-84-6	alpha-BHC	0.049	U
319-85-7	beta-BHC	0.049	U
319-86-8	delta-BHC	0.049	U
58-89-9	gamma-BHC (Lindane)	0.049	U
76-44-8	Heptachlor	0.049	U
309-00-2	Aldrin	0.049	U
1024-57-3	Heptachlor epoxide	0.049	U
959-98-8	Endosulfan I	0.049	U
60-57-1	Dieldrin	0.049	U
72-55-9	4,4'-DDE	0.099	U
72-20-8	Endrin	0.099	U
33213-65-9	Endosulfan II	0.099	U
72-54-8	4,4'-DDD	0.099	U
1031-07-8	Endosulfan sulfate	0.099	U
50-29-3	4,4'-DDT	0.099	U
72-43-5	Methoxychlor	0.099	U
53494-70-5	Endrin ketone	0.49	U
5103-71-9	alpha-Chlordane	0.099	U
5103-74-2	gamma-Chlordane	0.49	U
8001-35-2	Toxaphene	0.49	U
12674-11-2	Aroclor-1016	0.99	U
11104-28-2	Aroclor-1221	0.49	U
11141-16-5	Aroclor-1232	0.49	U
53469-21-9	Aroclor-1242	0.49	U
12672-29-6	Aroclor-1248	0.49	U
11097-69-1	Aroclor-1254	0.49	U
11096-82-5	Aroclor-1260	0.99	U
		0.99	U

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EPA SAMPLE NO.

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Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111168

Sample wt/vol: 1009 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.099	U
72-55-9	4,4'-DDE	0.099	U
72-20-8	Endrin	0.099	U
33213-65-9	Endosulfan II	0.099	U
72-54-8	4,4'-DDD	0.099	U
1031-07-8	Endosulfan sulfate	0.099	U
50-29-3	4,4'-DDT	0.099	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.099	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.99	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.99	U
11096-82-5	Aroclor-1260	0.99	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-1

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111170

Sample wt/vol: 1003 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/03/90

Moisture: not dec. _____ dec. _____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111171

Sample wt/vol: 1003 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/03/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWAA-2

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111172

Sample wt/vol: 1004 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/03/90

Moisture: not dec. _____ dec. _____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/13/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

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EPA SAMPLE NO.

PBLKR3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: PBLKR3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: _____

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MS

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

trix: (soil/water) WATER Lab Sample ID: 111156MS

mple wt/vol: 1005 (g/mL) ML Lab File ID: _____

vel: (low/med) LOW Date Received: 03/02/90

Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

traction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

C Cleanup: (Y/N) N pH:____ Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.25	U
319-85-7	beta-BHC	0.25	U
319-86-8	delta-BHC	0.25	U
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide		
959-98-8	Endosulfan I	0.25	U
60-57-1	Dieldrin	0.25	U
72-55-9	4,4'-DDE		
72-20-8	Endrin	0.50	U
33213-65-9	Endosulfan II		
72-54-8	4,4'-DDD	0.50	U
1031-07-8	Endosulfan sulfate	0.50	U
50-29-3	4,4'-DDT	0.50	U
72-43-5	Methoxychlor		
53494-70-5	Endrin ketone	2.5	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	2.5	U
8001-35-2	Toxaphene	2.5	U
12674-11-2	Aroclor-1016	5.0	U
11104-28-2	Aroclor-1221	2.5	U
11141-16-5	Aroclor-1232	2.5	U
53469-21-9	Aroclor-1242	2.5	U
12672-29-6	Aroclor-1248	2.5	U
11097-69-1	Aroclor-1254	2.5	U
11096-82-5	Aroclor-1260	5.0	U
		5.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWAA-2MSD

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20374 SAS No.: _____ SDG No.: 11115

Matrix: (soil/water) WATER Lab Sample ID: 111156MD

Sample wt/vol: 1005 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 03/02/90

% Moisture: not dec._____ dec._____ Date Extracted: 03/06/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/10/90

GPC Cleanup: (Y/N) N pH:____ Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.25	U
319-85-7	beta-BHC	0.25	U
319-86-8	delta-BHC	0.25	U
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide		
959-98-8	Endosulfan I	0.25	U
60-57-1	Dieldrin	0.25	U
72-55-9	4,4'-DDE		
72-20-8	Endrin	0.50	U
33213-65-9	Endosulfan II		
72-54-8	4,4'-DDD	0.50	U
1031-07-8	Endosulfan sulfate	0.50	U
50-29-3	4,4'-DDT	0.50	U
72-43-5	Methoxychlor		
53494-70-5	Endrin ketone	2.5	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	2.5	U
8001-35-2	Toxaphene	2.5	U
12674-11-2	Aroclor-1016	5.0	U
11104-28-2	Aroclor-1221	2.5	U
11141-16-5	Aroclor-1232	2.5	U
53469-21-9	Aroclor-1242	2.5	U
12672-29-6	Aroclor-1248	2.5	U
11097-69-1	Aroclor-1254	2.5	U
11096-82-5	Aroclor-1260	5.0	U
		5.0	U

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE 1

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110525

Level (low/med): _____ Date Received: 02/15/90

% Solids: 10.6

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4180			P
7440-36-0	Antimony	76.0	U	N	F
7440-38-2	Arsenic	9.8	U	WN*	F
7440-39-3	Barium	253	U		P
7440-41-7	Beryllium	6.3	U		P
7440-43-9	Cadmium	6.3	U		P
7440-70-2	Calcium	6340	U		P
7440-47-3	Chromium	25.9		E	P
7440-48-4	Cobalt	63.4	U		P
7440-50-8	Copper	90.7		E	P
7439-89-6	Iron	5530			P
7439-92-1	Lead	29.3			F
7439-95-4	Magnesium	3890	B		P
7439-96-5	Manganese	71.5		E	P
7439-97-6	Mercury	0.94	U		CV
7440-02-0	Nickel	50.7	U		P
7440-09-7	Potassium	6340	U		P
7782-49-2	Selenium	49	U	N	F
7440-22-4	Silver	9.8	U		A
7440-23-5	Sodium	6340	U		P
7440-28-0	Thallium	9.8	U		F
7440-62-2	Vanadium	63.4	U		P
7440-66-6	Zinc	162		E	P
	Cyanide	11.1			

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE 2

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110526

Level (low/med): _____ Date Received: 02/15/90

% Solids: 22.3

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1710			P
7440-36-0	Antimony	50.9	U	N	F
7440-38-2	Arsenic	7.0	U	WN*	F
7440-39-3	Barium	170	U		P
7440-41-7	Beryllium	4.2	U		P
7440-43-9	Cadmium	4.2	U		P
7440-70-2	Calcium	4240	U		P
7440-47-3	Chromium	34.8		E	P
7440-48-4	Cobalt	42.4	U		P
7440-50-8	Copper	88.7		E	P
7439-89-6	Iron	2150			P
7439-92-1	Lead	22.1			F
7439-95-4	Magnesium	6730			P
7439-96-5	Manganese	63.2		E	P
7439-97-6	Mercury	0.45	U		CV
7440-02-0	Nickel	50.0			P
7440-09-7	Potassium	4240	U		P
7782-49-2	Selenium	3.5	U	WN	F
7440-22-4	Silver	7.0	U		A
7440-23-5	Sodium	4240	U		P
7440-28-0	Thallium	7.0	U		F
7440-62-2	Vanadium	42.4	U		P
7440-66-6	Zinc	119		E	P
	Cyanide	6.5			

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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EPA SAMPLE NO.

SLUDGE 3

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110527

Level (low/med): _____ Date Received: 02/15/90

% Solids: 8.5

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14300			P
7440-36-0	Antimony	102	U	N	F
7440-38-2	Arsenic	16.2	U	N*	F
7440-39-3	Barium	340	U		P
7440-41-7	Beryllium	8.5	U		P
7440-43-9	Cadmium	8.5	U		P
7440-70-2	Calcium	8480	U		P
7440-47-3	Chromium	269		E	P
7440-48-4	Cobalt	84.8	U		P
7440-50-8	Copper	114		E	P
7439-89-6	Iron	27600			P
7439-92-1	Lead	97.8			F
7439-95-4	Magnesium	74600			P
7439-96-5	Manganese	465		E	P
7439-97-6	Mercury	1.2	U		CV
7440-02-0	Nickel	677			P
7440-09-7	Potassium	8480	U		P
7782-49-2	Selenium	8.1	U	WN	F
7440-22-4	Silver	16.2	U		A
7440-23-5	Sodium	8480	U		P
7440-28-0	Thallium	16.2	U		F
7440-62-2	Vanadium	84.8	U		P
7440-66-6	Zinc	380		E	P
	Cyanide	15.5			

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE 4

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110528

Level (low/med): _____ Date Received: 02/15/90

% Solids: 21.3

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7040			P
7440-36-0	Antimony	54.1	U	N	F
7440-38-2	Arsenic	8.2	U	N*	F
7440-39-3	Barium	180	U		P
7440-41-7	Beryllium	4.5	U		P
7440-43-9	Cadmium	4.5	U		P
7440-70-2	Calcium	4510	U		P
7440-47-3	Chromium	159		E	P
7440-48-4	Cobalt	45.1	U		P
7440-50-8	Copper	85.6		E	P
7439-89-6	Iron	13400			P
7439-92-1	Lead	57.3			F
7439-95-4	Magnesium	39200			P
7439-96-5	Manganese	457		E	P
7439-97-6	Mercury	1.4			CV
7440-02-0	Nickel	309			P
7440-09-7	Potassium	4510	U		P
7782-49-2	Selenium	41	U	N	F
7440-22-4	Silver	8.2	U		A
7440-23-5	Sodium	4510	U		P
7440-28-0	Thallium	8.2	U		F
7440-62-2	Vanadium	45.1	U		P
7440-66-6	Zinc	201		E	P
	Cyanide	10.8			

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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EPA SAMPLE NO.

SDAA-31

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110577

Level (low/med): _____ Date Received: 02/15/90

% Solids: 87.1

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900			P
7440-36-0	Antimony	13.2	U	N	F
7440-38-2	Arsenic	2.2		N*	F
7440-39-3	Barium	53.7			P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	1.2			P
7440-70-2	Calcium	1730			P
7440-47-3	Chromium	11.6		E	P
7440-48-4	Cobalt	11.0	U		P
7440-50-8	Copper	13.9		E	P
7439-89-6	Iron	14900			P
7439-92-1	Lead	19.3			F
7439-95-4	Magnesium	3230			P
7439-96-5	Manganese	92.9		E	P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	23.6			P
7440-09-7	Potassium	1100	U		P
7782-49-2	Selenium	6.2	U	WN	F
7440-22-4	Silver	1.2	U		A
7440-23-5	Sodium	1100	U		P
7440-28-0	Thallium	1.2	U		F
7440-62-2	Vanadium	15.8			P
7440-66-6	Zinc	57.4		E	P
	Cyanide	0.69	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-[illegible]

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110578

Level (low/med): _____ Date Received: 02/15/90

% Solids: 63.0

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23500			P
7440-36-0	Antimony	15.6	U	N	F
7440-38-2	Arsenic	12.1		SN*	F
7440-39-3	Barium	70.5			P
7440-41-7	Beryllium	1.3	U		P
7440-43-9	Cadmium	3.5			P
7440-70-2	Calcium	2130			P
7440-47-3	Chromium	21.9		E	P
7440-48-4	Cobalt	16.0			P
7440-50-8	Copper	34.8		E	P
7439-89-6	Iron	41900			P
7439-92-1	Lead	34.3			F
7439-95-4	Magnesium	7070			P
7439-96-5	Manganese	270		E	P
7439-97-6	Mercury	0.16	U		CV
7440-02-0	Nickel	44.4			P
7440-09-7	Potassium	1300	U		P
7782-49-2	Selenium	8.1	U	WN	F
7440-22-4	Silver	1.6	U		A
7440-23-5	Sodium	1300	U		P
7440-28-0	Thallium	1.6	U		F
7440-62-2	Vanadium	25.3			P
7440-66-6	Zinc	110		E	P
	Cyanide	0.95	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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EPA SAMPLE NO.

SSAA-1

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110579

Level (low/med): _____ Date Received: 02/15/90

% Solids: 94.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15200			P
7440-36-0	Antimony	12.2	U	N	F
7440-38-2	Arsenic	5.5		SN*	F
7440-39-3	Barium	62.2			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0			P
7440-70-2	Calcium	1460			P
7440-47-3	Chromium	12.7		E	P
7440-48-4	Cobalt	9.2	B		P
7440-50-8	Copper	20.7		E	P
7439-89-6	Iron	25500			P
7439-92-1	Lead	17.3			F
7439-95-4	Magnesium	3920			P
7439-96-5	Manganese	903		E	P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	18.9			P
7440-09-7	Potassium	893	B		P
7782-49-2	Selenium	6.0	U	WN	F
7440-22-4	Silver	1.2	U		A
7440-23-5	Sodium	1010	U		P
7440-28-0	Thallium	1.2	U		F
7440-62-2	Vanadium	18.8			P
7440-66-6	Zinc	73.5		E	P
	Cyanide	0.61	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1S

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110579S

Level (low/med): _____ Date Received: 02/15/90

% Solids: 92.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony	6.9	U	N	F
7440-38-2	Arsenic	8.9		N*	F
7440-39-3	Barium	262			P
7440-41-7	Beryllium	5.8			P
7440-43-9	Cadmium	8.4			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	32.2		E	P
7440-48-4	Cobalt	63.2			P
7440-50-8	Copper	47.6		E	P
7439-89-6	Iron				NR
7439-92-1	Lead	26.4			F
7439-95-4	Magnesium				NR
7439-96-5	Manganese	1080		E	P
7439-97-6	Mercury	0.52			CV
7440-02-0	Nickel	76.5			P
7440-09-7	Potassium				NR
7782-49-2	Selenium	9.1	U	N	F
7440-22-4	Silver	8.9			A
7440-23-5	Sodium				NR
7440-28-0	Thallium	8.2			F
7440-62-2	Vanadium	67.8			P
7440-66-6	Zinc	120		E	P
	Cyanide	6.1			

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1D

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110579D

Level (low/med): _____ Date Received: 02/15/90

% Solids: 94.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15400			P
7440-36-0	Antimony	10.2	U	N	F
7440-38-2	Arsenic	3.6		SN*	F
7440-39-3	Barium	61.1			P
7440-41-7	Beryllium	0.85	U		P
7440-43-9	Cadmium	2.4			P
7440-70-2	Calcium	1490			P
7440-47-3	Chromium	13.7		E	P
7440-48-4	Cobalt	9.3			P
7440-50-8	Copper	22.5		E	P
7439-89-6	Iron	24600			P
7439-92-1	Lead	18.7			F
7439-95-4	Magnesium	3980			P
7439-96-5	Manganese	771		E	P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	24.3			P
7440-09-7	Potassium	941			P
7782-49-2	Selenium	6.4	U	WN	F
7440-22-4	Silver	1.3	U		A
7440-23-5	Sodium	850	U		P
7440-28-0	Thallium	1.3	U		F
7440-62-2	Vanadium	20.1			P
7440-66-6	Zinc	74.5		E	P
	Cyanide	0.63	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-2

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110580

Level (low/med): _____ Date Received: 02/15/90

% Solids: 84.9

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	17300			P
7440-36-0	Antimony	7.3	U	WN	F
7440-38-2	Arsenic	8.9		SN*	F
7440-39-3	Barium	37.9			P
7440-41-7	Beryllium	0.61	U		P
7440-43-9	Cadmium	3.4			P
7440-70-2	Calcium	978			P
7440-47-3	Chromium	14.4		E	P
7440-48-4	Cobalt	15.6			P
7440-50-8	Copper	21.2		E	P
7439-89-6	Iron	38300			P
7439-92-1	Lead	34.6			F
7439-95-4	Magnesium	6300			P
7439-96-5	Manganese	964		E	P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	24.9			P
7440-09-7	Potassium	610	U		P
7782-49-2	Selenium	11.1	U	N	F
7440-22-4	Silver	2.2	U		A
7440-23-5	Sodium	610	U		P
7440-28-0	Thallium	2.2	U		F
7440-62-2	Vanadium	19.1			P
7440-66-6	Zinc	74.0		E	P
	Cyanide	0.65	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-3

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110581

Level (low/med): _____ Date Received: 02/15/90

% Solids: 99.8

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16500			P
7440-36-0	Antimony	6.4	U	WN	F
7440-38-2	Arsenic	7.7		SN*	F
7440-39-3	Barium	21.2	U		P
7440-41-7	Beryllium	0.53	U		P
7440-43-9	Cadmium	3.6			P
7440-70-2	Calcium	689			P
7440-47-3	Chromium	14.3		E	P
7440-48-4	Cobalt	9.9			P
7440-50-8	Copper	33.7		E	P
7439-89-6	Iron	38400			P
7439-92-1	Lead	24.0			F
7439-95-4	Magnesium	5980			P
7439-96-5	Manganese	178		E	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	30.7			P
7440-09-7	Potassium	513	B		P
7782-49-2	Selenium	8.6	U	N	F
7440-22-4	Silver	1.7	U		A
7440-23-5	Sodium	530	U		P
7440-28-0	Thallium	1.7	U		F
7440-62-2	Vanadium	15.4			P
7440-66-6	Zinc	94.6		E	P
	Cyanide	0.59	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-4

Lab Name: Aquatec, Inc. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 110525

Matrix (soil/water): SOIL Lab Sample ID: 110582

Level (low/med): _____ Date Received: 02/15/90

% Solids: 92.6

Concentration Units (ug/L or mg/kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15200			P
7440-36-0	Antimony	9.1	U	N	F
7440-38-2	Arsenic	8.2		SN*	F
7440-39-3	Barium	48.5			P
7440-41-7	Beryllium	0.76	U		P
7440-43-9	Cadmium	2.8			P
7440-70-2	Calcium	895			P
7440-47-3	Chromium	16.1		E	P
7440-48-4	Cobalt	9.3			P
7440-50-8	Copper	23.1		E	P
7439-89-6	Iron	28300			P
7439-92-1	Lead	96.0			P
7439-95-4	Magnesium	5190			P
7439-96-5	Manganese	466		E	P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	28.5			P
7440-09-7	Potassium	755	U		P
7782-49-2	Selenium	7.3	U	WN	F
7440-22-4	Silver	1.5	U		A
7440-23-5	Sodium	755	U		P
7440-28-0	Thallium	1.5	U		F
7440-62-2	Vanadium	18.0			P
7440-66-6	Zinc	80.5		E	P
	Cyanide	0.64	U		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#1

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110525

Sample wt/vol: 1.1 (g/mL) G Lab File ID: C110525V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 88 Date Analyzed: 02/22/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	380	U
74-83-9	Bromomethane	380	U
75-01-4	Vinyl Chloride	380	U
75-00-3	Chloroethane	380	U
75-09-2	Methylene Chloride	380	U
67-64-1	Acetone	57	BJ
75-15-0	Carbon Disulfide	380	U
75-35-4	1,1-Dichloroethene	190	U
75-34-3	1,1-Dichloroethane	190	U
540-59-0	1,2-Dichloroethene (total)	190	U
67-66-3	Chloroform	190	U
107-06-2	1,2-Dichloroethane	190	U
78-93-3	2-Butanone	190	U
71-55-6	1,1,1-Trichloroethane	380	U
56-23-5	Carbon Tetrachloride	190	U
108-05-4	Vinyl Acetate	190	U
75-27-4	Bromodichloromethane	380	U
78-87-5	1,2-Dichloropropane	190	U
10061-01-5	cis-1,3-Dichloropropene	190	U
79-01-6	Trichloroethene	190	U
124-48-1	Dibromochloromethane	190	U
79-00-5	1,1,2-Trichloroethane	190	U
71-43-2	Benzene	190	U
10061-02-6	trans-1,3-Dichloropropene	190	U
75-25-2	Bromoform	190	U
108-10-1	4-Methyl-2-Pentanone	190	U
591-78-6	2-Hexanone	380	U
127-18-4	Tetrachloroethene	380	U
79-34-5	1,1,2,2-Tetrachloroethane	190	U
108-88-3	Toluene	190	U
108-90-7	Chlorobenzene	6100	
100-41-4	Ethylbenzene	190	U
100-42-5	Styrene	190	U
1330-20-7	Xylene (total)	190	U
		190	

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F000089

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110525

Sample wt/vol: 1.1 (g/mL) G Lab File ID: C110525V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 88 Date Analyzed: 02/22/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	3.70	280	BJ
2.	UNKNOWN HYDROCARBON	29.80	230	J
3. 91-17-8	DECAHYDRONAPHTHALENE	32.65	200	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#2

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110526

Sample wt/vol: 3.0 (g/mL) G Lab File ID: D110526I2V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 62 Date Analyzed: 02/20/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	44	U
74-83-9	Bromomethane	44	U
75-01-4	Vinyl Chloride	44	U
75-00-3	Chloroethane	44	U
75-09-2	Methylene Chloride	44	U
67-64-1	Acetone	18	BJ
75-15-0	Carbon Disulfide	7	BJ
75-35-4	1,1-Dichloroethene	22	U
75-34-3	1,1-Dichloroethane	22	U
540-59-0	1,2-Dichloroethene (total)	22	U
67-66-3	Chloroform	22	U
107-06-2	1,2-Dichloroethane	31	
78-93-3	2-Butanone	22	U
71-55-6	1,1,1-Trichloroethane	44	U
56-23-5	Carbon Tetrachloride	22	U
108-05-4	Vinyl Acetate	22	U
75-27-4	Bromodichloromethane	44	U
78-87-5	1,2-Dichloropropane	22	U
10061-01-5	cis-1,3-Dichloropropene	22	U
79-01-6	Trichloroethene	22	U
124-48-1	Dibromochloromethane	22	U
79-00-5	1,1,2-Trichloroethane	22	U
71-43-2	Benzene	22	U
10061-02-6	trans-1,3-Dichloropropene	22	U
75-25-2	Bromoform	22	U
108-10-1	4-Methyl-2-Pentanone	22	U
591-78-6	2-Hexanone	44	U
127-18-4	Tetrachloroethene	44	U
79-34-5	1,1,2,2-Tetrachloroethane	22	U
108-88-3	Toluene	22	U
108-90-7	Chlorobenzene	22	U
100-41-4	Ethylbenzene	22	U
100-42-5	Styrene	22	U
1330-20-7	Xylene (total)	22	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110526

Sample wt/vol: 3.0 (g/mL) G Lab File ID: D110526I2V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 62 Date Analyzed: 02/20/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	3.95	39	BJ
2.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#3

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110527

Sample wt/vol: 1.5 (g/mL) G Lab File ID: D110527V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 91 Date Analyzed: 02/20/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	370	U
74-83-9	Bromomethane	370	U
75-01-4	Vinyl Chloride	370	U
75-00-3	Chloroethane	370	U
75-09-2	Methylene Chloride	120	BJ
67-64-1	Acetone	370	U
75-15-0	Carbon Disulfide	190	U
75-35-4	1,1-Dichloroethene	190	U
75-34-3	1,1-Dichloroethane	190	U
540-59-0	1,2-Dichloroethene (total)	190	U
67-66-3	Chloroform	190	U
107-06-2	1,2-Dichloroethane	190	U
78-93-3	2-Butanone	370	U
71-55-6	1,1,1-Trichloroethane	190	U
56-23-5	Carbon Tetrachloride	190	U
108-05-4	Vinyl Acetate	370	U
75-27-4	Bromodichloromethane	190	U
78-87-5	1,2-Dichloropropane	190	U
10061-01-5	cis-1,3-Dichloropropene	190	U
79-01-6	Trichloroethene	190	U
124-48-1	Dibromochloromethane	190	U
79-00-5	1,1,2-Trichloroethane	190	U
71-43-2	Benzene	190	U
10061-02-6	trans-1,3-Dichloropropene	190	U
75-25-2	Bromoform	190	U
108-10-1	4-Methyl-2-Pentanone	370	U
591-78-6	2-Hexanone	370	U
127-18-4	Tetrachloroethene	190	U
79-34-5	1,1,2,2-Tetrachloroethane	190	U
108-88-3	Toluene	5000	
108-90-7	Chlorobenzene	190	U
100-41-4	Ethylbenzene	190	U
100-42-5	Styrene	190	U
1330-20-7	Xylene (total)	190	U

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110527

Sample wt/vol: 1.5 (g/mL) G Lab File ID: D110527V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 91 Date Analyzed: 02/20/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	4.05	600	BJ
2.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#4

Name:AQUATEC, INC. Contract:89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water)SOIL Lab Sample ID: 110528

Sample wt/vol: 3.1 (g/mL)G Lab File ID: D110528I2V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec.82 Date Analyzed: 02/21/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)UG/KG	Q
74-87-3	Chloromethane	90	U
74-83-9	Bromomethane	90	U
75-01-4	Vinyl Chloride	90	U
75-00-3	Chloroethane	90	U
75-09-2	Methylene Chloride	45	U
67-64-1	Acetone	90	U
75-15-0	Carbon Disulfide	45	U
75-35-4	1,1-Dichloroethene	45	U
75-34-3	1,1-Dichloroethane	45	U
540-59-0	1,2-Dichloroethene (total)	45	U
67-66-3	Chloroform	45	U
107-06-2	1,2-Dichloroethane	45	U
78-93-3	2-Butanone	90	U
71-55-6	1,1,1-Trichloroethane	45	U
56-23-5	Carbon Tetrachloride	45	U
108-05-4	Vinyl Acetate	90	U
75-27-4	Bromodichloromethane	45	U
78-87-5	1,2-Dichloropropane	45	U
10061-01-5	cis-1,3-Dichloropropene	45	U
79-01-6	Trichloroethene	45	U
124-48-1	Dibromochloromethane	45	U
79-00-5	1,1,2-Trichloroethane	45	U
71-43-2	Benzene	45	U
10061-02-6	trans-1,3-Dichloropropene	45	U
75-25-2	Bromoform	45	U
108-10-1	4-Methyl-2-Pentanone	90	U
591-78-6	2-Hexanone	90	U
127-18-4	Tetrachloroethene	45	U
79-34-5	1,1,2,2-Tetrachloroethane	45	U
108-88-3	Toluene	45	U
108-90-7	Chlorobenzene	45	U
100-41-4	Ethylbenzene	45	U
100-42-5	Styrene	45	U
1330-20-7	Xylene (total)	45	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110528

Sample wt/vol: 3.1 (g/mL) G Lab File ID: D110528I2V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 82 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	75-28-5	2-METHYLPROPANE	4.05	86	BJ
2.		UNKNOWN	29.00	78	J
3.					
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-11

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110577

Sample wt/vol: 3.3 (g/mL) G Lab File ID: D110577V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 52 Date Analyzed: 02/21/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	32	U
74-83-9	Bromomethane	32	U
75-01-4	Vinyl Chloride	32	U
75-00-3	Chloroethane	32	U
75-09-2	Methylene Chloride	32	U
67-64-1	Acetone	16	U
75-15-0	Carbon Disulfide	32	U
75-35-4	1,1-Dichloroethene	16	U
75-34-3	1,1-Dichloroethane	16	U
540-59-0	1,2-Dichloroethene (total)	16	U
67-66-3	Chloroform	16	U
107-06-2	1,2-Dichloroethane	16	U
78-93-3	2-Butanone	16	U
71-55-6	1,1,1-Trichloroethane	32	U
56-23-5	Carbon Tetrachloride	16	U
108-05-4	Vinyl Acetate	16	U
75-27-4	Bromodichloromethane	32	U
78-87-5	1,2-Dichloropropane	16	U
10061-01-5	cis-1,3-Dichloropropene	16	U
79-01-6	Trichloroethene	16	U
124-48-1	Dibromochloromethane	16	U
79-00-5	1,1,2-Trichloroethane	16	U
71-43-2	Benzene	16	U
10061-02-6	trans-1,3-Dichloropropene	16	U
75-25-2	Bromoform	16	U
108-10-1	4-Methyl-2-Pentanone	16	U
591-78-6	2-Hexanone	32	U
127-18-4	Tetrachloroethene	32	U
79-34-5	1,1,2,2-Tetrachloroethane	16	U
108-88-3	Toluene	16	U
108-90-7	Chlorobenzene	16	U
100-41-4	Ethylbenzene	16	U
100-42-5	Styrene	16	U
1330-20-7	Xylene (total)	16	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SDAA-11

Lab Name: AQUATEC, INC.. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110577

Sample wt/vol: 3.3 (g/mL) G Lab File ID: D110577V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 52 Date Analyzed: 02/21/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	75-28-5	2-METHYLPROPANE	4.05	29	BJ
2.					
3.					
4.					
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FORM I VOA-TIC

1/87 Rev.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-12

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110578

Sample wt/vol: 3.4 (g/mL) G Lab File ID: D110578V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 46 Date Analyzed: 02/21/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	27	U
74-83-9	Bromomethane	27	U
75-01-4	Vinyl Chloride	27	U
75-00-3	Chloroethane	27	U
75-09-2	Methylene Chloride	27	U
67-64-1	Acetone	14	U
75-15-0	Carbon Disulfide	27	U
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	14	U
107-06-2	1,2-Dichloroethane	7	J
78-93-3	2-Butanone	14	U
71-55-6	1,1,1-Trichloroethane	27	U
56-23-5	Carbon Tetrachloride	14	U
108-05-4	Vinyl Acetate	14	U
75-27-4	Bromodichloromethane	27	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	27	U
127-18-4	Tetrachloroethene	27	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	14	U
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

FORM I VOA

1/87 Rev.

F000029

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SDAA-42

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110578

Sample wt/vol: 3.4 (g/mL) G Lab File ID: D110578V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 46 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579

Sample wt/vol: 3.3 (g/mL) G Lab File ID: D110579V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 20 Date Analyzed: 02/21/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	19	U
74-83-9	Bromomethane	19	U
75-01-4	Vinyl Chloride	19	U
75-00-3	Chloroethane	19	U
75-09-2	Methylene Chloride	9	U
67-64-1	Acetone	19	U
75-15-0	Carbon Disulfide	9	U
75-35-4	1,1-Dichloroethene	9	U
75-34-3	1,1-Dichloroethane	9	U
540-59-0	1,2-Dichloroethene (total)	9	U
67-66-3	Chloroform	9	U
107-06-2	1,2-Dichloroethane	9	U
78-93-3	2-Butanone	19	U
71-55-6	1,1,1-Trichloroethane	9	U
56-23-5	Carbon Tetrachloride	9	U
108-05-4	Vinyl Acetate	19	U
75-27-4	Bromodichloromethane	9	U
78-87-5	1,2-Dichloropropane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
79-01-6	Trichloroethene	9	U
124-48-1	Dibromochloromethane	9	U
79-00-5	1,1,2-Trichloroethane	9	U
71-43-2	Benzene	9	U
10061-02-6	trans-1,3-Dichloropropene	9	U
75-25-2	Bromoform	9	U
108-10-1	4-Methyl-2-Pentanone	19	U
591-78-6	2-Hexanone	19	U
127-18-4	Tetrachloroethene	9	U
79-34-5	1,1,2,2-Tetrachloroethane	9	U
108-88-3	Toluene	9	U
108-90-7	Chlorobenzene	9	U
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
1330-20-7	Xylene (total)	9	U

FORM I VOA

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579

Sample wt/vol: 3.3 (g/mL) G Lab File ID: D110579V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 20 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	75-28-5	2-METHYLPROPANE	4.00	11	BJ
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FORM I VOA-TIC

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-2

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110580

mple wt/vol: 3.2 (g/mL) G Lab File ID: D110580V

vel: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 16 Date Analyzed: 02/21/90

lumn: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	19	U
74-83-9	Bromomethane	19	U
75-01-4	Vinyl Chloride	19	U
75-00-3	Chloroethane	19	U
75-09-2	Methylene Chloride	19	U
67-64-1	Acetone	9	U
75-15-0	Carbon Disulfide	19	U
75-35-4	1,1-Dichloroethene	9	U
75-34-3	1,1-Dichloroethane	9	U
540-59-0	1,2-Dichloroethene (total)	9	U
67-66-3	Chloroform	9	U
107-06-2	1,2-Dichloroethane	9	U
78-93-3	2-Butanone	9	U
71-55-6	1,1,1-Trichloroethane	19	U
56-23-5	Carbon Tetrachloride	9	U
108-05-4	Vinyl Acetate	9	U
75-27-4	Bromodichloromethane	19	U
78-87-5	1,2-Dichloropropane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
79-01-6	Trichloroethene	9	U
124-48-1	Dibromochloromethane	9	U
79-00-5	1,1,2-Trichloroethane	9	U
71-43-2	Benzene	9	U
10061-02-6	trans-1,3-Dichloropropene	9	U
75-25-2	Bromoform	9	U
108-10-1	4-Methyl-2-Pentanone	9	U
591-78-6	2-Hexanone	19	U
127-18-4	Tetrachloroethene	19	U
79-34-5	1,1,2,2-Tetrachloroethane	9	U
108-88-3	Toluene	9	U
108-90-7	Chlorobenzene	9	U
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
1330-20-7	Xylene (total)	9	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110580

Sample wt/vol: 3.2 (g/mL) G Lab File ID: D110580V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 16 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-3

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110581

Sample wt/vol: 3.5 (g/mL) G Lab File ID: D110581V

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 16 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	17	U
74-83-9	Bromomethane	17	U
75-01-4	Vinyl Chloride	17	U
75-00-3	Chloroethane	17	U
75-09-2	Methylene Chloride	17	U
67-64-1	Acetone	9	U
75-15-0	Carbon Disulfide	17	U
75-35-4	1,1-Dichloroethene	9	U
75-34-3	1,1-Dichloroethane	9	U
540-59-0	1,2-Dichloroethene (total)	9	U
67-66-3	Chloroform	9	U
107-06-2	1,2-Dichloroethane	9	U
78-93-3	2-Butanone	9	U
71-55-6	1,1,1-Trichloroethane	17	U
56-23-5	Carbon Tetrachloride	9	U
108-05-4	Vinyl Acetate	9	U
75-27-4	Bromodichloromethane	17	U
78-87-5	1,2-Dichloropropane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
79-01-6	Trichloroethene	9	U
124-48-1	Dibromochloromethane	9	U
79-00-5	1,1,2-Trichloroethane	9	U
71-43-2	Benzene	9	U
10061-02-6	trans-1,3-Dichloropropene	9	U
75-25-2	Bromoform	9	U
108-10-1	4-Methyl-2-Pentanone	9	U
591-78-6	2-Hexanone	17	U
127-18-4	Tetrachloroethene	17	U
79-34-5	1,1,2,2-Tetrachloroethane	9	U
108-88-3	Toluene	9	U
108-90-7	Chlorobenzene	9	U
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
1330-20-7	Xylene (total)	9	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110581

Sample wt/vol: 3.5 (g/mL) G Lab File ID: D110581V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 16 Date Analyzed: 02/21/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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FORM I VOA-TIC

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-4

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110582

mple wt/vol: 3.2 (g/mL) G Lab File ID: C110582V

vel: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 23 Date Analyzed: 02/21/90

lumn: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	4	BJ
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
108-05-4	Vinyl Acetate	20	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110582

Sample wt/vol: 3.2 (g/mL) G Lab File ID: C110582V

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 23 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	3.75	80	BJ
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FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKH1

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: CJQB003BV

mple wt/vol: 3.3 (g/mL) G Lab File ID: CJQB003BV

vel: (low/med) LOW Date Received: 00/00/00

Moisture: not dec. 0 Date Analyzed: 02/21/90

lumn: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	15	U
74-83-9	Bromomethane	15	U
75-01-4	Vinyl Chloride	15	U
75-00-3	Chloroethane	15	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	15	U
75-15-0	Carbon Disulfide	8	U
75-35-4	1,1-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
540-59-0	1,2-Dichloroethene (total)	8	U
67-66-3	Chloroform	8	U
107-06-2	1,2-Dichloroethane	8	U
78-93-3	2-Butanone	15	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
108-05-4	Vinyl Acetate	15	U
75-27-4	Bromodichloromethane	8	U
78-87-5	1,2-Dichloropropane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
79-01-6	Trichloroethene	8	U
124-48-1	Dibromochloromethane	8	U
79-00-5	1,1,2-Trichloroethane	8	U
71-43-2	Benzene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
75-25-2	Bromoform	8	U
108-10-1	4-Methyl-2-Pentanone	15	U
591-78-6	2-Hexanone	15	U
127-18-4	Tetrachloroethene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
108-88-3	Toluene	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
1330-20-7	Xylene (total)	8	U

FORM I VOA

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKH1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: CJQB003BV

Sample wt/vol: 3.3 (g/mL) G Lab File ID: CJQB003BV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	3.75	8	J
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1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKH42

Name:AQUATEC, INC. Contract:89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

ix: (soil/water) SOIL Lab Sample ID: CJQB002CV

mple wt/vol: 3.1 (g/mL) G Lab File ID: CJQB002CV

l: (low/med) LOW Date Received: 00/00/00

Moisture: not dec. 0 Date Analyzed: 02/21/90

lumn: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	16	U
74-83-9	Bromomethane	16	U
75-01-4	Vinyl Chloride	16	U
75-00-3	Chloroethane	16	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	9	J
75-15-0	Carbon Disulfide	8	U
75-35-4	1,1-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
540-59-0	1,2-Dichloroethene (total)	8	U
67-66-3	Chloroform	8	U
107-06-2	1,2-Dichloroethane	8	U
78-93-3	2-Butanone	16	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
108-05-4	Vinyl Acetate	16	U
75-27-4	Bromodichloromethane	8	U
78-87-5	1,2-Dichloropropane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
79-01-6	Trichloroethene	8	U
124-48-1	Dibromochloromethane	8	U
79-00-5	1,1,2-Trichloroethane	8	U
71-43-2	Benzene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
75-25-2	Bromoform	8	U
108-10-1	4-Methyl-2-Pentanone	16	U
591-78-6	2-Hexanone	16	U
127-18-4	Tetrachloroethene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
108-88-3	Toluene	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
1330-20-7	Xylene (total)	8	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKH42

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: CJQB002CV

Sample wt/vol: 3.1 (g/mL) G Lab File ID: CJQB002CV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	3.70	48	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKG9

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: DKHB002PV

Sample wt/vol: 3.2 (g/mL) G Lab File ID: DKHB002PV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 Date Analyzed: 02/20/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	16	U
74-83-9	Bromomethane	16	U
75-01-4	Vinyl Chloride	16	U
75-00-3	Chloroethane	16	U
75-09-2	Methylene Chloride	16	U
67-64-1	Acetone	1	J
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
540-59-0	1,2-Dichloroethene (total)	8	U
67-66-3	Chloroform	8	U
107-06-2	1,2-Dichloroethane	8	U
78-93-3	2-Butanone	8	U
71-55-6	1,1,1-Trichloroethane	16	U
56-23-5	Carbon Tetrachloride	8	U
108-05-4	Vinyl Acetate	8	U
75-27-4	Bromodichloromethane	16	U
78-87-5	1,2-Dichloropropane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
79-01-6	Trichloroethene	8	U
124-48-1	Dibromochloromethane	8	U
79-00-5	1,1,2-Trichloroethane	8	U
71-43-2	Benzene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
75-25-2	Bromoform	8	U
108-10-1	4-Methyl-2-Pentanone	8	U
591-78-6	2-Hexanone	16	U
127-18-4	Tetrachloroethene	16	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
108-88-3	Toluene	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
1330-20-7	Xylene (total)	8	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKG9

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: DKHB002PV

Sample wt/vol: 3.2 (g/mL) G Lab File ID: DKHB002PV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 Date Analyzed: 02/20/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	75-28-5	2-METHYLPROPANE	3.90	10	J
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKH1

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: DKHB002QV

Sample wt/vol: 3.3 (g/mL) G Lab File ID: DKHB002QV

Level: (low/med) LOW Date Received: 00/00/00

Moisture: not dec. 0 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	15	U
74-83-9	Bromomethane	15	U
75-01-4	Vinyl Chloride	15	U
75-00-3	Chloroethane	15	U
75-09-2	Methylene Chloride	15	U
67-64-1	Acetone	8	U
75-15-0	Carbon Disulfide	15	U
75-35-4	1,1-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
540-59-0	1,2-Dichloroethene (total)	8	U
67-66-3	Chloroform	8	U
107-06-2	1,2-Dichloroethane	8	U
78-93-3	2-Butanone	8	U
71-55-6	1,1,1-Trichloroethane	15	U
56-23-5	Carbon Tetrachloride	8	U
108-05-4	Vinyl Acetate	8	U
75-27-4	Bromodichloromethane	15	U
78-87-5	1,2-Dichloropropane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
79-01-6	Trichloroethene	8	U
124-48-1	Dibromochloromethane	8	U
79-00-5	1,1,2-Trichloroethane	8	U
71-43-2	Benzene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
75-25-2	Bromoform	8	U
108-10-1	4-Methyl-2-Pentanone	8	U
591-78-6	2-Hexanone	15	U
127-18-4	Tetrachloroethene	15	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
108-88-3	Toluene	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
1330-20-7	Xylene (total)	8	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKH1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: DKHB002QV

Sample wt/vol: 3.3 (g/mL) G Lab File ID: DKHB002QV

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-28-5	2-METHYLPROPANE	4.05	15	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MS

Name:AQUATEC, INC. Contract:89150

ab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

rix: (soil/water)SOIL Lab Sample ID: 110579MS

ample wt/vol: 3.2 (g/mL)G Lab File ID: D110579MSV

evel: (low/med) LOW Date Received: 02/15/90

oisture: not dec.20 Date Analyzed: 02/21/90

olumn: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	20	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	20	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane		
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	20	U
56-23-5	Carbon Tetrachloride	10	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	20	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane		
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene		
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	20	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene		
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U
		10	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MSD

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579MD

Sample wt/vol: 3.3 (g/mL) G Lab File ID: D110579MDV

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 20 Date Analyzed: 02/21/90

Column: (pack/cap) PACK - Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	19	U
74-83-9	Bromomethane	19	U
75-01-4	Vinyl Chloride	19	U
75-00-3	Chloroethane	19	U
75-09-2	Methylene Chloride	9	U
67-64-1	Acetone	19	U
75-15-0	Carbon Disulfide	9	U
75-35-4	1,1-Dichloroethene		
75-34-3	1,1-Dichloroethane	9	U
540-59-0	1,2-Dichloroethene (total)	9	U
67-66-3	Chloroform	9	U
107-06-2	1,2-Dichloroethane	9	U
78-93-3	2-Butanone	19	U
71-55-6	1,1,1-Trichloroethane	9	U
56-23-5	Carbon Tetrachloride	9	U
108-05-4	Vinyl Acetate	19	U
75-27-4	Bromodichloromethane	9	U
78-87-5	1,2-Dichloropropane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
79-01-6	Trichloroethene		
124-48-1	Dibromochloromethane	9	U
79-00-5	1,1,2-Trichloroethane	9	U
71-43-2	Benzene		
10061-02-6	trans-1,3-Dichloropropene	9	U
75-25-2	Bromoform	9	U
108-10-1	4-Methyl-2-Pentanone	19	U
591-78-6	2-Hexanone	19	U
127-18-4	Tetrachloroethene	9	U
79-34-5	1,1,2,2-Tetrachloroethane	9	U
108-88-3	Toluene		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
1330-20-7	Xylene (total)	9	U

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#1

Name: AQUATEC, INC. Contract: 89150

ab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

atrix: (soil/water) SOIL Lab Sample ID: 110525

ample wt/vol: 30.1 (g/mL) G Lab File ID: B110525DS

evel: (low/med) LOW Date Received: 02/15/90

oisture: not dec. 89 dec. _____ Date Extracted: 02/22/90

xtraction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

Cleanup: (Y/N) Y pH: 6.8 Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	30000	U
111-44-4	bis(2-Chloroethyl)ether	30000	U
95-57-8	2-Chlorophenol	30000	U
541-73-1	1,3-Dichlorobenzene	30000	U
106-46-7	1,4-Dichlorobenzene	30000	U
100-51-6	Benzyl alcohol	30000	U
95-50-1	1,2-Dichlorobenzene	30000	U
95-48-7	2-Methylphenol	30000	U
108-60-1	bis(2-Chloroisopropyl)ether	30000	U
106-44-5	4-Methylphenol	30000	U
621-64-7	N-Nitroso-di-n-propylamine	30000	U
67-72-1	Hexachloroethane	30000	U
98-95-3	Nitrobenzene	30000	U
78-59-1	Isophorone	30000	U
88-75-5	2-Nitrophenol	30000	U
105-67-9	2,4-Dimethylphenol	30000	U
65-85-0	Benzoic acid	30000	U
111-91-1	bis(2-Chloroethoxy)methane	140000	U
120-83-2	2,4-Dichlorophenol	30000	U
120-82-1	1,2,4-Trichlorobenzene	30000	U
91-20-3	Naphthalene	30000	U
106-47-8	4-Chloroaniline	20000	J
87-68-3	Hexachlorobutadiene	30000	U
59-50-7	4-Chloro-3-methylphenol	30000	U
91-57-6	2-Methylnaphthalene	30000	U
77-47-4	Hexachlorocyclopentadiene	140000	
88-06-2	2,4,6-Trichlorophenol	30000	U
95-95-4	2,4,5-Trichlorophenol	30000	U
91-58-7	2-Chloronaphthalene	140000	U
88-74-4	2-Nitroaniline	30000	U
131-11-3	Dimethylphthalate	140000	U
208-96-8	Acenaphthylene	30000	U
606-20-2	2,6-Dinitrotoluene	30000	U
		30000	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110525

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110525DS

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 89 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.8 Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	140000	U
83-32-9	Acenaphthene	30000	U
51-28-5	2,4-Dinitrophenol	140000	U
100-02-7	4-Nitrophenol	140000	U
132-64-9	Dibenzofuran	30000	U
121-14-2	2,4-Dinitrotoluene	30000	U
84-66-2	Diethylphthalate	30000	U
7005-72-3	4-Chlorophenyl-phenylether	30000	U
86-73-7	Fluorene	30000	U
100-01-6	4-Nitroaniline	140000	U
534-52-1	4,6-Dinitro-2-methylphenol	140000	U
86-30-6	N-Nitrosodiphenylamine (1)	30000	U
101-55-3	4-Bromophenyl-phenylether	30000	U
118-74-1	Hexachlorobenzene	30000	U
87-86-5	Pentachlorophenol	140000	U
85-01-8	Phenanthrene	30000	U
120-12-7	Anthracene	30000	U
84-74-2	Di-n-butylphthalate	30000	U
206-44-0	Fluoranthene	30000	U
129-00-0	Pyrene	30000	U
85-68-7	Butylbenzylphthalate	30000	U
91-94-1	3,3'-Dichlorobenzidine	60000	U
56-55-3	Benzo(a)anthracene	30000	U
218-01-9	Chrysene	30000	U
117-81-7	bis(2-Ethylhexyl)phthalate	8700	J
117-84-0	Di-n-octylphthalate	30000	U
205-99-2	Benzo(b)fluoranthene	30000	U
207-08-9	Benzo(k)fluoranthene	30000	U
50-32-8	Benzo(a)pyrene	30000	U
193-39-5	Indeno(1,2,3-cd)pyrene	30000	U
53-70-3	Dibenz(a,h)anthracene	30000	U
191-24-2	Benzo(g,h,i)perylene	30000	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#1

Name:AQUATEC, INC. Contract:89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water)SOIL Lab Sample ID: 110525

Sample wt/vol: 30.1 (g/mL)G Lab File ID: B110525DS

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec.89 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N)Y pH: 6.8 Dilution Factor: 5.0

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg)UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALIPHATIC HYDROCARBO	14.80	60000	J
2.	UNKNOWN ALIPHATIC HYDROCARBO	17.08	58000	J
3. 90-12-0	1-METHYLNAPHTHALENE	19.47	85000	J
4.	UNKNOWN DIMETHYLNAPHTHALENE	21.47	70000	J
5. 544-76-3	HEXADECANE	24.20	67000	J
6. 629-78-7	HEPTADECANE	25.70	82000	J
7. 593-45-3	OCTADECANE	27.13	63000	J
8.	UNKNOWN ALIPHATIC HYDROCARBO	32.20	52000	J
9.	UNKNOWN	33.23	160000	J
10.	UNKNOWN ALIPHATIC HYDROCARBO	34.43	64000	J
11.	UNKNOWN	35.42	71000	J
12.	UNKNOWN ALIPHATIC HYDROCARBO	36.48	53000	J
13.	UNKNOWN	37.45	79000	J
14.	UNKNOWN ALIPHATIC HYDROCARBO	38.38	57000	J
15.	UNKNOWN ALIPHATIC HYDROCARBO	39.55	73000	J
16.	UNKNOWN ALIPHATIC HYDROCARBO	41.25	84000	J
17.	UNKNOWN POLYCYCLIC HYDROCARB	41.43	84000	J
18.	UNKNOWN POLYCYCLIC HYDROCARB	42.27	87000	J
19.	UNKNOWN ALIPHATIC HYDROCARBO	43.25	53000	J
20.	UNKNOWN	44.07	130000	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110526

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110526DS

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 78 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 2.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	7500	U
111-44-4	bis(2-Chloroethyl)ether	7500	U
95-57-8	2-Chlorophenol	7500	U
541-73-1	1,3-Dichlorobenzene	7500	U
106-46-7	1,4-Dichlorobenzene	7500	U
100-51-6	Benzyl alcohol	7500	U
95-50-1	1,2-Dichlorobenzene	7500	U
95-48-7	2-Methylphenol	7500	U
108-60-1	bis(2-Chloroisopropyl)ether	7500	U
106-44-5	4-Methylphenol	7500	U
621-64-7	N-Nitroso-di-n-propylamine	7500	U
67-72-1	Hexachloroethane	7500	U
98-95-3	Nitrobenzene	7500	U
78-59-1	Isophorone	7500	U
88-75-5	2-Nitrophenol	7500	U
105-67-9	2,4-Dimethylphenol	7500	U
65-85-0	Benzoic acid	36000	U
111-91-1	bis(2-Chloroethoxy)methane	7500	U
120-83-2	2,4-Dichlorophenol	7500	U
120-82-1	1,2,4-Trichlorobenzene	7500	U
91-20-3	Naphthalene	3900	J
106-47-8	4-Chloroaniline	7500	U
87-68-3	Hexachlorobutadiene	7500	U
59-50-7	4-Chloro-3-methylphenol	7500	U
91-57-6	2-Methylnaphthalene	27000	
77-47-4	Hexachlorocyclopentadiene	7500	U
88-06-2	2,4,6-Trichlorophenol	7500	U
95-95-4	2,4,5-Trichlorophenol	36000	U
91-58-7	2-Chloronaphthalene	7500	U
88-74-4	2-Nitroaniline	36000	U
131-11-3	Dimethylphthalate	7500	U
208-96-8	Acenaphthylene	7500	U
606-20-2	2,6-Dinitrotoluene	7500	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#2

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110526

mple wt/vol: 30.0 (g/mL) G Lab File ID: B110526DS

vel: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 78 dec. _____ Date Extracted: 02/22/90

traction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 2.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	36000	U
83-32-9	Acenaphthene	7500	U
51-28-5	2,4-Dinitrophenol	36000	U
100-02-7	4-Nitrophenol	36000	U
132-64-9	Dibenzofuran	7500	U
121-14-2	2,4-Dinitrotoluene	7500	U
84-66-2	Diethylphthalate	7500	U
7005-72-3	4-Chlorophenyl-phenylether	7500	U
86-73-7	Fluorene	7500	U
100-01-6	4-Nitroaniline	36000	U
534-52-1	4,6-Dinitro-2-methylphenol	36000	U
86-30-6	N-Nitrosodiphenylamine (1)	7500	U
101-55-3	4-Bromophenyl-phenylether	7500	U
118-74-1	Hexachlorobenzene	7500	U
87-86-5	Pentachlorophenol	36000	U
85-01-8	Phenanthrene	7500	U
120-12-7	Anthracene	7500	U
84-74-2	Di-n-butylphthalate	7500	U
206-44-0	Fluoranthene	7500	U
129-00-0	Pyrene	7500	U
85-68-7	Butylbenzylphthalate	7500	U
91-94-1	3,3'-Dichlorobenzidine	15000	U
56-55-3	Benzo(a)anthracene	7500	U
218-01-9	Chrysene	7500	U
117-81-7	bis(2-Ethylhexyl)phthalate	3400	J
117-84-0	Di-n-octylphthalate	7500	U
205-99-2	Benzo(b)fluoranthene	7500	U
207-08-9	Benzo(k)fluoranthene	7500	U
50-32-8	Benzo(a)pyrene	7500	U
193-39-5	Indeno(1,2,3-cd)pyrene	7500	U
53-70-3	Dibenz(a,h)anthracene	7500	U
191-24-2	Benzo(g,h,i)perylene	7500	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110526

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110526DS

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 78 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 2.5

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	90-12-0	1-METHYLNAPHTHALENE	19.47	18000	J
2.	544-76-3	HEXADECANE	24.20	29000	J
3.	629-78-7	HEPTADECANE	25.72	32000	J
4.	593-45-3	OCTADECANE	27.15	25000	J
5.		UNKNOWN ALIPHATIC HYDROCARBO	27.28	24000	J
6.		UNKNOWN ALIPHATIC HYDROCARBO	28.50	19000	J
7.		UNKNOWN DIMETHOXY C-10 AROMA	31.48	160000	J
8.		UNKNOWN DIETHYLBIPHENYL	31.48	150000	J
9.		UNKNOWN ALIPHATIC HYDROCARBO	32.22	18000	J
10.		UNKNOWN C-4 ALKYLPHENANTHREN	32.90	18000	J
11.		UNKNOWN ALIPHATIC HYDROCARBO	33.25	51000	J
12.		UNKNOWN ALIPHATIC HYDROCARBO	34.45	22000	J
13.		UNKNOWN	35.45	17000	J
14.		UNKNOWN	36.53	19000	J
15.		UNKNOWN	37.47	33000	J
16.		UNKNOWN POLYCYCLIC HYDROCARB	41.45	39000	J
17.		UNKNOWN POLYCYCLIC HYDROCARB	42.32	41000	J
18.		UNKNOWN	44.12	56000	J
19.		UNKNOWN	44.28	18000	J
20.		UNKNOWN	44.87	27000	J
21.					
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FORM I SV-TIC

1/87 Rev.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#3

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110527

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110527S

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 92 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	8200	U
111-44-4	bis(2-Chloroethyl)ether	8200	U
95-57-8	2-Chlorophenol	8200	U
541-73-1	1,3-Dichlorobenzene	8200	U
106-46-7	1,4-Dichlorobenzene	8200	U
100-51-6	Benzyl alcohol	8200	U
95-50-1	1,2-Dichlorobenzene	8200	U
95-48-7	2-Methylphenol	8200	U
108-60-1	bis(2-Chloroisopropyl)ether	8200	U
106-44-5	4-Methylphenol	8200	U
621-64-7	N-Nitroso-di-n-propylamine	8200	U
67-72-1	Hexachloroethane	8200	U
98-95-3	Nitrobenzene	8200	U
78-59-1	Isophorone	8200	U
88-75-5	2-Nitrophenol	8200	U
105-67-9	2,4-Dimethylphenol	8200	U
65-85-0	Benzoic acid	8200	U
111-91-1	bis(2-Chloroethoxy)methane	40000	U
120-83-2	2,4-Dichlorophenol	8200	U
120-82-1	1,2,4-Trichlorobenzene	8200	U
91-20-3	Naphthalene	8200	U
106-47-8	4-Chloroaniline	2000	J
87-68-3	Hexachlorobutadiene	8200	U
59-50-7	4-Chloro-3-methylphenol	8200	U
91-57-6	2-Methylnaphthalene	8200	U
77-47-4	Hexachlorocyclopentadiene	13000	
88-06-2	2,4,6-Trichlorophenol	8200	U
95-95-4	2,4,5-Trichlorophenol	8200	U
91-58-7	2-Chloronaphthalene	40000	U
88-74-4	2-Nitroaniline	8200	U
131-11-3	Dimethylphthalate	40000	U
208-96-8	Acenaphthylene	8200	U
606-20-2	2,6-Dinitrotoluene	8200	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110527

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110527S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 92 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)- SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	40000	U
83-32-9	Acenaphthene	8200	U
51-28-5	2,4-Dinitrophenol	40000	U
100-02-7	4-Nitrophenol	40000	U
132-64-9	Dibenzofuran	8200	U
121-14-2	2,4-Dinitrotoluene	8200	U
84-66-2	Diethylphthalate	8200	U
7005-72-3	4-Chlorophenyl-phenylether	8200	U
86-73-7	Fluorene	8200	U
100-01-6	4-Nitroaniline	40000	U
534-52-1	4,6-Dinitro-2-methylphenol	40000	U
86-30-6	N-Nitrosodiphenylamine (1)	8200	U
101-55-3	4-Bromophenyl-phenylether	8200	U
118-74-1	Hexachlorobenzene	8200	U
87-86-5	Pentachlorophenol	40000	U
85-01-8	Phenanthrene	8200	U
120-12-7	Anthracene	8200	U
84-74-2	Di-n-butylphthalate	8200	U
206-44-0	Fluoranthene	8200	U
129-00-0	Pyrene	8200	U
85-68-7	Butylbenzylphthalate	8200	U
91-94-1	3,3'-Dichlorobenzidine	16000	U
56-55-3	Benzo(a)anthracene	8200	U
218-01-9	Chrysene	8200	U
117-81-7	bis(2-Ethylhexyl)phthalate	4100	J
117-84-0	Di-n-octylphthalate	8200	U
205-99-2	Benzo(b)fluoranthene	8200	U
207-08-9	Benzo(k)fluoranthene	8200	U
50-32-8	Benzo(a)pyrene	8200	U
193-39-5	Indeno(1,2,3-cd)pyrene	8200	U
53-70-3	Dibenz(a,h)anthracene	8200	U
191-24-2	Benzo(g,h,i)perylene	8200	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#3

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110527

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110527S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 92 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

Number TICs found: 20

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALIPHATIC HYDROCARBO	22.62	33000	J
2. 544-76-3	HEXADECANE	24.20	46000	J
3. 629-78-7	HEPTADECANE	25.72	42000	J
4. 593-45-3	OCTADECANE	27.13	38000	J
5.	UNKNOWN ALIPHATIC HYDROCARBO	32.22	37000	J
6.	UNKNOWN	33.25	40000	J
7.	UNKNOWN ALIPHATIC HYDROCARBO	34.45	53000	J
8.	UNKNOWN ALIPHATIC HYDROCARBO	35.50	69000	J
9.	UNKNOWN ALIPHATIC HYDROCARBO	36.47	52000	J
10.	UNKNOWN ALIPHATIC HYDROCARBO	37.45	81000	J
11.	UNKNOWN ALIPHATIC HYDROCARBO	38.37	51000	J
12.	UNKNOWN	38.73	44000	J
13.	UNKNOWN ALIPHATIC HYDROCARBO	39.28	120000	J
14.	UNKNOWN ALIPHATIC HYDROCARBO	40.15	38000	J
15.	UNKNOWN	40.23	35000	J
16.	UNKNOWN ALIPHATIC HYDROCARBO	41.00	54000	J
17.	UNKNOWN ALIPHATIC HYDROCARBO	41.25	35000	J
18.	UNKNOWN POLYCYCLIC HYDROCARB	41.43	62000	J
19.	UNKNOWN POLYCYCLIC HYDROCARB	42.28	73000	J
20.	UNKNOWN	44.12	100000	J
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110528

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110528D2S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 79 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 2.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	7800	U
111-44-4	bis(2-Chloroethyl)ether	7800	U
95-57-8	2-Chlorophenol	7800	U
541-73-1	1,3-Dichlorobenzene	7800	U
106-46-7	1,4-Dichlorobenzene	7800	U
100-51-6	Benzyl alcohol	7800	U
95-50-1	1,2-Dichlorobenzene	7800	U
95-48-7	2-Methylphenol	7800	U
108-60-1	bis(2-Chloroisopropyl)ether	7800	U
106-44-5	4-Methylphenol	7800	U
621-64-7	N-Nitroso-di-n-propylamine	7800	U
67-72-1	Hexachloroethane	7800	U
98-95-3	Nitrobenzene	7800	U
78-59-1	Isophorone	7800	U
88-75-5	2-Nitrophenol	7800	U
105-67-9	2,4-Dimethylphenol	7800	U
65-85-0	Benzoic acid	38000	U
111-91-1	bis(2-Chloroethoxy)methane	7800	U
120-83-2	2,4-Dichlorophenol	7800	U
120-82-1	1,2,4-Trichlorobenzene	7800	U
91-20-3	Naphthalene	1400	J
106-47-8	4-Chloroaniline	7800	U
87-68-3	Hexachlorobutadiene	7800	U
59-50-7	4-Chloro-3-methylphenol	7800	U
91-57-6	2-Methylnaphthalene	49000	
77-47-4	Hexachlorocyclopentadiene	7800	U
88-06-2	2,4,6-Trichlorophenol	7800	U
95-95-4	2,4,5-Trichlorophenol	38000	U
91-58-7	2-Chloronaphthalene	7800	U
88-74-4	2-Nitroaniline	38000	U
131-11-3	Dimethylphthalate	7800	U
208-96-8	Acenaphthylene	7800	U
606-20-2	2,6-Dinitrotoluene	7800	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#4

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110528

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110528D2S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 79 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 2.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	38000	U
83-32-9	Acenaphthene	7800	U
51-28-5	2,4-Dinitrophenol	38000	U
100-02-7	4-Nitrophenol	38000	U
132-64-9	Dibenzofuran	7800	U
121-14-2	2,4-Dinitrotoluene	7800	U
84-66-2	Diethylphthalate	7800	U
7005-72-3	4-Chlorophenyl-phenylether	7800	U
86-73-7	Fluorene	7800	U
100-01-6	4-Nitroaniline	38000	U
534-52-1	4,6-Dinitro-2-methylphenol	38000	U
86-30-6	N-Nitrosodiphenylamine (1)	7800	U
101-55-3	4-Bromophenyl-phenylether	7800	U
118-74-1	Hexachlorobenzene	7800	U
87-86-5	Pentachlorophenol	38000	U
85-01-8	Phenanthrene	7800	U
120-12-7	Anthracene	7800	U
84-74-2	Di-n-butylphthalate	7800	U
206-44-0	Fluoranthene	7800	U
129-00-0	Pyrene	7800	U
85-68-7	Butylbenzylphthalate	7800	U
91-94-1	3,3'-Dichlorobenzidine	16000	U
56-55-3	Benzo(a)anthracene	7800	U
218-01-9	Chrysene	7800	U
117-81-7	bis(2-Ethylhexyl)phthalate	7800	U
117-84-0	Di-n-octylphthalate	7800	U
205-99-2	Benzo(b)fluoranthene	7800	U
207-08-9	Benzo(k)fluoranthene	7800	U
50-32-8	Benzo(a)pyrene	7800	U
193-39-5	Indeno(1,2,3-cd)pyrene	7800	U
53-70-3	Dibenz(a,h)anthracene	7800	U
191-24-2	Benzo(g,h,i)perylene	7800	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SLUDGE#4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110528

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110528D2S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 79 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/05/90

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 2.5

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN ALIPHATIC HYDROCARBO	17.15	37000	J
2.		UNKNOWN DIMETHYLNAPHTHALENE	21.53	41000	J
3.	544-76-3	HEXADECANE	24.27	44000	J
4.	629-78-7	HEPTADECANE	25.78	43000	J
5.	593-45-3	OCTADECANE	27.20	40000	J
6.		UNKNOWN DIMETHOXY C-10 AROMA	31.50	38000	J
7.		UNKNOWN DIETHYLBIPHENYL	31.50	38000	J
8.		UNKNOWN ALIPHATIC HYDROCARBO	33.32	69000	J
9.		UNKNOWN ALIPHATIC HYDROCARBO	34.50	45000	J
10.		UNKNOWN ALIPHATIC HYDROCARBO	35.55	50000	J
11.		UNKNOWN ALIPHATIC HYDROCARBO	36.55	50000	J
12.		UNKNOWN ALIPHATIC HYDROCARBO	37.52	59000	J
13.		UNKNOWN ALIPHATIC HYDROCARBO	38.45	48000	J
14.		UNKNOWN ALIPHATIC HYDROCARBO	39.35	44000	J
15.		UNKNOWN ALIPHATIC HYDROCARBO	39.63	43000	J
16.		UNKNOWN ALIPHATIC HYDROCARBO	40.23	38000	J
17.		UNKNOWN ALIPHATIC HYDROCARBO	41.33	56000	J
18.		UNKNOWN POLYCYCLIC HYDROCARB	41.50	49000	J
19.		UNKNOWN POLYCYCLIC HYDROCARB	42.37	60000	J
20.		UNKNOWN	44.18	55000	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-11

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110577

Sample wt/vol: 31.0 (g/mL) G Lab File ID: B110577S

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 13 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/27/90

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	730	U
111-44-4	bis(2-Chloroethyl)ether	730	U
95-57-8	2-Chlorophenol	730	U
541-73-1	1,3-Dichlorobenzene	730	U
106-46-7	1,4-Dichlorobenzene	730	U
100-51-6	Benzyl alcohol	730	U
95-50-1	1,2-Dichlorobenzene	730	U
95-48-7	2-Methylphenol	730	U
108-60-1	bis(2-Chloroisopropyl)ether	730	U
106-44-5	4-Methylphenol	730	U
621-64-7	N-Nitroso-di-n-propylamine	730	U
67-72-1	Hexachloroethane	730	U
98-95-3	Nitrobenzene	730	U
78-59-1	Isophorone	730	U
88-75-5	2-Nitrophenol	730	U
105-67-9	2,4-Dimethylphenol	730	U
65-85-0	Benzoic acid	730	U
111-91-1	bis(2-Chloroethoxy)methane	3600	U
120-83-2	2,4-Dichlorophenol	730	U
120-82-1	1,2,4-Trichlorobenzene	730	U
91-20-3	Naphthalene	730	U
106-47-8	4-Chloroaniline	730	U
87-68-3	Hexachlorobutadiene	730	U
59-50-7	4-Chloro-3-methylphenol	730	U
91-57-6	2-Methylnaphthalene	730	U
77-47-4	Hexachlorocyclopentadiene	730	U
88-06-2	2,4,6-Trichlorophenol	730	U
95-95-4	2,4,5-Trichlorophenol	730	U
91-58-7	2-Chloronaphthalene	3600	U
88-74-4	2-Nitroaniline	730	U
131-11-3	Dimethylphthalate	3600	U
208-96-8	Acenaphthylene	730	U
606-20-2	2,6-Dinitrotoluene	730	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-81

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110577

Sample wt/vol: 31.0 (g/mL) G Lab File ID: B110577S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 13 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/27/90

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3600	U
83-32-9	Acenaphthene	730	U
51-28-5	2,4-Dinitrophenol	3600	U
100-02-7	4-Nitrophenol	3600	U
132-64-9	Dibenzofuran	730	U
121-14-2	2,4-Dinitrotoluene	730	U
84-66-2	Diethylphthalate	730	U
7005-72-3	4-Chlorophenyl-phenylether	730	U
86-73-7	Fluorene	730	U
100-01-6	4-Nitroaniline	3600	U
534-52-1	4,6-Dinitro-2-methylphenol	3600	U
86-30-6	N-Nitrosodiphenylamine (1)	730	U
101-55-3	4-Bromophenyl-phenylether	730	U
118-74-1	Hexachlorobenzene	730	U
87-86-5	Pentachlorophenol	3600	U
85-01-8	Phenanthrene	730	U
120-12-7	Anthracene	730	U
84-74-2	Di-n-butylphthalate	730	U
206-44-0	Fluoranthene	730	U
129-00-0	Pyrene	730	U
85-68-7	Butylbenzylphthalate	730	U
91-94-1	3,3'-Dichlorobenzidine	1500	U
56-55-3	Benzo(a)anthracene	730	U
218-01-9	Chrysene	730	U
117-81-7	bis(2-Ethylhexyl)phthalate	730	U
117-84-0	Di-n-octylphthalate	730	U
205-99-2	Benzo(b)fluoranthene	730	U
207-08-9	Benzo(k)fluoranthene	730	U
50-32-8	Benzo(a)pyrene	730	U
193-39-5	Indeno(1,2,3-cd)pyrene	730	U
53-70-3	Dibenz(a,h)anthracene	730	U
191-24-2	Benzo(g,h,i)perylene	730	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SDAA-91

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110577

Sample wt/vol: 31.0 (g/mL) G Lab File ID: B110577S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 13 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/27/90

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

Number TICs found: 16

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.00	440	JB
2.	UNKNOWN	4.83	1700	JB
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.85	5700	JBA
4.	UNKNOWN	8.90	900	JB
5. 100-52-7	BENZALDEHYDE	10.63	2000	JB
6.	UNKNOWN	11.60	490	JB
7. 57-10-3	HEXADECANOIC ACID	29.28	1200	JB
8.	UNKNOWN	31.75	420	J
9.	UNKNOWN	37.45	540	J
10.	UNKNOWN	38.77	300	J
11.	UNKNOWN ALIPHATIC HYDROCARBO	39.28	930	J
12.	UNKNOWN ALIPHATIC HYDROCARBO	41.02	2000	J
13.	UNKNOWN ALIPHATIC HYDROCARBO	42.95	490	J
14.	UNKNOWN	43.63	310	J
15.	UNKNOWN	44.07	950	J
16.	UNKNOWN	45.10	590	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-4Z

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110578

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110578S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 37 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1000	U
111-44-4	bis(2-Chloroethyl)ether	1000	U
95-57-8	2-Chlorophenol	1000	U
541-73-1	1,3-Dichlorobenzene	1000	U
106-46-7	1,4-Dichlorobenzene	1000	U
100-51-6	Benzyl alcohol	1000	U
95-50-1	1,2-Dichlorobenzene	1000	U
95-48-7	2-Methylphenol	1000	U
108-60-1	bis(2-Chloroisopropyl)ether	1000	U
106-44-5	4-Methylphenol	1000	U
621-64-7	N-Nitroso-di-n-propylamine	1000	U
67-72-1	Hexachloroethane	1000	U
98-95-3	Nitrobenzene	1000	U
78-59-1	Isophorone	1000	U
88-75-5	2-Nitrophenol	1000	U
105-67-9	2,4-Dimethylphenol	1000	U
65-85-0	Benzoic acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	5100	U
120-83-2	2,4-Dichlorophenol	1000	U
120-82-1	1,2,4-Trichlorobenzene	1000	U
91-20-3	Naphthalene	1000	U
106-47-8	4-Chloroaniline	1000	U
87-68-3	Hexachlorobutadiene	1000	U
59-50-7	4-Chloro-3-methylphenol	1000	U
91-57-6	2-Methylnaphthalene	1000	U
77-47-4	Hexachlorocyclopentadiene	1000	U
88-06-2	2,4,6-Trichlorophenol	1000	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	5100	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	5100	U
208-96-8	Acenaphthylene	1000	U
606-20-2	2,6-Dinitrotoluene	1000	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-12

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110578

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110578S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 37 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	5100	U
83-32-9	Acenaphthene	1000	U
51-28-5	2,4-Dinitrophenol	5100	U
100-02-7	4-Nitrophenol	5100	U
132-64-9	Dibenzofuran	1000	U
121-14-2	2,4-Dinitrotoluene	1000	U
84-66-2	Diethylphthalate	1000	U
7005-72-3	4-Chlorophenyl-phenylether	1000	U
86-73-7	Fluorene	1000	U
100-01-6	4-Nitroaniline	5100	U
534-52-1	4,6-Dinitro-2-methylphenol	5100	U
86-30-6	N-Nitrosodiphenylamine (1)	1000	U
101-55-3	4-Bromophenyl-phenylether	1000	U
118-74-1	Hexachlorobenzene	1000	U
87-86-5	Pentachlorophenol	5100	U
85-01-8	Phenanthrene	1000	U
120-12-7	Anthracene	1000	U
84-74-2	Di-n-butylphthalate	1000	U
206-44-0	Fluoranthene	1000	U
129-00-0	Pyrene	1000	U
85-68-7	Butylbenzylphthalate	1000	U
91-94-1	3,3'-Dichlorobenzidine	2100	U
56-55-3	Benzo(a)anthracene	1000	U
218-01-9	Chrysene	1000	U
117-81-7	bis(2-Ethylhexyl)phthalate	1000	U
117-84-0	Di-n-octylphthalate	1000	U
205-99-2	Benzo(b)fluoranthene	1000	U
207-08-9	Benzo(k)fluoranthene	1000	U
50-32-8	Benzo(a)pyrene	1000	U
193-39-5	Indeno(1,2,3-cd)pyrene	1000	U
53-70-3	Dibenz(a,h)anthracene	1000	U
191-24-2	Benzo(g,h,i)perylene	1000	U

(1) - Cannot be separated from Diphenylamine

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SDAA-42

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110578

mple wt/vol: 30.0 (g/mL) G Lab File ID: B110578S

vel: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 37 dec. _____ Date Extracted: 02/22/90

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

mber TICs found: 20 CONCENTRATION UNITS: (ug/L or ug/Kg) UG.KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.00	610	JB
2.	UNKNOWN	4.83	2800	JB
123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.83	8500	JBA
4.	UNKNOWN	8.90	1000	JB
5. 100-52-7	BENZALDEHYDE	10.63	2100	JB
6.	UNKNOWN	11.58	700	JB
57-10-3	HEXADECANOIC ACID	29.30	2400	JB
8.	UNKNOWN	31.75	980	J
9.	UNKNOWN	35.47	750	J
10.	UNKNOWN	37.45	1600	J
11.	UNKNOWN ALIPHATIC HYDROCARBO	39.28	2300	J
12.	UNKNOWN ALIPHATIC HYDROCARBO	41.02	2000	J
13.	UNKNOWN	42.98	530	J
14.	UNKNOWN	43.35	420	J
15.	UNKNOWN	44.08	3300	J
16.	UNKNOWN	44.82	690	J
17.	UNKNOWN	45.62	420	J
18.	UNKNOWN	46.05	670	J
19.	UNKNOWN	47.28	680	J
20.	UNKNOWN	47.73	3200	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110579S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)_ SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	690	U
111-44-4	bis(2-Chloroethyl)ether	690	U
95-57-8	2-Chlorophenol	690	U
541-73-1	1,3-Dichlorobenzene	690	U
106-46-7	1,4-Dichlorobenzene	690	U
100-51-6	Benzyl alcohol	690	U
95-50-1	1,2-Dichlorobenzene	690	U
95-48-7	2-Methylphenol	690	U
108-60-1	bis(2-Chloroisopropyl)ether	690	U
106-44-5	4-Methylphenol	690	U
621-64-7	N-Nitroso-di-n-propylamine	690	U
67-72-1	Hexachloroethane	690	U
98-95-3	Nitrobenzene	690	U
78-59-1	Isophorone	690	U
88-75-5	2-Nitrophenol	690	U
105-67-9	2,4-Dimethylphenol	690	U
65-85-0	Benzoic acid	690	U
111-91-1	bis(2-Chloroethoxy)methane	3400	U
120-83-2	2,4-Dichlorophenol	690	U
120-82-1	1,2,4-Trichlorobenzene	690	U
91-20-3	Naphthalene	690	U
106-47-8	4-Chloroaniline	690	U
87-68-3	Hexachlorobutadiene	690	U
59-50-7	4-Chloro-3-methylphenol	690	U
91-57-6	2-Methylnaphthalene	690	U
77-47-4	Hexachlorocyclopentadiene	690	U
88-06-2	2,4,6-Trichlorophenol	690	U
95-95-4	2,4,5-Trichlorophenol	690	U
91-58-7	2-Chloronaphthalene	3400	U
88-74-4	2-Nitroaniline	690	U
131-11-3	Dimethylphthalate	3400	U
208-96-8	Acenaphthylene	690	U
606-20-2	2,6-Dinitrotoluene	690	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110579S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3400	U
83-32-9	Acenaphthene	690	U
51-28-5	2,4-Dinitrophenol	3400	U
100-02-7	4-Nitrophenol	3400	U
132-64-9	Dibenzofuran	690	U
121-14-2	2,4-Dinitrotoluene	690	U
84-66-2	Diethylphthalate	690	U
7005-72-3	4-Chlorophenyl-phenylether	690	U
86-73-7	Fluorene	690	U
100-01-6	4-Nitroaniline	3400	U
534-52-1	4,6-Dinitro-2-methylphenol	3400	U
86-30-6	N-Nitrosodiphenylamine (1)	690	U
101-55-3	4-Bromophenyl-phenylether	690	U
118-74-1	Hexachlorobenzene	690	U
87-86-5	Pentachlorophenol	3400	U
85-01-8	Phenanthrene	690	U
120-12-7	Anthracene	690	U
84-74-2	Di-n-butylphthalate	690	U
206-44-0	Fluoranthene	690	U
129-00-0	Pyrene	690	U
85-68-7	Butylbenzylphthalate	690	U
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)anthracene	690	U
218-01-9	Chrysene	690	U
117-81-7	bis(2-Ethylhexyl)phthalate	690	U
117-84-0	Di-n-octylphthalate	690	U
205-99-2	Benzo(b)fluoranthene	690	U
207-08-9	Benzo(k)fluoranthene	690	U
50-32-8	Benzo(a)pyrene	690	U
193-39-5	Indeno(1,2,3-cd)pyrene	690	U
53-70-3	Dibenz(a,h)anthracene	690	U
191-24-2	Benzo(g,h,i)perylene	690	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

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1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110579S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

Number TICs found: 9

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	4.85	1100	JB
2.	123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.87	4100	JBA
3.		UNKNOWN	8.87	580	JB
4.	100-52-7	BENZALDEHYDE	10.58	910	JB
5.		UNKNOWN	11.57	360	JB
6.	57-10-3	HEXADECANOIC ACID	29.25	470	JB
7.		UNKNOWN ALIPHATIC HYDROCARBO	39.25	570	J
8.		UNKNOWN ALIPHATIC HYDROCARBO	40.97	1300	J
9.		UNKNOWN ALIPHATIC HYDROCARBO	42.88	450	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110580

Sample wt/vol: 30.5 (g/mL) G Lab File ID: B110580S

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 15 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	760	U
111-44-4	bis(2-Chloroethyl)ether	760	U
95-57-8	2-Chlorophenol	760	U
541-73-1	1,3-Dichlorobenzene	760	U
106-46-7	1,4-Dichlorobenzene	760	U
100-51-6	Benzyl alcohol	760	U
95-50-1	1,2-Dichlorobenzene	760	U
95-48-7	2-Methylphenol	760	U
108-60-1	bis(2-Chloroisopropyl)ether	760	U
106-44-5	4-Methylphenol	760	U
621-64-7	N-Nitroso-di-n-propylamine	760	U
67-72-1	Hexachloroethane	760	U
98-95-3	Nitrobenzene	760	U
78-59-1	Isophorone	760	U
88-75-5	2-Nitrophenol	760	U
105-67-9	2,4-Dimethylphenol	760	U
65-85-0	Benzoic acid	760	U
111-91-1	bis(2-Chloroethoxy)methane	3700	U
120-83-2	2,4-Dichlorophenol	760	U
120-82-1	1,2,4-Trichlorobenzene	760	U
91-20-3	Naphthalene	760	U
106-47-8	4-Chloroaniline	760	U
87-68-3	Hexachlorobutadiene	760	U
59-50-7	4-Chloro-3-methylphenol	760	U
91-57-6	2-Methylnaphthalene	760	U
77-47-4	Hexachlorocyclopentadiene	760	U
88-06-2	2,4,6-Trichlorophenol	760	U
95-95-4	2,4,5-Trichlorophenol	760	U
91-58-7	2-Chloronaphthalene	3700	U
88-74-4	2-Nitroaniline	760	U
131-11-3	Dimethylphthalate	3700	U
208-96-8	Acenaphthylene	760	U
606-20-2	2,6-Dinitrotoluene	760	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110580

Sample wt/vol: 30.5 (g/mL) G Lab File ID: B110580S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 15 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3700	U
83-32-9	Acenaphthene	760	U
51-28-5	2,4-Dinitrophenol	3700	U
100-02-7	4-Nitrophenol	3700	U
132-64-9	Dibenzofuran	760	U
121-14-2	2,4-Dinitrotoluene	760	U
84-66-2	Diethylphthalate	760	U
7005-72-3	4-Chlorophenyl-phenylether	760	U
86-73-7	Fluorene	760	U
100-01-6	4-Nitroaniline	3700	U
534-52-1	4,6-Dinitro-2-methylphenol	3700	U
86-30-6	N-Nitrosodiphenylamine (1)	760	U
101-55-3	4-Bromophenyl-phenylether	760	U
118-74-1	Hexachlorobenzene	760	U
87-86-5	Pentachlorophenol	3700	U
85-01-8	Phenanthrene	760	U
120-12-7	Anthracene	760	U
84-74-2	Di-n-butylphthalate	760	U
206-44-0	Fluoranthene	760	U
129-00-0	Pyrene	80	J
85-68-7	Butylbenzylphthalate	760	U
91-94-1	3,3'-Dichlorobenzidine	1500	U
56-55-3	Benzo(a)anthracene	760	U
218-01-9	Chrysene	760	U
117-81-7	bis(2-Ethylhexyl)phthalate	760	U
117-84-0	Di-n-octylphthalate	760	U
205-99-2	Benzo(b)fluoranthene	760	U
207-08-9	Benzo(k)fluoranthene	760	U
50-32-8	Benzo(a)pyrene	760	U
193-39-5	Indeno(1,2,3-cd)pyrene	760	U
53-70-3	Dibenz(a,h)anthracene	760	U
191-24-2	Benzo(g,h,i)perylene	760	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

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F14

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-2

b Name: AQUATEC, INC. Contract: 89150

ab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110580

ample wt/vol: 30.5 (g/mL) G Lab File ID: B110580S

vel: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 15 dec. _____ Date Extracted: 02/22/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

C Cleanup: (Y/N) Y pH: 6.1 Dilution Factor: 1.0

mber TICs found: 11 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.82	950	JB
2. 123-2-2	2-PENTANONE, 4-HYDROXY-4-MET	5.82	4500	JBA
3.	UNKNOWN	8.85	520	JB
4. 57-10-3	HEXADECANOIC ACID	29.22	350	JB
5.	UNKNOWN	37.38	850	J
6.	UNKNOWN ALIPHATIC HYDROCARBO	39.23	1700	J
7.	UNKNOWN ALDEHYDE	40.50	370	J
8.	UNKNOWN ALIPHATIC HYDROCARBO	40.93	2500	J
9.	UNKNOWN	41.02	680	J
10.	UNKNOWN ALIPHATIC HYDROCARBO	42.85	590	J
11.	UNKNOWN	43.98	1200	J
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110581

Sample wt/vol: 31.1 (g/mL) G Lab File ID: B110581S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 0 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 5.9 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	640	U
111-44-4	bis(2-Chloroethyl)ether	640	U
95-57-8	2-Chlorophenol	640	U
541-73-1	1,3-Dichlorobenzene	640	U
106-46-7	1,4-Dichlorobenzene	640	U
100-51-6	Benzyl alcohol	640	U
95-50-1	1,2-Dichlorobenzene	640	U
95-48-7	2-Methylphenol	640	U
108-60-1	bis(2-Chloroisopropyl)ether	640	U
106-44-5	4-Methylphenol	640	U
621-64-7	N-Nitroso-di-n-propylamine	640	U
67-72-1	Hexachloroethane	640	U
98-95-3	Nitrobenzene	640	U
78-59-1	Isophorone	640	U
88-75-5	2-Nitrophenol	640	U
105-67-9	2,4-Dimethylphenol	640	U
65-85-0	Benzoic acid	640	U
111-91-1	bis(2-Chloroethoxy)methane	3100	U
120-83-2	2,4-Dichlorophenol	640	U
120-82-1	1,2,4-Trichlorobenzene	640	U
91-20-3	Naphthalene	640	U
106-47-8	4-Chloroaniline	640	U
87-68-3	Hexachlorobutadiene	640	U
59-50-7	4-Chloro-3-methylphenol	640	U
91-57-6	2-Methylnaphthalene	640	U
77-47-4	Hexachlorocyclopentadiene	640	U
88-06-2	2,4,6-Trichlorophenol	640	U
95-95-4	2,4,5-Trichlorophenol	640	U
91-58-7	2-Chloronaphthalene	3100	U
88-74-4	2-Nitroaniline	640	U
131-11-3	Dimethylphthalate	3100	U
208-96-8	Acenaphthylene	640	U
606-20-2	2,6-Dinitrotoluene	640	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110581

Sample wt/vol: 31.1 (g/mL) G Lab File ID: B110581S

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 0 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 5.9 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3100	U
83-32-9	Acenaphthene	640	U
51-28-5	2,4-Dinitrophenol	3100	U
100-02-7	4-Nitrophenol	3100	U
132-64-9	Dibenzofuran	640	U
121-14-2	2,4-Dinitrotoluene	640	U
84-66-2	Diethylphthalate	640	U
7005-72-3	4-Chlorophenyl-phenylether	640	U
86-73-7	Fluorene	640	U
100-01-6	4-Nitroaniline	3100	U
534-52-1	4,6-Dinitro-2-methylphenol	3100	U
86-30-6	N-Nitrosodiphenylamine (1)	640	U
101-55-3	4-Bromophenyl-phenylether	640	U
118-74-1	Hexachlorobenzene	640	U
87-86-5	Pentachlorophenol	3100	U
85-01-8	Phenanthrene	640	U
120-12-7	Anthracene	640	U
84-74-2	Di-n-butylphthalate	640	U
206-44-0	Fluoranthene	640	U
129-00-0	Pyrene	640	U
85-68-7	Butylbenzylphthalate	640	U
91-94-1	3,3'-Dichlorobenzidine	1300	U
56-55-3	Benzo(a)anthracene	640	U
218-01-9	Chrysene	640	U
117-81-7	bis(2-Ethylhexyl)phthalate	640	U
117-84-0	Di-n-octylphthalate	640	U
205-99-2	Benzo(b)fluoranthene	640	U
207-08-9	Benzo(k)fluoranthene	640	U
50-32-8	Benzo(a)pyrene	640	U
193-39-5	Indeno(1,2,3-cd)pyrene	640	U
53-70-3	Dibenz(a,h)anthracene	640	U
191-24-2	Benzo(g,h,i)perylene	640	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-3

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110581

Sample wt/vol: 31.1 (g/mL) G Lab File ID: B110581S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 0 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 5.9 Dilution Factor: 1.0

Number TICs found: 7

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	4.83	710	JB
2.	123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.87	3000	JBA
3.		UNKNOWN	8.88	410	JB
4.		UNKNOWN ALIPHATIC HYDROCARBO	37.45	370	J
5.		UNKNOWN	39.32	1200	J
6.		UNKNOWN	41.08	520	J
7.		UNKNOWN	44.07	390	J
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FORM I SV-TIC

1/87 Rev.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110582

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110582S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 7 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 5.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	710	U
111-44-4	bis(2-Chloroethyl)ether	710	U
95-57-8	2-Chlorophenol	710	U
541-73-1	1,3-Dichlorobenzene	710	U
106-46-7	1,4-Dichlorobenzene	710	U
100-51-6	Benzyl alcohol	710	U
95-50-1	1,2-Dichlorobenzene	710	U
95-48-7	2-Methylphenol	710	U
108-60-1	bis(2-Chloroisopropyl)ether	710	U
106-44-5	4-Methylphenol	710	U
621-64-7	N-Nitroso-di-n-propylamine	710	U
67-72-1	Hexachloroethane	710	U
98-95-3	Nitrobenzene	710	U
78-59-1	Isophorone	710	U
88-75-5	2-Nitrophenol	710	U
105-67-9	2,4-Dimethylphenol	710	U
65-85-0	Benzoic acid	710	U
111-91-1	bis(2-Chloroethoxy)methane	3400	U
120-83-2	2,4-Dichlorophenol	710	U
120-82-1	1,2,4-Trichlorobenzene	710	U
91-20-3	Naphthalene	710	U
106-47-8	4-Chloroaniline	710	U
87-68-3	Hexachlorobutadiene	710	U
59-50-7	4-Chloro-3-methylphenol	710	U
91-57-6	2-Methylnaphthalene	710	U
77-47-4	Hexachlorocyclopentadiene	710	U
88-06-2	2,4,6-Trichlorophenol	710	U
95-95-4	2,4,5-Trichlorophenol	710	U
91-58-7	2-Chloronaphthalene	3400	U
88-74-4	2-Nitroaniline	710	U
131-11-3	Dimethylphthalate	3400	U
208-96-8	Acenaphthylene	710	U
606-20-2	2,6-Dinitrotoluene	710	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110582

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110582S

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 7 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 5.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3400	U
83-32-9	Acenaphthene	710	U
51-28-5	2,4-Dinitrophenol	3400	U
100-02-7	4-Nitrophenol	3400	U
132-64-9	Dibenzofuran	710	U
121-14-2	2,4-Dinitrotoluene	710	U
84-66-2	Diethylphthalate	710	U
7005-72-3	4-Chlorophenyl-phenylether	710	U
86-73-7	Fluorene	710	U
100-01-6	4-Nitroaniline	3400	U
534-52-1	4,6-Dinitro-2-methylphenol	3400	U
86-30-6	N-Nitrosodiphenylamine (1)	710	U
101-55-3	4-Bromophenyl-phenylether	710	U
118-74-1	Hexachlorobenzene	710	U
87-86-5	Pentachlorophenol	3400	U
85-01-8	Phenanthrene	710	U
120-12-7	Anthracene	710	U
84-74-2	Di-n-butylphthalate	710	U
206-44-0	Fluoranthene	710	U
129-00-0	Pyrene	710	U
85-68-7	Butylbenzylphthalate	710	U
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)anthracene	710	U
218-01-9	Chrysene	710	U
117-81-7	bis(2-Ethylhexyl)phthalate	710	U
117-84-0	Di-n-octylphthalate	710	U
205-99-2	Benzo(b)fluoranthene	710	U
207-08-9	Benzo(k)fluoranthene	710	U
50-32-8	Benzo(a)pyrene	710	U
193-39-5	Indeno(1,2,3-cd)pyrene	710	U
53-70-3	Dibenz(a,h)anthracene	710	U
191-24-2	Benzo(g,h,i)perylene	710	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SSAA-4

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110582

Sample wt/vol: 30.1 (g/mL) G Lab File ID: B110582S

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 7 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 5.7 Dilution Factor: 1.0

Number TICs found: 16

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.87	1000	JB
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.88	4500	JBA
3.	UNKNOWN	8.90	570	JB
4.	UNKNOWN	11.58	330	JB
5.	UNKNOWN	37.40	780	J
6.	UNKNOWN	38.72	560	J
7.	UNKNOWN ALIPHATIC HYDROCARBO	39.25	1400	J
8.	UNKNOWN ALIPHATIC HYDROCARBO	40.97	2400	J
9.	UNKNOWN	41.05	340	J
10.	UNKNOWN	42.88	590	J
11.	UNKNOWN	43.23	700	J
12.	UNKNOWN	44.00	610	J
13.	UNKNOWN	45.00	350	J
14.	UNKNOWN	45.35	610	J
15.	UNKNOWN	47.75	3000	J
16.	UNKNOWN	49.22	380	J
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FORM I SV-TIC

1/87 Rev.

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F148

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKF1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: BB0222FIS

Sample wt/vol: 30.0 (g/mL) G Lab File ID: BB0222FIS

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/27/90

GPC Cleanup: (Y/N) Y pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	660	U
111-44-4	bis(2-Chloroethyl)ether	660	U
95-57-8	2-Chlorophenol	660	U
541-73-1	1,3-Dichlorobenzene	660	U
106-46-7	1,4-Dichlorobenzene	660	U
100-51-6	Benzyl alcohol	660	U
95-50-1	1,2-Dichlorobenzene	660	U
95-48-7	2-Methylphenol	660	U
108-60-1	bis(2-Chloroisopropyl)ether	660	U
106-44-5	4-Methylphenol	660	U
621-64-7	N-Nitroso-di-n-propylamine	660	U
67-72-1	Hexachloroethane	660	U
98-95-3	Nitrobenzene	660	U
78-59-1	Isophorone	660	U
88-75-5	2-Nitrophenol	660	U
105-67-9	2,4-Dimethylphenol	660	U
65-85-0	Benzoic acid	660	U
111-91-1	bis(2-Chloroethoxy)methane	3200	U
120-83-2	2,4-Dichlorophenol	660	U
120-82-1	1,2,4-Trichlorobenzene	660	U
91-20-3	Naphthalene	660	U
106-47-8	4-Chloroaniline	660	U
87-68-3	Hexachlorobutadiene	660	U
59-50-7	4-Chloro-3-methylphenol	660	U
91-57-6	2-Methylnaphthalene	660	U
77-47-4	Hexachlorocyclopentadiene	660	U
88-06-2	2,4,6-Trichlorophenol	660	U
95-95-4	2,4,5-Trichlorophenol	660	U
91-58-7	2-Chloronaphthalene	3200	U
88-74-4	2-Nitroaniline	660	U
131-11-3	Dimethylphthalate	3200	U
208-96-8	Acenaphthylene	660	U
606-20-2	2,6-Dinitrotoluene	660	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKF1

a Name: AQUATEC, INC. Contract: 89150

ab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

atrix: (soil/water) SOIL Lab Sample ID: BB0222FIS

ample wt/vol: 30.0 (g/mL) G Lab File ID: BB0222FIS

evel: (low/med) LOW Date Received: 00/00/00

oisture: not dec. 0 dec._____ Date Extracted: 02/22/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/27/90

p Cleanup: (Y/N) Y pH:____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3200	U
83-32-9	Acenaphthene	660	U
51-28-5	2,4-Dinitrophenol	3200	U
100-02-7	4-Nitrophenol	3200	U
132-64-9	Dibenzofuran	660	U
121-14-2	2,4-Dinitrotoluene	660	U
84-66-2	Diethylphthalate	660	U
7005-72-3	4-Chlorophenyl-phenylether	660	U
86-73-7	Fluorene	660	U
100-01-6	4-Nitroaniline	3200	U
534-52-1	4,6-Dinitro-2-methylphenol	3200	U
86-30-6	N-Nitrosodiphenylamine (1)	660	U
101-55-3	4-Bromophenyl-phenylether	660	U
118-74-1	Hexachlorobenzene	660	U
87-86-5	Pentachlorophenol	3200	U
85-01-8	Phenanthrene	660	U
120-12-7	Anthracene	660	U
84-74-2	Di-n-butylphthalate	660	U
206-44-0	Fluoranthene	660	U
129-00-0	Pyrene	660	U
85-68-7	Butylbenzylphthalate	660	U
91-94-1	3,3'-Dichlorobenzidine	1300	U
56-55-3	Benzo(a)anthracene	660	U
218-01-9	Chrysene	660	U
117-81-7	bis(2-Ethylhexyl)phthalate	660	U
117-84-0	Di-n-octylphthalate	660	U
205-99-2	Benzo(b)fluoranthene	660	U
207-08-9	Benzo(k)fluoranthene	660	U
50-32-8	Benzo(a)pyrene	660	U
193-39-5	Indeno(1,2,3-cd)pyrene	660	U
53-70-3	Dibenz(a,h)anthracene	660	U
191-24-2	Benzo(g,h,i)perylene	660	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1/87 Rev.

~~000080~~

F150

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKF1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: BB0222FIS

Sample wt/vol: 30.0 (g/mL) G Lab File ID: BB0222FIS

Level: (low/med) LOW Date Received: 00/00/00

% Moisture: not dec. 0 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/27/90

GPC Cleanup: (Y/N) Y pH:____ Dilution Factor: 1.0

Number TICs found: 7

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	4.00	410	J
2.		UNKNOWN	4.83	1600	J
3.	123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.82	9600	JA
4.		UNKNOWN	8.87	810	J
5.	100-52-7	BENZALDEHYDE	10.60	760	J
6.		UNKNOWN	11.57	490	J
7.	57-10-3	HEXADECANOIC ACID	29.28	720	J
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FORM I SV-TIC

1/87 Rev.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MS

ab Name: AQUATEC, INC. Contract: 89150

ab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

atrix: (soil/water) SOIL Lab Sample ID: 110579MS

ample wt/vol: 30.2 (g/mL) G Lab File ID: B110579MSS

evel: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 5 dec._____ Date Extracted: 02/22/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

P Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	690	U
111-44-4	bis(2-Chloroethyl)ether	690	U
95-57-8	2-Chlorophenol	690	U
541-73-1	1,3-Dichlorobenzene	690	U
106-46-7	1,4-Dichlorobenzene	690	U
100-51-6	Benzyl alcohol	690	U
95-50-1	1,2-Dichlorobenzene	690	U
95-48-7	2-Methylphenol	690	U
108-60-1	bis(2-Chloroisopropyl)ether	690	U
106-44-5	4-Methylphenol	690	U
621-64-7	N-Nitroso-di-n-propylamine	690	U
67-72-1	Hexachloroethane	690	U
98-95-3	Nitrobenzene	690	U
78-59-1	Isophorone	690	U
88-75-5	2-Nitrophenol	690	U
105-67-9	2,4-Dimethylphenol	690	U
65-85-0	Benzoic acid	3300	U
111-91-1	bis(2-Chloroethoxy)methane	690	U
120-83-2	2,4-Dichlorophenol	690	U
120-82-1	1,2,4-Trichlorobenzene	690	U
91-20-3	Naphthalene	690	U
106-47-8	4-Chloroaniline	690	U
87-68-3	Hexachlorobutadiene	690	U
59-50-7	4-Chloro-3-methylphenol	690	U
91-57-6	2-Methylnaphthalene	690	U
77-47-4	Hexachlorocyclopentadiene	690	U
88-06-2	2,4,6-Trichlorophenol	690	U
95-95-4	2,4,5-Trichlorophenol	3300	U
91-58-7	2-Chloronaphthalene	690	U
88-74-4	2-Nitroaniline	3300	U
131-11-3	Dimethylphthalate	690	U
208-96-8	Acenaphthylene	690	U
606-20-2	2,6-Dinitrotoluene	690	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MS

Lab Name: AQUATEC, INC.. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579MS

Sample wt/vol: 30.2 (g/mL) G Lab File ID: B110579MSS

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc)_ SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3300	U
83-32-9	Acenaphthene	3300	U
51-28-5	2,4-Dinitrophenol	690	U
100-02-7	4-Nitrophenol	690	U
132-64-9	Dibenzofuran	690	U
121-14-2	2,4-Dinitrotoluene	690	U
84-66-2	Diethylphthalate	690	U
7005-72-3	4-Chlorophenyl-phenylether	690	U
86-73-7	Fluorene	3300	U
100-01-6	4-Nitroaniline	3300	U
534-52-1	4,6-Dinitro-2-methylphenol	690	U
86-30-6	N-Nitrosodiphenylamine (1)	690	U
101-55-3	4-Bromophenyl-phenylether	690	U
118-74-1	Hexachlorobenzene	690	U
87-86-5	Pentachlorophenol	690	U
85-01-8	Phenanthrene	690	U
120-12-7	Anthracene	690	U
84-74-2	Di-n-butylphthalate	690	U
206-44-0	Fluoranthene	690	U
129-00-0	Pyrene	690	U
85-68-7	Butylbenzylphthalate	690	U
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)anthracene	690	U
218-01-9	Chrysene	690	U
117-81-7	bis(2-Ethylhexyl)phthalate	690	U
117-84-0	Di-n-octylphthalate	690	U
205-99-2	Benzo(b)fluoranthene	690	U
207-08-9	Benzo(k)fluoranthene	690	U
50-32-8	Benzo(a)pyrene	690	U
193-39-5	Indeno(1,2,3-cd)pyrene	690	U
53-70-3	Dibenz(a,h)anthracene	690	U
191-24-2	Benzo(g,h,i)perylene	690	U

(1) - Cannot be separated from Diphenylamine

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MSD

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579MD

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110579MDS

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 5 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	690	U
111-44-4	bis(2-Chloroethyl)ether	690	U
95-57-8	2-Chlorophenol	690	U
541-73-1	1,3-Dichlorobenzene	690	U
106-46-7	1,4-Dichlorobenzene	690	U
100-51-6	Benzyl alcohol	690	U
95-50-1	1,2-Dichlorobenzene	690	U
95-48-7	2-Methylphenol	690	U
108-60-1	bis(2-Chloroisopropyl)ether	690	U
106-44-5	4-Methylphenol	690	U
621-64-7	N-Nitroso-di-n-propylamine	690	U
67-72-1	Hexachloroethane	690	U
98-95-3	Nitrobenzene	690	U
78-59-1	Isophorone	690	U
88-75-5	2-Nitrophenol	690	U
105-67-9	2,4-Dimethylphenol	690	U
65-85-0	Benzoic acid	3400	U
111-91-1	bis(2-Chloroethoxy)methane	690	U
120-83-2	2,4-Dichlorophenol	690	U
120-82-1	1,2,4-Trichlorobenzene	690	U
91-20-3	Naphthalene	690	U
106-47-8	4-Chloroaniline	690	U
87-68-3	Hexachlorobutadiene	690	U
59-50-7	4-Chloro-3-methylphenol	690	U
91-57-6	2-Methylnaphthalene	690	U
77-47-4	Hexachlorocyclopentadiene	690	U
88-06-2	2,4,6-Trichlorophenol	690	U
95-95-4	2,4,5-Trichlorophenol	3400	U
91-58-7	2-Chloronaphthalene	690	U
88-74-4	2-Nitroaniline	3400	U
131-11-3	Dimethylphthalate	690	U
208-96-8	Acenaphthylene	690	U
606-20-2	2,6-Dinitrotoluene	690	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MSD

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579MD

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B110579MDS

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec._____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/28/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3400	U
83-32-9	Acenaphthene		
51-28-5	2,4-Dinitrophenol	3400	U
100-02-7	4-Nitrophenol		
132-64-9	Dibenzofuran	690	U
121-14-2	2,4-Dinitrotoluene		
84-66-2	Diethylphthalate	690	U
7005-72-3	4-Chlorophenyl-phenylether	690	U
86-73-7	Fluorene	690	U
100-01-6	4-Nitroaniline	3400	U
534-52-1	4,6-Dinitro-2-methylphenol	3400	U
86-30-6	N-Nitrosodiphenylamine (1)	690	U
101-55-3	4-Bromophenyl-phenylether	690	U
118-74-1	Hexachlorobenzene	690	U
87-86-5	Pentachlorophenol		
85-01-8	Phenanthrene	690	U
120-12-7	Anthracene	690	U
84-74-2	Di-n-butylphthalate	690	U
206-44-0	Fluoranthene	690	U
129-00-0	Pyrene		
85-68-7	Butylbenzylphthalate	690	U
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)anthracene	690	U
218-01-9	Chrysene	690	U
117-81-7	bis(2-Ethylhexyl)phthalate	690	U
117-84-0	Di-n-octylphthalate	690	U
205-99-2	Benzo(b)fluoranthene	690	U
207-08-9	Benzo(k)fluoranthene	690	U
50-32-8	Benzo(a)pyrene	690	U
193-39-5	Indeno(1,2,3-cd)pyrene	690	U
53-70-3	Dibenz(a,h)anthracene	690	U
191-24-2	Benzo(g,h,i)perylene	690	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SLUDGE#1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110525

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 89 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 6.8 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	140	U
319-85-7	beta-BHC	140	U
319-86-8	delta-BHC	140	U
58-89-9	gamma-BHC (Lindane)	140	U
76-44-8	Heptachlor	140	U
309-00-2	Aldrin	140	U
1024-57-3	Heptachlor epoxide	140	U
959-98-8	Endosulfan I	140	U
60-57-1	Dieldrin	140	U
72-55-9	4,4'-DDE	290	U
72-20-8	Endrin	290	U
33213-65-9	Endosulfan II	290	U
72-54-8	4,4'-DDD	290	U
1031-07-8	Endosulfan sulfate	290	U
50-29-3	4,4'-DDT	290	U
72-43-5	Methoxychlor	290	U
53494-70-5	Endrin ketone	1400	U
5103-71-9	alpha-Chlordane	290	U
5103-74-2	gamma-Chlordane	1400	U
8001-35-2	Toxaphene	1400	U
12674-11-2	Aroclor-1016	2900	U
11104-28-2	Aroclor-1221	1400	U
11141-16-5	Aroclor-1232	1400	U
53469-21-9	Aroclor-1242	1400	U
12672-29-6	Aroclor-1248	1400	U
11097-69-1	Aroclor-1254	1400	U
11096-82-5	Aroclor-1260	2900	U
		2900	U

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EPA SAMPLE NO.

SLUDGE #2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110526

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 78 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/01/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	73	U
319-85-7	beta-BHC	73	U
319-86-8	delta-BHC	73	U
58-89-9	gamma-BHC (Lindane)	73	U
76-44-8	Heptachlor	73	U
309-00-2	Aldrin	73	U
1024-57-3	Heptachlor epoxide	73	U
959-98-8	Endosulfan I	73	U
60-57-1	Dieldrin	73	U
72-55-9	4,4'-DDE	150	U
72-20-8	Endrin	150	U
33213-65-9	Endosulfan II	150	U
72-54-8	4,4'-DDD	150	U
1031-07-8	Endosulfan sulfate	150	U
50-29-3	4,4'-DDT	150	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	730	U
5103-71-9	alpha-Chlordane	150	U
5103-74-2	gamma-Chlordane	730	U
8001-35-2	Toxaphene	730	U
12674-11-2	Aroclor-1016	1500	U
11104-28-2	Aroclor-1221	730	U
11141-16-5	Aroclor-1232	730	U
53469-21-9	Aroclor-1242	730	U
12672-29-6	Aroclor-1248	730	U
11097-69-1	Aroclor-1254	730	U
11096-82-5	Aroclor-1260	930	Y
		1500	U

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EPA SAMPLE NO.

SLUDGE #3

b Name: AQUATEC, INC. Contract: 89150

b Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110527

mple wt/vol: 30.0 (g/mL) G Lab File ID: _____

vol: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 92 dec. _____ Date Extracted: 02/22/90

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

C Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	200	U
319-85-7	beta-BHC	200	U
319-86-8	delta-BHC	200	U
58-89-9	gamma-BHC (Lindane)	200	U
76-44-8	Heptachlor	200	U
309-00-2	Aldrin	200	U
1024-57-3	Heptachlor epoxide	200	U
959-98-8	Endosulfan I	200	U
60-57-1	Dieldrin	400	U
72-55-9	4,4'-DDE	400	U
72-20-8	Endrin	400	U
33213-65-9	Endosulfan II	400	U
72-54-8	4,4'-DDD	400	U
1031-07-8	Endosulfan sulfate	400	U
50-29-3	4,4'-DDT	400	U
72-43-5	Methoxychlor	2000	U
53494-70-5	Endrin ketone	400	U
5103-71-9	alpha-Chlordane	2000	U
5103-74-2	gamma-Chlordane	2000	U
8001-35-2	Toxaphene	4000	U
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	2000	U
53469-21-9	Aroclor-1242	2000	U
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor-1254	4000	U
11096-82-5	Aroclor-1260	4000	U

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EPA SAMPLE NO.

SLUDGE #4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110528

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 79 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	76	U
319-85-7	beta-BHC	76	U
319-86-8	delta-BHC	76	U
58-89-9	gamma-BHC (Lindane)	76	U
76-44-8	Heptachlor	76	U
309-00-2	Aldrin	76	U
1024-57-3	Heptachlor epoxide	76	U
959-98-8	Endosulfan I	76	U
60-57-1	Dieldrin	76	U
72-55-9	4,4'-DDE	150	U
72-20-8	Endrin	150	U
33213-65-9	Endosulfan II	150	U
72-54-8	4,4'-DDD	150	U
1031-07-8	Endosulfan sulfate	150	U
50-29-3	4,4'-DDT	150	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	760	U
5103-71-9	alpha-Chlordane	150	U
5103-74-2	gamma-Chlordane	760	U
8001-35-2	Toxaphene	760	U
12674-11-2	Aroclor-1016	1500	U
11104-28-2	Aroclor-1221	760	U
11141-16-5	Aroclor-1232	760	U
53469-21-9	Aroclor-1242	760	U
12672-29-6	Aroclor-1248	760	U
11097-69-1	Aroclor-1254	760	U
11096-82-5	Aroclor-1260	1500	U
		1500	U

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EPA SAMPLE NO.

SDAA-3

Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110577

Sample wt/vol: 31.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 13 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	18	U
72-55-9	4,4'-DDE	36	U
72-20-8	Endrin	36	U
33213-65-9	Endosulfan II	36	U
72-54-8	4,4'-DDD	36	U
1031-07-8	Endosulfan sulfate	36	U
50-29-3	4,4'-DDT	36	U
72-43-5	Methoxychlor	36	U
53494-70-5	Endrin ketone	180	U
5103-71-9	alpha-Chlordane	36	U
5103-74-2	gamma-Chlordane	180	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	360	U
11104-28-2	Aroclor-1221	180	U
11141-16-5	Aroclor-1232	180	U
53469-21-9	Aroclor-1242	180	U
12672-29-6	Aroclor-1248	180	U
11097-69-1	Aroclor-1254	180	U
11096-82-5	Aroclor-1260	360	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SDAA-12

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110578

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 37 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	25	U
319-85-7	beta-BHC	25	U
319-86-8	delta-BHC	25	U
58-89-9	gamma-BHC (Lindane)	25	U
76-44-8	Heptachlor	25	U
309-00-2	Aldrin	25	U
1024-57-3	Heptachlor epoxide	25	U
959-98-8	Endosulfan I	25	U
60-57-1	Dieldrin	51	U
72-55-9	4,4'-DDE	51	U
72-20-8	Endrin	51	U
33213-65-9	Endosulfan II	51	U
72-54-8	4,4'-DDD	51	U
1031-07-8	Endosulfan sulfate	51	U
50-29-3	4,4'-DDT	51	U
72-43-5	Methoxychlor	250	U
53494-70-5	Endrin ketone	51	U
5103-71-9	alpha-Chlordane	250	U
5103-74-2	gamma-Chlordane	250	U
8001-35-2	Toxaphene	510	U
12674-11-2	Aroclor-1016	250	U
11104-28-2	Aroclor-1221	250	U
11141-16-5	Aroclor-1232	250	U
53469-21-9	Aroclor-1242	250	U
12672-29-6	Aroclor-1248	250	U
11097-69-1	Aroclor-1254	510	U
11096-82-5	Aroclor-1260	510	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

trix: (soil/water) SOIL Lab Sample ID: 110579

ple wt/vol: 30.1 (g/mL) G Lab File ID: _____

vel: (low/med) LOW Date Received: 02/15/90

isture: not dec. 5 dec. _____ Date Extracted: 02/22/90

traction: (SepF/Cont/Sonc) - SONC Date Analyzed: 03/02/90

Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	34	U
72-20-8	Endrin	34	U
33213-65-9	Endosulfan II	34	U
72-54-8	4,4'-DDD	34	U
1031-07-8	Endosulfan sulfate	34	U
50-29-3	4,4'-DDT	34	U
72-43-5	Methoxychlor	34	U
53494-70-5	Endrin ketone	170	U
5103-71-9	alpha-Chlordane	34	U
5103-74-2	gamma-Chlordane	170	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	340	U
11104-28-2	Aroclor-1221	170	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	340	U
		340	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-2

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110580

Sample wt/vol: 30.5 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 15 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 6.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	37	U
72-20-8	Endrin	37	U
33213-65-9	Endosulfan II	37	U
72-54-8	4,4'-DDD	37	U
1031-07-8	Endosulfan sulfate	37	U
50-29-3	4,4'-DDT	37	U
72-43-5	Methoxychlor	37	U
53494-70-5	Endrin ketone	190	U
5103-71-9	alpha-Chlordane	37	U
5103-74-2	gamma-Chlordane	190	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	370	U
11104-28-2	Aroclor-1221	190	U
11141-16-5	Aroclor-1232	190	U
53469-21-9	Aroclor-1242	190	U
12672-29-6	Aroclor-1248	190	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	370	U
		370	U

FORM I PEST

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-3

Name: AQUATEC, INC. Contract: 89150

Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110581

Sample wt/vol: 31.1 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

Moisture: not dec. 0 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 5.9 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	15	U
72-55-9	4,4'-DDE	31	U
72-20-8	Endrin	31	U
33213-65-9	Endosulfan II	31	U
72-54-8	4,4'-DDD	31	U
1031-07-8	Endosulfan sulfate	31	U
50-29-3	4,4'-DDT	31	U
72-43-5	Methoxychlor	31	U
53494-70-5	Endrin ketone	150	U
5103-71-9	alpha-Chlordane	31	U
5103-74-2	gamma-Chlordane	150	U
8001-35-2	Toxaphene	150	U
12674-11-2	Aroclor-1016	310	U
11104-28-2	Aroclor-1221	150	U
11141-16-5	Aroclor-1232	150	U
53469-21-9	Aroclor-1242	150	U
12672-29-6	Aroclor-1248	150	U
11097-69-1	Aroclor-1254	150	U
11096-82-5	Aroclor-1260	310	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-4

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110582

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 7 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 5.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	34	U
72-20-8	Endrin	34	U
33213-65-9	Endosulfan II	34	U
72-54-8	4,4'-DDD	34	U
1031-07-8	Endosulfan sulfate	34	U
50-29-3	4,4'-DDT	34	U
72-43-5	Methoxychlor	34	U
53494-70-5	Endrin ketone	170	U
5103-71-9	alpha-Chlordane	34	U
5103-74-2	gamma-Chlordane	170	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	340	U
11104-28-2	Aroclor-1221	170	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	340	U
		340	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKP1

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: PBLKP1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: _____

Moisture: not dec. _____ dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) - SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	32	U
72-20-8	Endrin	32	U
33213-65-9	Endosulfan II	32	U
72-54-8	4,4'-DDD	32	U
1031-07-8	Endosulfan sulfate	32	U
50-29-3	4,4'-DDT	32	U
72-43-5	Methoxychlor	32	U
53494-70-5	Endrin ketone	160	U
5103-71-9	alpha-Chlordane	32	U
5103-74-2	gamma-Chlordane	160	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	320	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	320	U
		320	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MS

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579MS

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 3.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	50	U
319-85-7	beta-BHC	50	U
319-86-8	delta-BHC	50	U
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide		
959-98-8	Endosulfan I	50	U
60-57-1	Dieldrin	50	U
72-55-9	4,4'-DDE		
72-20-8	Endrin	100	U
33213-65-9	Endosulfan II		
72-54-8	4,4'-DDD	100	U
1031-07-8	Endosulfan sulfate	100	U
50-29-3	4,4'-DDT	100	U
72-43-5	Methoxychlor		
53494-70-5	Endrin ketone	500	U
5103-71-9	alpha-Chlordane	100	U
5103-74-2	gamma-Chlordane	500	U
8001-35-2	Toxaphene	500	U
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	500	U
11141-16-5	Aroclor-1232	500	U
53469-21-9	Aroclor-1242	500	U
12672-29-6	Aroclor-1248	500	U
11097-69-1	Aroclor-1254	500	U
11096-82-5	Aroclor-1260	1000	U
		1000	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSAA-1MSD

Lab Name: AQUATEC, INC. Contract: 89150

Lab Code: AQUAI Case No.: 20181 SAS No.: _____ SDG No.: 11052

Matrix: (soil/water) SOIL Lab Sample ID: 110579MD

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 02/15/90

% Moisture: not dec. 5 dec. _____ Date Extracted: 02/22/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/02/90

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 3.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	51	U
319-85-7	beta-BHC	51	U
319-86-8	delta-BHC	51	U
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide	51	U
959-98-8	Endosulfan I	51	U
60-57-1	Dieldrin		
72-55-9	4,4'-DDE	100	U
72-20-8	Endrin		
33213-65-9	Endosulfan II	100	U
72-54-8	4,4'-DDD	100	U
1031-07-8	Endosulfan sulfate	100	U
50-29-3	4,4'-DDT		
72-43-5	Methoxychlor	510	U
53494-70-5	Endrin ketone	100	U
5103-71-9	alpha-Chlordane	510	U
5103-74-2	gamma-Chlordane	510	U
8001-35-2	Toxaphene	1000	U
12674-11-2	Aroclor-1016	510	U
11104-28-2	Aroclor-1221	510	U
11141-16-5	Aroclor-1232	510	U
53469-21-9	Aroclor-1242	510	U
12672-29-6	Aroclor-1248	510	U
11097-69-1	Aroclor-1254	1000	U
11096-82-5	Aroclor-1260	1000	U

Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Dr., S. Burlington, VT 05403
Telephone Number: (802) 658-5798 Telefax Number: (802) 658-6187

March 16, 1990

Aquatec Inc.
Richard Gomez
75 Green Mountain Drive
So. Burlington, VT 05403

RE: Asbestos Analysis by PLM
Lab Reference No. 16330
Your P.O. No. 13728

Dear Mr. Gomez:

Please find enclosed the data sheet for the 9 bulk samples submitted to Shelburne Laboratories on February 23, 1990 (Lab No. SL90-2222-2230).

Analysis was performed by Polarized Light Microscopy (PLM) using dispersion staining and point counting techniques at 100X magnification according to NYSDEC test methods. Samples were dried at 50° C for 16 hours prior to analysis and the results represent percent asbestos after drying. Identification of asbestos by PLM is based on optical crystallographic properties, and gives a qualitative differentiation between asbestos types and other fibrous materials. The results are as follows:

SL90 Lab No.	Sample I.D. No./Description	Results	% Solids
2222	110525 ETR No. 20181	No Asbestos Detected	24%
2223	110526 ETR No. 20181	Positive for Asbestos 67% Chrysotile	48%
2224	110527 ETR No. 20181	No Asbestos Detected	30%
2225	110528 ETR No. 20181	No Asbestos Detected	62%
2226	110529 ETR No. 20181	Positive for Asbestos 31% Chrysotile <1% Amosite <1% Crocidolite	50%
2227	110530 ETR No. 20181	Positive for Asbestos 22% Chrysotile	33%
2228	110531 ETR No. 20181	Positive for Asbestos 44% Chrysotile 3% Amosite	49%
2229	110577 ETR No. 20181	No Asbestos Detected	75%
2230	110578 ETR No. 20181	No Asbestos Detected	80%

~~001153~~
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Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Dr., S. Burlington, VT 05403
Telephone Number: (802) 658-5798 Telefax Number: (802) 658-6187

March 23, 1990

Terry Schneider, Staff Geologist
YEC, Inc.
10 Pinecrest Road
Valley Cottage, NY 10989

Dear Ms Schneider,

At your request, I am sending you a description of the analysis technique used for the analysis of nine bulk/sludge samples submitted to Shelburne Laboratories on February 23, 1990 by Richard Gomez of Aquatec, Inc.

Rather than rewrite the method for you, I have enclosed a copy of the Stratified Point-Counting Technique for Identifying and Quantifying Asbestos in Bulk Samples. Section 4 describes the sample preparation, and sections 5.2.2 thru 5.3 explain the point-counting calculations. In addition to this methodology, portions of the homogenized samples were dried in a drying oven at 50° C for 16 hours before preparation.

As Aquatec requested, additional alloquots were weighed before and after drying under the same conditions to determine the percent solids. Listed below are the pre and post weights:

SL90-Lab No.	Pre-Weight milligrams	Post-Weight milligrams	% Solids
2222	792.86	192.16	24
2223	804.85	385.20	48
2224	760.20	231.57	30
2225	441.71	273.46	62
2226	825.73	412.92	50
2227	687.21	229.94	33
2228	605.20	297.95	49
2229	894.35	667.01	75
2230	818.02	652.26	80

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Bryan Schultz
Laboratory Manager

Enclosure

F170

Shelburne Laboratories has been and is currently accredited under Section 206 (d) of Title II of the USC Chapter 15, TSCA as stated in 40 CFR 763, April 30, 1987 and accredited in the NBS NVLAP (Lab. No. 1025) and NIOSH PAT Program.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Bryan Schultz

Bryan Schultz
Laboratory Manager

BS/lln

Enclosure

001154

F/2J

Shelburne Laboratories
P.O. Box 9479, 74 Ethan Allen Drive
South Burlington, VT 05407
(802) 658-5798 Fax: (802) 658-6187

PLM Data Sheet
Method: EPA-600/M4-82-020 December 1982

Client Name: Aquatec, Inc.

Client Project Identification: 89150

Project Location:

Lab Reference: 160330

Lab# SL90	Sample ID	Morphology			% Asbestos Results				% Non-Asbestos Results				
		Color	Fri	Non Fri	Pos/ Neg	Chrys	Amo	Other	Fib. Glass	Cell	Synth	Other	Non Fib.
2222	110525 ETR No. 20181	grey	✓		–					89			bal.
2223	110526 ETR No. 20181	grey	✓		+	67				22			bal
2224	110527 ETR No. 20181	grey	✓		–					93			bal
2225	110528 ETR No. 20181	grey	✓		–					95			bal
2226	110529 ETR No. 20181	grey	✓		+	31	<1	<1*		41			bal
2227	110530 ETR No. 20181	grey	✓		+	22				48			bal
2228	110531 ETR No. 20181	grey	✓		+	44	3			32			bal
2229	110577 ETR No. 20185	tan	✓		–					<1			bal
2230	110578 ETR No. 20185	tan	✓		–					3			bal

Comments: *SL90-2226: <1% crocidolite
all samples dried @ 50°C prior to analysis.

Microscope: Zeiss _____ Olympus BH2

Received By: SA

Prepped By: BS Date: 02-23-90

Analyzed By: Bryan Shaw Date: 03-05-90

Report By: Bryan Shaw Date: 03-05-90

Date: 03-05-90

This report applies to the samples tested, and are not necessarily indicative of the qualities of apparently identical or similar materials. Shelburne Laboratories assumes no responsibility or liability for the manner in which these results are used or interpreted. This report is for the exclusive use of the client to whom it is addressed.

1.0d4 R2c:90.1.4 T-E

001137

F172

STRATIFIED POINT-COUNT TECHNIQUE FOR IDENTIFYING AND QUANTITATING ASBESTOS IN BULK SAMPLES

Environmental Laboratory Approval Program

Wadsworth Center for Laboratories and Research

New York State Department of Health

June 1989

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7. Precision and Accuracy.

7.1. Precision. Theoretically, the point-count method (when performed with 400 points) should yield a relative standard deviation no better than 50% at a composition of 1% asbestos. However, depending on matrices within a bulk sample, the point-count method (when performed with 300 or more points) has yielded relative standard deviations of 25% or less at compositions between 1 and 3 percent asbestos (Perkins 1989). Similar results were derived from synthetic bulk samples with formulated weight compositions; relative standard deviations ranged from 24 to 45% for replicate samples containing 5 to 7% chrysotile and amosite (Webber et al. 1989). Certain matrices (e.g., chrysotile in vermiculite or cellulose) tend to increase analytical variability.

Although intralaboratory precision with the 400-point method improves with increasing asbestos concentrations, precision in a stratified scheme will be reduced as the number of points counted are reduced. This reduction in precision is not critical, however, since only samples with high asbestos concentrations will have substantially decreased numbers of points counted. These samples have asbestos concentrations well in excess of 1% and thus are categorically ACM.

7.2. Accuracy. The point-count method is usually more accurate than the visual estimation method at quantitating asbestos concentrations in bulk samples, especially at low concentrations (Perkins 1989, Webber et al. 1989). Nonetheless, there are material combinations which seem to cause biases, e.g., the presence of cellulose causes underestimation of chrysotile while amosite in plaster is usually overestimated. In even these instances, however, point-count results are usually closer to actual weight percents than visual-estimation results. For such problematic matrices, laboratories could formulate low-level asbestos bulk samples (Webber et al. 1982) and determine their biases and compensate for these in calculating their results.

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Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Dr., S. Burlington, VT 05403
Telephone Number: (802) 658-5798 Telefax Number: (802) 658-6187

March 5, 1990

Aquatec, Inc.
John Hulbert
25 Green Mountain Drive
So. Burlington, VT 05403

RE: Total Fiber Count by PCM (NIOSH 7400)
Lab Reference No. 16331
Your P.O. No. 13744

Dear Mr. Hulbert:

Please find enclosed the data sheets for the 4 air monitoring samples submitted to Shelburne Laboratories on February 23, 1990 (Our Lab No. SL90-2231-2234). Analysis was performed by Phase Contrast Microscopy (PCM) using an Olympus CH-2 microscope (serial # 700323) at 400X magnification according to NIOSH Method 7400. This method is an approved procedure for the NIOSH Proficiency Analyncal Testing (PAT) asbestos fiber counting program. Fiber counting performed by PCM is based on particulate size and shape, and is not intended as a means of identification. All fibers having a length to width ratio of 3:1 and a length of five microns or greater are counted. The results are as follows:

SL90 Lab No.	Sample I.D. No.	Air Volume (Liters)	Results
2231	#1	1440	No Fibers Detected
2232	#2	1434	BDL* (.001 f/cc)
2233	#3	1425	BDL* (.001 f/cc)
2234	#4 (Blank)	------	No Fibers Detected

*Below Detectable Limit (Less Than 5.5 Fibers Per 100 Fields)

Shelburne Laboratories has been and is currently accredited under Section 206 (d) of Title II of the USC Chapter 15, TSCA as stated in 40 CFR 763, April 30, 1987 and Proficient in the NBS NVLAP and NIOSH PAT Program.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Bryan Schultz
Laboratory Manager

BS/lln

Enclosure

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Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Drive
South Burlington, VT 05407
(802) 658-5798 Fax: (802) 658-6187

PCM Data Sheet
Method: NIOSH 7400

Client Name: Aquatec, Inc.

Client Project Identification: 89150

Project Location:

Lab Reference: 160331

Lab Number: SL90- 2231 Sample Identification: #1

Sample Description:

BQL BDL ND QC PRA Checked: PL

Effective Area
25mm = 385mm^2
37mm = 855mm^2

Calculations

Fiber Density

$\frac{0 \text{ (Total Fibers)}}{100 \text{ (Total Fields)}} = 0$ Average Fibers/Fields

$\frac{0 \text{ (Fibers/Fields)}}{0.0075\text{mm}^2 \text{ (Field Area)}} = 0$ f/mm^2

Fibers/Cubic Centimeter

$0 \text{ f/mm}^2 \times 385 \text{ (Effective Area)} \times \frac{1}{1440 \text{ L}} \times \frac{1}{1000\text{cc}} = 0$ f/cc

BQL (Below Quantifiable Limit): < 10.0 fibers/100

BDL (Below Detectable Limit): < 5.5 fibers/100 fields

The above calculations are based on the air volumes supplied to us with your sample(s). Shelburne Laboratories is not responsible for errors which might occur due to improper sampling procedures, pump calibration procedures or the recording of incorrect air volumes by the client on his/her cassettes and sample data sheets. AIHA Accreditation No. 361

Microscope: Olympus CH-2

Received By: SA Date: 3-2-90

Prepped By: PL Date: 3-5-90

Analyzed By: [illegible] Date: 3-5-90

Report By: [illegible] Date: 3-5-90

1.0a4 R1c:90.2.15 TrE

F176

Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Drive
South Burlington, VT 05407
(802) 658-5798 Fax: (802) 658-6187

PCM Data Sheet
Method: NIOSH 7400

Client Name: Aquatec, Inc.

Client Project Identification: 89150

Lab Reference: 160331

Project Location:

Lab Number: SL90- 2232 Sample Identification: #2

Sample Description:

BQL BDL ND QC PRA Checked: [illegible]

		1							
								1	
							1/2		
	1/2								

Effective Area
25mm = 385mm^2
37mm = 855mm^2

Calculations

Fiber Density

$\frac{3 \text{ (Total Fibers)}}{100 \text{ (Total Fields)}} = .03$ Average Fibers/Fields

$\frac{.03 \text{ (Fibers/Fields)}}{0.0075\text{mm}^2 \text{ (Field Area)}} = 4$ f/mm^2

Fibers/Cubic Centimeter

$4 \text{ f/mm}^2 \times 385 \text{ (Effective Area)} \times \frac{1}{1434 \text{ L}} \times \frac{1}{1000\text{cc}} = .001$ f/cc

BQL (Below Quantifiable Limit): < 10.0 fibers/100

BDL (Below Detectable Limit): < 5.5 fibers/100 fields

The above calculations are based on the air volumes supplied to us with your sample(s). Shelburne Laboratories is not responsible for errors which might occur due to improper sampling procedures, pump calibration procedures or the recording of incorrect air volumes by the client on his/her cassettes and sample data sheets. AIHA Accreditation No. 361

Microscope: Olympus CH-2

Received By: SA Date: 3-V-90

Prepped By: PE Date: 3-5-90

Analyzed By: PE Date: 3-5-90

Report By: [illegible] Date: 3-5-90

1.0a4 R1c:90.2.15 TrE

P177

Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Drive
South Burlington, VT 05407
(802) 658-5798 Fax: (802) 658-6187

PCM Data Sheet
Method: NIOSH 7400

Client Name: Aquatec, Inc.

Client Project Identification: 89150

Project Location:

Lab Reference: 160331

Lab Number: SL90- 2233 Sample Identification: #3

Sample Description:

BQL BDL ND QC PRA Checked: [illegible]

			1						

Effective Area
25mm = 385mm^2
37mm = 855mm^2

Calculations

Fiber Density

$\frac{1 \text{ (Total Fibers)}}{100 \text{ (Total Fields)}} = .01$ Average Fibers/Fields

$\frac{.01 \text{ (Fibers/Fields)}}{0.0075\text{mm}^2 \text{ (Field Area)}} = 1.33$ f/mm^2

Fibers/Cubic Centimeter

$1.33 \text{ f/mm}^2 \times 385 \text{ (Effective Area)} \times \frac{1}{1425 \text{ L}} \times \frac{1}{1000\text{cc}} = .001$ f/cc

BQL (Below Quantifiable Limit): < 10.0 fibers/100

BDL (Below Detectable Limit): < 5.5 fibers/100 fields

The above calculations are based on the air volumes supplied to us with your sample(s). Shelburne Laboratories is not responsible for errors which might occur due to improper sampling procedures, pump calibration procedures or the recording of incorrect air volumes by the client on his/her cassettes and sample data sheets. AIHA Accreditation No. 361

Microscope: Olympus CH-2

Received By: SA Date: 3-2-90

Prepped By: PE Date: 3-5-90

Analyzed By: PE Date: 3-5-90

Report By: [illegible] Date: 3-5-90

1.0a4 R1c:90.2.15 TrE

F128

Shelburne Laboratories

P.O. Box 9479, 74 Ethan Allen Drive
South Burlington, VT 05407
(802) 658-5798 Fax: (802) 658-6187

PCM Data Sheet
Method: NIOSH 7400

Client Name: Aquatec, Inc.

Client Project Identification: 89150

Project Location:

Lab Reference: 160331

Lab Number: SL90- 2234 Sample Identification: #4

Sample Description: (Blank)

BQL BDL (ND) QC PRA Checked: M

Effective Area
25mm = 385mm^2
37mm = 855mm^2

Fiber Density

0 (Total Fibers) / 100 (Total Fields) = 0 Average Fibers/Fields

0 (Fibers/Fields) / 0.0075mm^2 (Field Area) = 0 f/mm^2

Fibers/Cubic Centimeter

0 f/mm^2 x 385 (Effective Area) x 1/0 L x 1/1000cc = 0 f/cc

Calculations

BQL (Below Quantifiable Limit): < 10.0 fibers/100

BDL (Below Detectable Limit): < 5.5 fibers/100 fields

The above calculations are based on the air volumes supplied to us with your sample(s). Shelburne Laboratories is not responsible for errors which might occur due to improper sampling procedures, pump calibration procedures or the recording of incorrect air volumes by the client on his/her cassettes and sample data sheets. AIHA Accreditation No. 361

Microscope: Olympus CH-2

Received By: SA Date: 3-2-90

Prepped By: RG Date: 3-5-90

Analyzed By: [illegible] Date: 3-5-90

Report By: [illegible] Date: 3-5-90

1.0a4 R1c:90.2.15 TrE

F129

aquatec
ENVIRONMENTAL SERVICES
75 Green Mountain Drive, So. Burlington, VT 05403
TEL. 802/658-1074

ANALYTICAL REPORT

YEC, Inc.
10 Pine Crest Road
Valley Cottage, NY 10989

Date : 03/16/90
ETR Number : 20185
Project No.: 89150
No. Samples: 9
Arrived : 02/15/90

Attention : Dr. Y.S. Ed Chen

Page 1

SDG:110525 Atlantic Asbestos Site

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Method No.	Parameter
SUBCON	Asbestos by PLM

Lab No.	Sample Description	Result
110577	SDAA-3:02/14/90 @1300	<1
110578	SDAA-4:02/14/90 @1325	<1

Comments/Notes

Note Asbestos results are reported as percent.

000004

< Last Page > Submitted By : Joseph Co[illegible] Aquatec Inc.

P180

An asbestos determination was performed on samples SWAA-1 and SWAA-2 using a modified Total Suspended Solids procedure previously approved by YEC, Inc. The gravimetric test performed measured both asbestos and non-asbestos residue retained on a 0.45 micron filter. The reporting limit for this test is 100 mg/l (<0.01%).

Sincerely,

Neal E. Van Wyck for

Joseph K. Comeau, Ph.D.
Vice President
Chemistry Division

JKC/lam

Enclosure

89150B29MAR90

DATE: 1 May 1990 FILE No. 576028

TO: Maureen Serafini, NYSDEC

FROM: William Ahlert, LMS

SUBJECT: Usability determination for Atlantic Asbestos (I.D.# 314019)

The final report from Data Validation Services concluded that all the results associated with the Atlantic Asbestos site were compliant as submitted. LMS finds all the data from Atlantic Asbestos usable as submitted.

Data Validation Services

P. O. Box 54

Riparius, N. Y. 12862

Phone 518-494-3509

RECEIVED

APR 25 1990

LMS ENGINEERS

TO: Lawler, Matusky & Skelly, Engineers

FROM: Judy Harris, Data Validation Services J Harris

DATE: 4-23-90

RE: Data Validation of results from Atlantic Asbestos Site
Aquatec Project No. 60150
Case Nos 30101 and 30174 SDG Nos. 110525 and [illegible]

Review has been completed for data packages submitted [illegible] involving samples collected at the Atlantic Asbestos Site. [illegible] samples were found to be in compliance for all parameters, and the reported results correctly reflect the raw data. There were some metals spike compounds that had results outside of the limits and recovery ranges, and this is indicated in the case narrative and on the corresponding forms.

[illegible]	[illegible]	[illegible]	Sample #	Matrix	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	02-[illegible]-90	[illegible]	Sludge#[illegible]	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		Sludge#[illegible]	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		Sludge#[illegible]	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		Sludge#[illegible]	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		Sludge#[illegible]	Soil	NR	NR	NR	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		Sludge#[illegible]	Soil	NR	NR	NR	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		Sludge#	Soil	NR	NR	NR	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		SDAA-3	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		SDAA-4	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		SSAA-1	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		SSAA-2	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		SSAA-3	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
	02-[illegible]-90		SSAA-4	Soil	OK	OK	OK	[illegible]	[illegible]	[illegible]
[illegible]	03-03-90		MWAA-1	Aqueous	OK	OK	OK	[illegible]	[illegible]	[illegible]
	03-02-90		MWAA-2	Aqueous	OK	OK	OK	[illegible]	[illegible]	[illegible]
	03-02-90		MWAA-3	Aqueous	OK	OK	OK	[illegible]	[illegible]	[illegible]
	03-02-90		MWAA-4	Aqueous	OK	OK	OK	[illegible]	[illegible]	[illegible]
	03-03-[illegible]		SWAA-[illegible]	Aqueous	OK	OK	OK	[illegible]		[illegible]
	03-02-[illegible]		SWAA-2	Aqueous	OK	OK	OK	[illegible]	[illegible]	

ATLANTIC ASBESTOS
DATA USABILITY REPORT
I.D. #314019

The final report from Data Validation Services concluded that all the results associated with the Atlantic Asbestos site were compliant as submitted. LMS finds all the data from Atlantic Asbestos usable as submitted.

300

REFERENCE NO. 3

WESTON

Michelle L Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name: Richard Trotti - Assessor

Company: Red Hook Town Assessor's Office

Address: 107 South Broadway Road
Red Hook, NY

Phone: (914) 758-5991

Subject: Property size and ownership Information

Date: 2/9/95

Time: 9:45 AM/PM

☐ Originator Placed Call

☐ Originator Received Call

W.O. NO.

Notes: Red Hook Paper Company is owned by Barry Hull and is approximately 66 acres w/ 2 parcels of land.

☐ File

☐ Tickle File ___/___/___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials: MLH

RFW 110-4-83

REFERENCE NO. 4

THIS ENTIRE REPORT IS ALREADY IN THE SITE FILE

"WHY DUPLICATE"

(PC)

(INCOMPLETE)

ONLY 7 PAGES

THE "ORIGINAL" WEHRAN PHASE I REPORT IS 90(-) PAGES

AND INCLUDES THE ORIGINAL NYDEP-PA

(PC)

WEHRA Consulting Engi

PHASE I INVESTIGATION REPORT
ATLANTIC ASBESTOS
RED HOOK, NEW YORK
SEPTEMBER, 1984

WEHRAN
ENGINEERING
Consulting Engineers

September 24, 1984

Mr. Norman H. Nosenchuck, P. E.
Director, Division of Solid Waste
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, NY 12233

Re: NYSDEC Superfund Program - Phase I
Atlantic Asbestos Corporation
Red Hook, New York
Site I.D. No. 314019

Dear Mr. Nosenchuck:

We are pleased to submit the results of the Phase I Investigation for the Atlantic Asbestos Corporation site. We have enclosed ten copies of the Phase I report which has been prepared in accordance with our contract requirements.

This project can be briefly summarized as follows:

Description

The former Atlantic Asbestos Corporation facility (presently Red Hook Paper) was the site for manufacturing asbestos fiber and asbestos paper. As part of its treatment operation, wastewater was discharged through a series of lagoons to a pond. These unlined lagoons were used as settling basins for asbestos solids contained in the wastewater. The lagoons were dredged occasionally to increase the volume.

HRS Score

Phase I data was incomplete to produce a complete final score. The preliminary S_M was .1, the S_{FE} was assigned a score of zero and the S_{DC} was .833.

Recommendation For Phase II

A Phase II investigation is required to produce a complete and final HRS score and to prepare a preliminary cost range estimate for site remediation. The recommended Phase II Work Plan includes a number of related tasks. The first task includes collection of any available site specific data. The work plan then identifies the installation of three (3) groundwater monitoring wells to determine the potential of groundwater contamination. Surface water and groundwater samples would be collected as well as soil samples from the lagoon walls. A metal detector survey would be employed to determine the location of suspected refuse piles. The

Research & Design Center:
666 East Main Street
Middletown, NY 10940
(914) 343-0660

1.0 BRIEF DESCRIPTION OF THE SITE

ATLANTIC ASBESTOS COMPANY

Spring Lake Road
Red Hook, Dutchess County, New York

The Atlantic Asbestos Company (presently Red Hook Paper Corporation) is located on Spring Lake Road in the Town of Red Hook, New York. The facility consisted of an asbestos fiber and asbestos paper operation that started in the early 1950s and continued to the mid 1970s. During this time, the operation consisted of a water intake from a neighboring pond which was used in the fiber production and paper operation. Wastewater from this process was then discharged directly to a series of lagoons. These lagoons were used as settling basins for solids contained in the wastewater. The water would then flow into a pond where additional settling would occur. This would eventually recirculate into the intake basin which is downgradient of the pond, creating a closed loop system. Occasional overflows of the pond would discharge into a small stream which is also downgradient of the site. An area behind the mill was also reported to be a dumping area for refuse and process wastes.

Presently the site consists of the upper and lower ponds, the lagoon area and the rebuilding of the Red Hook Paper Mill. The lagoons are dry with visible signs of fiber located on the walls of the lagoons. There were no signs of any refuse piles located in the vicinity of the site.

2.0 SITE LOCATION

The site is located on Spring Lake Road in the Town of Red Hook. This is located in Northern Dutchess County near the Hudson River. The site area is approximately 200 feet west of Spring Lake Road and 400 feet north of Hapeman Road. The area of the site is approximately 20 acres and consists of two buildings, two ponds, and a series of lagoons.

One building houses the paper production operation and the other building houses the offices. The upper pond is used as a wastewater discharge area and the lower pond is used for intake in the paper process. Lake Kill, which runs adjacent to the property and drains the Spring Lakes, is approximately 500 feet to the east of the site. A generalized location of the site is identified on Figures 1 and 2.

5.0 SITE HISTORY

The Atlantic Asbestos Corporation facility (presently Red Hook Paper Company) has produced asbestos fiber, asbestos paper and a low quality shipping paper since the facility was opened in 1946. Originally, the facility was constructed and operated as one of three plants in southern New York owned and operated by the Zurovich family. The paper produced by the facility consists of recycled newsprint, books, and magazines. Asbestos used in the operation process was obtained by utilizing virgin and reclaimed asbestos fibers. The processing would utilize on-site sources for water needs. A pond adjacent to the processing building was used as an intake for the pulping process. Wastewater was discharged through a series of lagoons and eventually to a pond to the southwest of the facility. This pond has a direct flow to the lower pond which resulted in a closed loop flow.

In the late 1970s, a property owner adjacent to the discharge pond complained of water flowing onto his property. He also complained of fish kills in the pond and dead fish washing onto his property. Investigations were made after this by County Health, New York State Department of Environmental Conservation, New York State Public Health Department officials, and private consultants which consisted of testing the intake and discharge water. No public health hazards were found. NYSDEC and USEPA officials also reported that refuse piles suspected of containing asbestos fibers were located on the property. Recent field visits have revealed no refuse piles present onsite.

In 1980, the property was sold due to declining paper sales. The facility was purchased and the new operation produced low quality paper with no asbestos content. Late in 1982, the plant suffered a fire which put the facility out of operation. Presently, the facility is being rebuilt and is expected to start operation in early 1984. The operation is expected to utilize the same wastewater discharge process that was previously employed.

EPA

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

I. IDENTIFICATION
01 STATE: NY
02 SITE NUMBER:

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 ☒ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☒ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
_____ (ft)	A 3.0 (ft)	_____

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
_____ (in)	_____ (in)	0-2 %	Northeast	2-4 %

09 FLOOD POTENTIAL

SITE IS IN _____ YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. <1/2 (mi)

OTHER: B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL: A. _____ (mi)

RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES: B. <1/4 (mi)

AGRICULTURAL LANDS: PRIME AG LAND: C. < (mi) AG LAND: D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is located on down slope of hill adjacent to Spring Lakes. Two small ponds are located to the southwest of the present facility and Spring Lakes is located to the northeast of the site.

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

USGS Map - Cleremont Quadrangle
NYSDEC - Region III Files

EPA FORM 2070-13 (7-81)

REFERENCE NO. 5

WESTON

PROJECT NOTE

TO: Atlantic Asbestos

DATE: 2/9/95

FROM: Michelle Hunter

W.O. NO.: 04200-022-031-0051

SUBJECT: Water Supply

Water supply calculations were completed in the following manner: Townships w/in the 4-mile Target Distance Limit (TDL) are served by private groundwater wells (see phone cons for various townships) except the village of Red Hook, part of the Town of Red Hook, Rhinebeck and two other community supplies (Hawkland Mobile Home Park + N. Dutchess Mobile Home Park). The Annadale W.D and R.H. wells were located by way of the computer printout provided by M. Phillips; the community supplies were located by way of the N.Y.S Atlas of Community Water Septen-1982 attachment; Rhinebeck information was from Town clerk. All community supplies were subtracted from the total population w/in each distance ring from Frost Assoc. Data. (See Frost Assoc. data sheets for breakdown) Only The Village of Red Hook needed apportioning:

① (Village Population) = 1,700 (from Vlg. clerk)
(25% pop. in 2-3 mi ring-Estimate) x.25
425 (pop. in 2-3 mile ring)

② 1,700 (Vlg. Pop.)
x.75 (pop. in 3-4 mile ring - Estimate)
1,275 (pop. in 3-4 mile ring)

These population totals were also subtracted in Frost Assoc. data sheets for each appropriate distance ring. (See following attachments)

* Rhinebeck - .05% tow pop. w/in 3-4 mile ring = ~138 people + must subtract from Town population.

FROST ASSOCIATES

P.O.Box 495, Essex, Connecticut 06426
(203) 767-7644 FAX (203) 767-1971

Jan 12, 1995

To: Jan Holderness
Roy F. Weston Inc
4th Floor Raritan Plaza
Edison, New Jersey 08837-3616

Fr: Bob Frost
Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-1254
Fax: (203) 767-7069

Sub: Atlantic Asbestos
Red Hook, NY

CERCLIS: NYD980202014

Job: 04200-022-081-0081-02

Site Longitude: 73-49-15 73.820831
Site Latitude : 42-01-09 42.019169

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and

Atlantic Asbestos
Red Hook, NY

========== Site Data ==========

Population:	7177.88
Households:	3010.24
Drilled Wells:	169.32
Dug Wells:	1810.27
Other Water Sources:	5.58

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ---- (−) Community Supplies = Population served by private wells

Population:	4099.91
Households:	1670.96
Drilled Wells:	75.42
Dug Wells:	821.78
Other Wells:	4.79
** Population On Private Wells:	2201.40

−(44: Hav. Mob Home Park) = 4056 − (31: N. Dutchess Mob. Home) = 4025 − (400: Annadale W.D.) = 3625 − (1,275: 75% population of R.H. village) = 2,350 − (138: Rhinebeck population served by Hudson River − surface w.) = 2212 = population supplied by private groundwater wells

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	1535.79
Households:	699.46
Drilled Wells:	44.33
Dug Wells:	528.79
Other Wells:	0.51
** Population On Private Wells:	1258.38

−(425: 25% R.H. village) = 1,111 = population supplied by private wells.

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	1132.37
Households:	471.31
Drilled Wells:	36.14
Dug Wells:	340.33
Other Wells:	0.22
** Population On Private Wells:	904.50

= 1,132 = pop. served by private gw wells

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	282.94
Households:	118.09
Drilled Wells:	9.18
Dug Wells:	85.52
Other Wells:	0.06
** Population On Private Wells:	226.91

= 283 = Pop. served by private gw wells

Atlantic Asbestos
Red Hook, NY

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	91.89
Households:	36.71
Drilled Wells:	3.07
Dug Wells:	24.85
Other Wells:	0.01

= 92 = pop. served by private gw wells

** Population On Private Wells: 69.90

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	34.99
Households:	13.72
Drilled Wells:	1.19
Dug Wells:	9.00
Other Wells:	0.00

= 35 = pop. served by private gw wells

** Population On Private Wells: 25.97

WESTON

Michelle L. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name: Village Clerk
Company: Red Hook Vlg. Clerk's Office
Address:

Phone: (914) 758-1081

Date: 2/9/95
Time: 9:20 AM/PM

☑ Originator Placed Call
☐ Originator Received Call
W.O. NO.:

Subject: Village Population and Water Supply Information

Notes: Town Pop = 1,700 residences all on Town water wells
residences refer to total number of people served by water supply.

☐ File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials: MLH

RFW 110-4-83

WESTON

Michelle L. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Margaret Doty
Company Red Hook (Town) Clerk's Office
Address Willowbrook Lane Road
Red Hook, NY
Phone (914) 758-3561

Date 2 / 9 / 95
Time 8:00 AM/PM

☑ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Subject Town Population and Water Supply Information

Notes: Red Hook Town population is approx. 9,585;
400 residences in town served by W.D. #1 (a.k.a. Annandale W.D)
184 residences in town served by Rockefeller Homes, Inc, but NOT
in 4-Mile TDL - The rest of town is served by Private wells:

9,585 = (Town Pop)
- 400 = (Comm. Supply)
9,185 = people served by private wells

residences refer to total number of persons served
by water supply.

☐ File
☐ Tickle File / /
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MLH

RFW 110-4-83

WESTON

Michelle L. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Donna - Assessor Clerk

Company Milan Town Clerk's Office

Address

Milan, NY

Phone (914) 876-3463

Date 2 / 9 / 95

Time 9:30 AM PM

☑ Originator Placed Call

☐ Originator Received Call

W.O. NO.

Subject Town population and water supply Information

Notes: Population of Milan is approximately ~~1865~~ 1865 people; all of town is supplied by private wells MLH

☐ File

☐ Tickle File / /

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MLH

RFW 110-4-83

WESTON

Michelle C. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Valerie Kelmer
Company Rhinebeck ~~Town~~ Village Clerk
Address 76 E Market
Rhinebeck, NY
Phone (914) 876 - 7015

Date 2 / 9 / 95
Time 10:30 (AM) PM

☑ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Subject Village Population and Water Supply Information

Notes: Village Population 2,750 ; municipal water supply from the Hudson - plant located 308 W outside Rhinebeck and outside of the 15-mile surface water pathway

☐ File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MCH

RFW 110-4-83

WESTON

Michelle L. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Pauline Freer - Dep. Clerk

Company Clermont Town Clerk's Office

Address

Phone (518) 537-6838

Date 2 / 9 / 95

Time 8:45 AM/PM

☑ Originator Placed Call

☐ Originator Received Call

W.O. NO.

Subject Town Population and Water Supply Information

Notes: ~ 1400 residences in Clermont; all on private wells
residences refers to people served by water supply.

☐ File

☐ Tickle File / /

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MLH

RFW 110-4-83

WESTON

Michelle L. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Gallatin Town Clerk
Company Gallatin Town Hall
Address

Phone (518) 398-7579 ~~329~~-7425

Date 2/9/95
Time 8:30 AM/PM

☑ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Subject Town Population & Water Supply Information

Notes: Gallatin has approximately 1,658 residences, and pop. is served by private wells

Residences refers to number of people served by water supply.

☐ File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MLH

RFW 110-4-83

WESTON

Michelle L. Hu
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Linda Fixx
Company Livingston Town Clerk's Office
Address
Phone (518) 851-9441

Date 2 / 9 / 95
Time 8:10 AM PM

☑ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Subject Town Population and Water Supply Information

Notes: Town Pop = 3870, residences; all residences are on private wells for potable water

Residences refers to the number of people served by water supply.

☐ File
☐ Tickle File / /
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MLH

RFW 110-4-83

Site Name: [redacted]
Work Order No.: [redacted]

Page ___ of ___

Groundwater Population Worksheet No. 1

A Town/City	B Water Co./Dept. Supplying Town/City	C No. of Wells in System (incl. Standby Wells)	D Identify the Well No. and Location of Each Well (Landmarks, Cross Streets)	E Blended Prior to Distribution (Y/N)?	F Blended with Surface Water (Y/N); If Yes, Ratio (or %) of GW to SW	G If blended, does any 1 well or intake supply more than 40% to the system (Y/N)?	H Aquifer Tapped by Each Well	I No. of Public Service Connections For Entire System (or by each well if not blended)	J No. of Service Connections per Well for Blended Systems (divide column I by column C)	K Do Private Wells Exist in Town/City (Y/N)?	L No. or Percent of Private Wells in Town/City	M Identify Areas Within Town/City Served by Public Supply vs. Areas Supplied by Private Wells	N Aquifer Tapped by Private Wells
Milan	—	—	—	—	—	—	—	—	—	Y	1,865	All Private	[illegible]
[illegible]	[illegible]	—	[illegible] outside [illegible]	—	All [illegible]	—	Hudson River	2,750	—	N	—	[illegible]	
[illegible]	[illegible]	7	3.5 miles from site - located East of Rte 9 [illegible] village (See attachments)	—	—	—	Bedrock	1,700	—	N	—	[illegible]	
Clermont	—	—	—	—	—	—	—	—	—	Y	1,400	[illegible]	[illegible]
Gallatin													
Livingston	—	—	—	—	—	—	—	—	—	Y	3,870	All private	[illegible]
[illegible]	[illegible]	4	3.5 miles from site West of Rte 9 (See attachments)	—	—	—	Bedrock	400	—	Y	9,110	Most of Town is private	Bedrock
Red Hook Town	Haviland Mobile Home Park #1	1	3.8 miles - Just West of Rte 9 South of R.H. Village (See [illegible])	—	—	—	Bedrock	44	—	Y	9,110	most of Town is private	Bedrock
Red Hook Town	Northern Dutchess Mobile Home Park	1	3.2 miles from site - East of RTE 9 South of R.H. Village (See attachments)	—	—	—	Bedrock	31	—	Y	9,110	most of Town is private	Bedrock

Work Order No.:

Date:

Groundwater Population Worksheet No. 2

Distance Ring	Water Co./Dept.	No. of Public Supply Wells in Ring	No. of Service Connections per Well	Population Served by Public Supply Wells in Ring*	Population Served by Private Wells in Ring**	Total Population Served by Wells in Ring
>0 to 0.25 mi.	—					
>0.25 to 0.5 mi.	—					
>0.5 to 1 mi.	—					
>1 to 2 mi.	—					
>2 to 3 mi.	Red Hook Village (25% R.H. pop)	—	—		1,111	1,111
>3 to 4 mi.	Haviland Mob Home	—	—	44	2,212	4,387
	N. Dutchess Mob Home	—	—	31	↓	↓
	Annadale W.D	—	—	400	↓	↓
	R.H. Village (75% in Ring)	—	—	1,700	↓	↓

* Unless supplied by well owner, populations served by public supply wells in a particular distance ring were calculated by multiplying the number of wells in the distance ring (see 4-mile map) by the number of service connections per well (see Groundwater Population Worksheet No. 1) and then multiplying that product by the county average population per household (see attached population data).

** Populations served by private wells were calculated by multiplying the number of private wells by the county average population per household (see attached population data).

Groundwater Population Worksheet No. [illegible]

Distance Ring	Water Co./Dept.	No. of Public Supply Wells in Ring	No. of Service Connections per Well	Population Served by Public Supply Wells in Ring*	Population Served by Private Wells in Ring**	Total Population Served by Wells in Ring
>3 to 4 mi. ~~>0 to 0.25 mi.~~	Rhinebeck (Surface Water)	—	—	138	2,212	4,100
~~>0.25 to 0.5 mi.~~						
~~>0.5 to 1 mi.~~						
~~>1 to 2 mi.~~						
~~>2 to 3 mi.~~						
~~>3 to 4 mi.~~						

* Unless supplied by well owner, populations served by public supply wells in a particular distance ring were calculated by multiplying the number of wells in the distance ring (see 4-mile map) by the number of servic connections per well (see Groundwater Population Worksheet No. 1) and then multiplying that product by the county average population per household (see attached population data).

** Populations served by private wells were calculated by multiplying the number of private wells by the county average population per household (see attached population data).

Site Name: [redacted] Date: 2/9/95

Work Order No.:

Groundwater Population Worksheet No. 3

Population Supplied by the Aquifer of Concern and Overlying Aquifers Within 4 Miles of the Site

Distance Ring	Population Served by Public Supply Wells	Population Served by Private Wells	Total Population Supplied
>0 to 0.25 mi.	—	35	35
>0.25 to 0.5 mi.	—	92	92
>0.5 to 1 mi.	—	283	283
>1 to 2 mi.	—	1,132	1,132
>2 to 3 mi.		1,111	1,111
>3 to 4 mi.	2,175	2,212	4,387

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New York State Atlas of Community Water System Sources 1982

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

REFERENCE

REF
TD
224
.N7N7
1982

DUTCHESS COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Amenia Water District #1	1000	Wells
* 2	Annandale Water Company	1000	Wells 2.5 mi (*Pop. updated - See phone cons)
3	Aztec Water Company	1300	Wells
4	Beacon City (See also No.) Putnam Co.)	5000	Mt. Beacon & Melzingah Reservoirs, Wells
5	Beekman Country Club	350	Wells
6	Brettview Acres Water Company	320	Wells
7	Brinckerhoff Water Company	1500	Wells
8	Central Wappinger Improvement Area	1000	Wells
9	Deerfield Estates Water District	900	Wells
10	Dogwood Knolls	600	Wells
11	Dover Plains Water Company	1500	Wells
12	Dover Ridge Estates	60	Wells
13	Dutchess Estates Inc.	700	Wells
14	Fishkill Village	4000	Wells
15	Fleetwood Manor Water District	650	Wells
16	[illegible] Water District	160	Wells
17	Greenfield Water District	1250	Wells
18	Greenmeadow Park Water Company	350	Wells
19	Harbourd Hills Water Company Inc.	900	Wells
20	Hopegard, Inc.	275	Wells
21	Hopewell Services Inc.	900	Wells
22	Hyde Park Fire & Water District	4000	Crum Elbow Creek, Wells
23	Kensington Park Water Company	65	Wells
24	La Grange Club Estates	170	Wells (Infiltration Gallery)
25	Little Switzerland Water Company	600	Wells
26	Millbrook Village	1715	Wells
27	Millerton Village	1000	Wells
28	Noxon Knolls Water District	250	Wells
29	Oakwood Knolls	310	Wells
30	Pawling Village	2000	Pawling Reservoir, Wells
31	Pine Plains Water Company	1160	Wells
32	Pinewood Knolls	265	Wells
33	Poughkeepsie City	30000	Hudson River
34	Quaker Hill Estates Water District	475	Wells
* 35	Red Hook Village	2000	Wells 3.5 mi (*Pop. updated - See Phone records)
36	Revere Park Water Company	360	Wells
37	Rhinebeck Village	4200	Hudson River
38	Rockingham Farms	3000	Wells
39	Rokeby Homes, Inc.	100	Wells
40	Schreiber Water Works	110	Wells
41	Shorehaven Civic Association	300	Wells
42	Smith Cross Road Water Company Inc.	372	Wells (Infiltration Gallery)
43	Staatsburgh Water Company	1072	Indian Hill Reservoir, Wells
44	Taconic Estates	105	Wells
45	Tall Trees	250	Wells
46	Titusville Water District	300	Wells
47	Tivoli Village	711	Wells
48	Valley Dale Water Company	340	Wells
49	Wappinger Park Homes	600	Wells
50	Wappingers Falls Village	5100	Wells
51	Willow Lake Water Company	126	Wells
52	Windermere Highlands	175	Wells
	Non Municipal Community		
53	Angels Trailer Park	40	Wells
54	Arbor Arms Apartments	30	Wells
55	Arvans Mobile Court #1	72	Wells
56	Bard College	900	Sawkill Creek
57	Beckwith Trailer Park	76	Wells
58	B-D Mobile Home Park	137	Wells
59	Birchwood Mobile Home Park	62	Wells
60	Brooks Mobile Home Park	25	Wells
61	Cannons Trailer Park	18	Wells
62	Canterbury Garden Apartments	600	Wells
63	Cedar Hollow Mobile Home Park	90	Wells
64	Cedar Lane Mobile Home Park #2	20	Wells
65	Charlotte Grove Mobile Trailer Park	110	Wells
66	Chateau Hyde Park Home for Adults	170	Wells
67	Chelsea Ridge Apartments	1000	Wells
68	Clove Branch Apartments	19	Wells
69	Colonial Maples Trailer Park	30	Wells
70	Cooper Road Trailer Park	19	Wells
71	Cove View Apartments	40	Wells
72	Dayton Village	70	Wells
73	Dutch Garden Apartments	650	Wells
74	Dutchess Trailer Park	30	Wells
75	East Mountain Trailer Park	70	Wells
76	Eleanor Roosevelt	200	Wells
77	Elliott Apartments	16	Wells
78	Ennis Mobile Home Park	92	Wells
79	Fuller Trailer Court	60	Wells
80	Fieldstone Apartments	54	Wells
81	Fishkill Park Apartments	200	Wells
82	[illegible] Villas	30	Wells
83	Gebhard F Stoetzel	30	Wells
84	Green Haven Correctional Facility	NA	Reservoir
85	Green Meadow Trailer Court	44	Wells
86	Greer School	300	Wells
87	Harlem Valley Psychiatric Center	1500	Swamp River
88	Haviland Apartments	100	Wells
* 89	Haviland Mobile Home Park #1	96	Wells 3.8 mi
90	Haviland Mobile Home Park #2	29	Wells

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Non Municipal Community		
91	Hi Vu	50	Wells
92	Hickory Hill Mobile Home Park	250	Wells
93	Hidden Hollow Apartments	850	Wells
94	Hidden Valley Mobile Court	30	Wells
95	High Meadows Park Inc	196	Wells
96	Hoffman Trailer Park	76	Wells
97	Hudson River Psychiatric Center	2000	Hudson River
98	Hudson [illegible] Water Works	1000	Wells
99	Hyde Park Mobile Home Estates	84	Wells
100	Hyde Park Terrace Apartments	20	Wells
101	Kent Hollow Apartments	24	Wells
102	[illegible] Trailer Park	20	Wells
103	Lake Ellis Mobile Home Park	81	Wells
104	Lake Lodge Apartments	24	Wells
105	Lake Walton Park	47	Wells
106	Lakeside Mobile Home Park	84	Wells
107	Lamplighter Court Mobile Estates	21	Wells
108	Ledges Apartments	540	Wells
109	Little Falls Trailer Park	161	Wells
110	M and D Mobile Home Park	106	Wells
111	Maple Lane Trailer Park	150	Wells
112	May Lane Mobile Park	30	Wells
113	Maynards Mobile Homes	101	Wells
114	McCarthy's Trailer Park	42	Wells
115	Mobile Home Gardens	30	Wells
116	Montclair Townhouse Apartments	640	Wells
117	Mountain View Mobile Estates	55	Wells
118	Northeastern Conference Nursing Home	120	Wells
* 119	Northern Dutchess Mobile Home Park	31	Wells 3.2 mi
120	Odell's Trailer Park	19	Wells
121	Osborne Trailer Park	15	Wells
122	Palmer Apartments	27	Wells
123	Parkway Apartments	16	Wells
124	Partridge Hill Apartments	150	Wells
125	Phillips Trailer Park	45	Wells
126	Pine Grove Mobile Home Park	19	Wells
127	Powell Road Mobile Park	115	Wells
128	Ramsey's Trailer Park	20	Wells
129	Red Church Trailer Park	12	Wells
130	Rhinebeck Country Village	100	Wells
131	Rhinebeck Mobile Court	120	Wells
132	Roberts Running Creek Trailer Park	80	Wells
133	Route 82 Trailer Park	76	Wells
134	Royal Crest Apartments	150	Wells
135	Sabo Trailer Park	65	Wells
136	Smith Mobile Home Park	76	Wells
137	Scenic Apartments	412	Wells
138	Scenic View Mobile Home Park	27	Wells
139	Shady Acres Trailer Park	26	Wells
140	Shady Homes Trailer Park	62	Wells
141	Shady Lane Trailer Park	11	Wells
142	Simpson Mobile Home Site	27	Wells
143	Springhill Mobile Home Park	NA	Wells
144	Sunset Farms Mobile Home Park	35	Wells
145	Sunset Knolls	50	Wells
146	Taconic Manor Lodge	27	Wells
147	Tally Ho Mobile Estates	NA	Wells
148	Tel Apartments	16	Wells
149	The Lodge at Rhinebeck	48	Wells
150	Unification Theological Church	150	Wells
151	Val Hill Park East	72	Wells
152	Valley Forge Mobile Home Park	60	Wells
153	[illegible] Lake Estates	44	Wells
154	Village Crest Apartments	600	Wells
155	Wappingers Falls Trailer Park	50	Wells
156	Wassaic Developmental Center	2110	Wells
157	Willow Tree Park	10	Wells
158	Wingdale Village Park	77	Wells
159	Woodcrest Manor Adult Home	84	Wells
160	Woodfield Apartments	7	Wells

PUTNAM COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Alpine Village	150	Wells
2	[illegible] Estates	100	Wells
3	Beacon City (See Dutchess Co)		Cargill Reservoir
4	Blackberry Hill	500	Wells
5	[illegible] Water Company	360	Wells
6	Brewster Heights	1000	Middle Branch Reservoir
7	Brewster Village	1700	East Branch Croton River
8	Capri Estates	100	Wells
9	Carmel Water District #2	5000	Lake Gleneida
10	Carmel Water District #1	1400	Lake Secor
11	Carmel Water District #5 - Baldwin Water Company	1000	Wells
12	Carmel Water District #3 - Maple Terrace	100	Wells
13	Carmel Water District #6 - [illegible]	124	Wells
14	Carmel Water District #7 - [illegible]	50	Wells
15	Chestnut Ridge	300	Wells
16	Cold Spring Village	3000	Foundry Brook Reservoir
17	Colonial Hills	105	Lake Mahopac
18	Country Hill Estates	200	Wells
19	Crescent Road Water Supply	40	Wells
20	[illegible] Brewster Corporation	255	Wells
21	[illegible] Lodge	900	Wells
22	Forest Park Homes	200	Wells
23	Fox Hill Estates	170	Wells
24	Garrison Water Supply	85	Wells (Infiltration Gallery)
25	George Walsh	40	Wells
26	Glenmar Gardens	NA	Wells
27	Graymoor Village	220	Wells
28	Gypsy Trail Club	100	Wells
29	Hillsdale Estates	240	Wells
30	Indian Hill	56	Wells
31	Ivy Hill Water Supply	200	Wells
32	Kent Water District #1	140	Wells
33	Lake View Park	400	Lake Mahopac
34	Lakeside Estates	256	Wells
35	[illegible] Bridge Water Works	288	Wells, Well (Infiltration Gallery)
36	Mahopac Hills	400	Lake Mahopac
37	Mahopac Lake Shore Estates	80	Wells
38	Mahopac Ridge Water Supply	1000	Lake Mahopac
39	Mahopac Water Company	500	Wells
40	Mill Pond Water Supply	70	Wells
41	New York City - Aqueduct System (page 76)		Bog Brook, East Branch and Middle Branch Reservoirs (Croton Aqueduct System); Boyd Corners[1] (Croton), [illegible], Croton Falls[2], and West Branch Reservoirs (Croton and Delaware Aqueduct Systems)
42	Rainbow Hill Estates[*]	120	Wells
43	Red Mills Water Supply	400	Wells
44	Spring Knoll Estates	70	Wells
45	Star Ridge Manor	160	Wells
46	Sunrise Ridge	170	Wells
47	Union Valley Estates	290	Wells
48	Valle Grove	514	Wells
49	West Branch Acres	240	Wells
50	Wildwood Manor	140	Wells
51	Wood Hill Estates	100	Wells
52	York View	200	Wells
	Non Municipal Community		
53	Brewster Woods Condominium	200	Wells
54	Capuchin Theological Seminary	65	[illegible], Wells
55	Carpenter Trailer Park	50	Wells
56	[illegible] Rest Home	10	Wells
57	Clearing in the Woods	162	Wells
58	Cold Spring Trailer Court	15	Wells
59	Fink Apartments	50	Wells
60	Forest Haven Apartments	600	Wells
61	[illegible] Trailer Park	NA	Wells
62	Holly Stream Condominium Apartments	225	Wells
63	Kent Apartments	56	Wells
64	Kent Nursing Home	125	Wells
65	[illegible] Trailer Court	NA	Wells
66	[illegible] Apartments	40	Wells
67	Malcolm Gordon School	40	Wells
68	Meadow Motor & Mobile Home Court	30	Wells
69	Middle Branch Apartments	40	Wells
70	Patterson Trailer Park	41	Wells
71	Patterson Village Condominiums	192	Wells
72	Post Road Mobile Home Park	NA	Wells
73	Putnam Community Hospital	111	Wells
74	St Basil Academy	90	[illegible] Brook
75	Tilly Foster Apartments	16	Wells
76	Vista on the Lake Condominiums	402	Wells
77	Walter Nursing Home	75	Wells
78	[illegible] Town House Apartments	150	Wells
79	Woodcrest Apartments	600	Wells

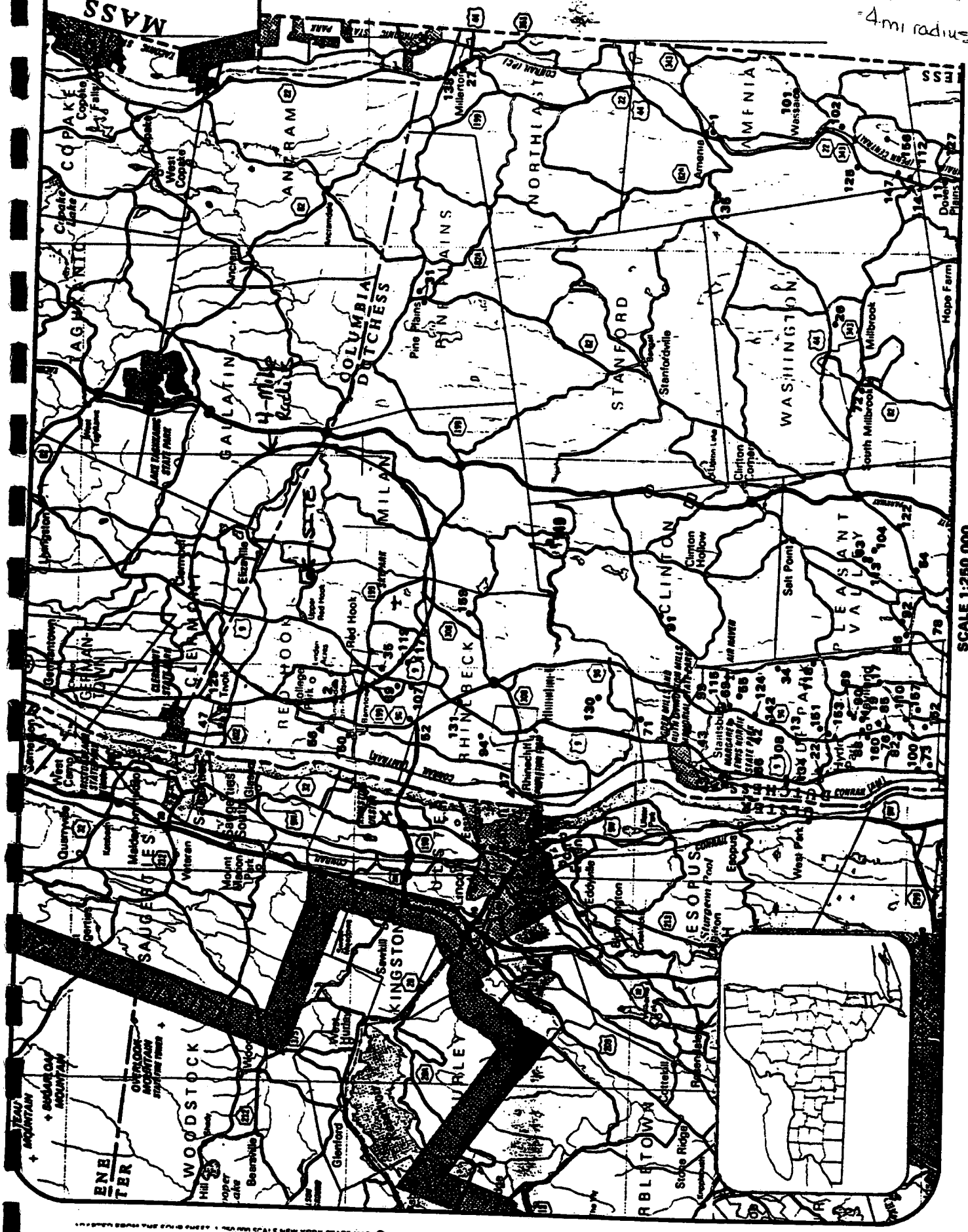
[1] [illegible] is part of Delaware System, [illegible] into Croton System

[2] [illegible] as part of the [illegible] System, but has limited capability to [illegible] the Delaware System

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982

Here's a new page — indicate Approx. site location = 4 mi radius

DUTCHESS and PUTNAM COUNTIES



WESTON ATLANTIC

415917	0735230	Red Hook VILLAGE	x = -7.56 y = -5.65	3.6 mi
415917	0735236		x = -7.79 y = -5.65	3.6
415919	0735231		x = -7.6 y = -5.55	3.5 mi
4159	0735235		x = -7.75 y = -5.50	3.6 mi
415924	0735225		x = -7.36 y = -5.29	3.4 mi
415921	0735233		x = -7.67 y = -5.45	3.6
415924	0735233		x = -7.67 y = -5.29	3.5 mi

SAME

420034	0735310	Annadale Water Co	x = -9.11 y = -1.66	3.5 mi
420034	0735310	Annadale Water Co	x = -9.11 y = -1.66	3.5 mi
420034	0735310	Annadale Water Co	x = -9.11 y = -1.66	3.5
420042	0735253	Annadale Water Co	x = -8.45 y = -1.36	3.2 mi

REFERENCE NO. 6

WESTON

PROJECT NOTE

TO: Atlantic Asbestos File

DATE: 6/2/95

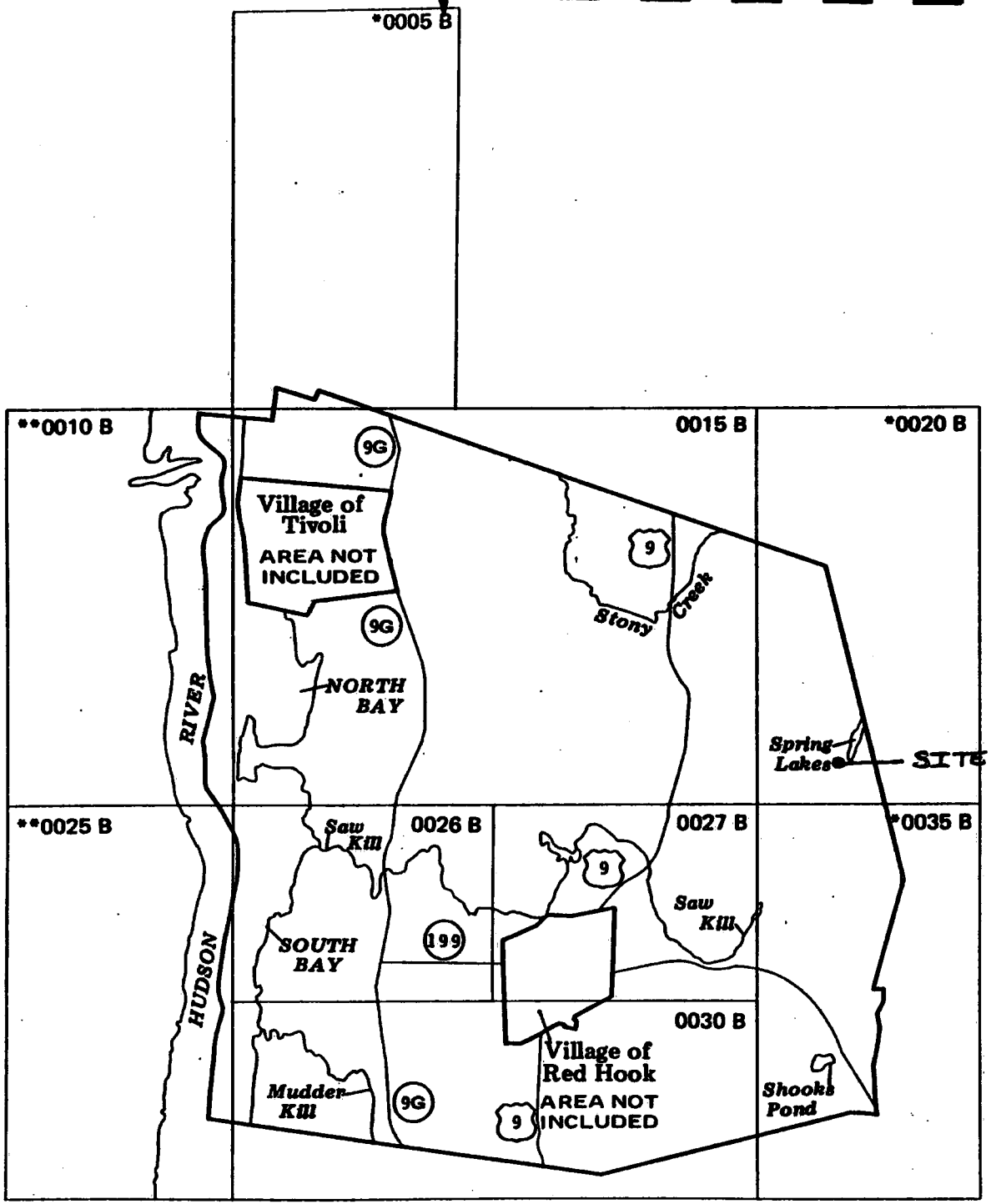
FROM: Michelle Hunter

W.O. NO.: 04200-022-081-0081

SUBJECT: Sensitive Environment Summary

According to the New York State Department of Environmental Conservation (NYSDEC), Wildlife Resources Center in Latham, NY, there are only 2 New York State (NYS)-Listed threatened species w/in a 4-mile radius of the site; the Blanding's Turtle was found to be located approximately 1.9 (N.W) and 0.4 miles southeast of the site. There are no other Federal/NYS-listed threatened or endangered species within the 15-mile SW pathway and neither of these areas lie within the surface water pathway or are within 200' of observed site contamination.

REFERENCE NO. 7



*PANEL NOT PRINTED ; AREA IN ZONE C
**PANEL NOT PRINTED ; OPEN WATER AREA ALL IN ZONE A5

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
RED HOOK,
NEW YORK
DUTCHESS COUNTY

MAP INDEX

PANELS PRINTED: 15, 26, 27, 30

COMMUNITY-PANEL NUMBERS
361143 0001-0035
EFFECTIVE DATE:
OCTOBER 16, 1984

WESTON

PROJECT NOTE

TO: Atlantic Asbestos File

DATE: 6/9/95

FROM: Michelle Hunter

W.O. NO.: 04200-022-081-0081

SUBJECT: Wellhead Protection Information

The following attachment by Governor Cuomo, in detail, defines for the State what is considered a wellhead protection area. The attached map indicates where this site, Atlantic Asbestos, lies in relation to nearby wellhead protection areas.

REFERENCE NO. 8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

SEP 27 1990

Honorable Mario M. Cuomo
Governor of the State of
New York
State Capitol
Executive Chamber
Albany, New York 12224

Dear Governor Cuomo:

In response to a letter from former EPA Administrator, Lee Thomas, you designated the New York State Department of Environmental Conservation (DEC) as the lead State agency for the development and implementation of New York's Wellhead Protection Program under Section 1428 of the Safe Drinking Water Act Amendments of 1986 (SDWA).

In accordance with the SDWA, the DEC submitted a draft Wellhead Protection (WHP) Program document to EPA, Region II, on June 19, 1989. Under Section 1428 of the SDWA, EPA must evaluate each State's Program document to determine whether the Program is fully adequate to protect public water supply systems from contaminants that may have an adverse effect on the public's health.

EPA Region II reviewed DEC's June 1989 submittal and subsequent addenda that were received over the next few weeks. Comments were sent to the State, and DEC revised its plan to address comments from EPA and the public. The revised documents, received in September 1990, responded to all comments sufficiently. Therefore, I am pleased to inform you that the New York Wellhead Protection Program document adequately addresses the requirements of Section 1428 of the Safe Drinking Water Act and the program is fully approved.

The level of activity and sense of commitment to Wellhead Protection on the part of New York State is impressive, especially considering the delays associated with Congressional appropriations for the WHP Program. It is a great credit to the Department of Environmental Conservation, and in particular to the staff of the Division of Water, to have successfully completed the Wellhead Protection Program document. New York State is one of twenty-seven states nationwide to have submitted a WHP Program document within the time frame specified by the SDWA and is one of the first states to receive EPA approval of its program. We recognize your continual efforts to improve upon the program, as reflected in the current revisions to New York's Wellhead Protection Program document.

New York has made major strides in ground water protection over the years, particularly with respect to the development of the State's Upstate and Long Island Ground Water Management Programs, the Nonpoint Source Management Program, and the Water Resources Management Strategy. The State has established itself as a national leader in ground water protection, and EPA looks forward to further advances in this area.

EPA continues to support New York State in the implementation of the Wellhead Protection Program. Federal funding is presently available under Section 106 of the Clean Water Act to support the Department of Environmental Conservation with this new program. Our Ground Water Management Section staff will assist DEC in preparing a WHP implementation workplan for the use of these funds in the coming fiscal year.

Again, congratulations on the accomplishments of your staff.

Sincerely,

Constantine Sidamon-Eristoff
Regional Administrator

cc: Thomas Jorling, NYSDEC
Sal Pagano, NYSDEC
Phil DeGaetano, NYSDEC
Al Tedrow, NYSDEC
Kevin Roberts, NYSDEC

PROPOSED
NEW YORK STATE
WELLHEAD PROTECTION PROGRAM

SUBMITTAL
TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
IN
APPLICATION FOR IMPLEMENTATION FUNDS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
ALBANY, NY

MAY 1990

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ACKNOWLEDGEMENTS

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with the overall wellhead protection objectives if they unduly diminish funds available for management program implementation or if the management program does not require great sophistication. Increased refinements of delineations are justifiable to the extent that corresponding refinements in management and enforcement are practical and possible.

1.4. Wellhead Protection Program Summary

This summary is an overview of material developed in more detail in Chapters 2 through 8.

1.4.1. Agency Responsibilities

The Department of Environmental Conservation (DEC) is the principal agency responsible for developing and implementing state-level aspects of the Wellhead Protection Program and for coordination. The Department of Health (DOH) is responsible for certain aspects related to public water supply well data, contingency planning, new well planning, and Watershed Rules and Regulations. Regional and county planning agencies and county governments are responsible for county-level planning, management and educational outreach elements in the overall program, in addition to any county-level ordinances developed for wellhead protection. Town, village and city governments are responsible for local land use control, local ordinances and other local-level aspects of wellhead protection. Water suppliers will have a role in developing local Watershed Rules and Regulations, education, land acquisition and other program aspects determined by DEC and DOH. The educational effort will be shared by all levels, including Cooperative Extension, the universities and the State Education Department. Federal agencies and other state agencies will participate as appropriate, as coordinated by DEC with the assistance of EPA for federal agencies.

1.4.2. Wellhead Protection Area Delineation

The Safe Drinking Water Act defines a Wellhead Protection Area (WHPA) as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." This definition is not specific because there is no time framework and because there is a requirement that contaminants be reasonably likely to reach the well, a condition that is very difficult to accurately predict. States are given flexibility by the Safe Drinking Water Act in determining delineation approaches.

New York State proposes that unconsolidated aquifer boundaries serve as the fundamental delineation of wellhead protection areas and that a multiple zone approach be used within the total WHPA for varying management relative to risk. This approach is modified for Long Island and for bedrock aquifers, as described in Chapter 3. New York's approach proposes to allow local flexibility in an evolutionary process of delineation refinements, and to allow utilization of previously delineated protection areas, where appropriate.

There are many distinct advantages in this overall approach. A very important advantage is that considerable aquifer characterization and mapping work has already been accomplished. Second, it is consistent with the evolution and principal policies of both the comprehensive New York State Groundwater Management Program (1987) and New York State Water Resources Management Strategy (1989), in addition to the New York State Watershed Rules and Regulation policies. Third, it focuses attention of local governments on the entire aquifer resource and facilitates contingency planning and new (or future) well protection. Finally, it provides a base within which more sophisticated delineations (e.g., subdividing the overall WHPA) can be made as programs require and funding permits.

A possible drawback of using aquifer boundaries—that aquifers may be broad regional systems—is not a major problem in most of New York State. In Upstate New York most public water supplies using groundwater are in unconsolidated aquifers of rather limited areal extent. Most important recharge areas are within the boundaries of the unconsolidated aquifers, another advantage of this approach.

Chapter 3 provides further details and background on wellhead protection area delineation.

CHAPTER 3

WELLHEAD PROTECTION AREA DELINEATION

3.1. Introduction and Institutional Processes

3.1.1. Introduction

The comprehensive New York State Groundwater Management Program, developed in the early 1980's and published in revised and final documents in 1986 (for Long Island) and 1987 (for Upstate), recommended key policies and program initiatives endorsing geographic targeting and critical area protection. These concepts were forerunners of the Safe Drinking Water Act's Wellhead Protection Program. Significant progress has been made in different aspects of geographic targeting of programs and in different parts of New York State. New York acknowledges these accomplishments as an integral part of its overall Wellhead Protection Program.

Delineation determines geographic areas for which different levels of groundwater protection activities are to be instituted. The Wellhead Protection Program in New York State is intended to accomplish a wider recognition of targeting objectives by all levels of government, by citizens in general, and to begin an evolutionary process toward improved targeting and protective program implementation.

The basic wellhead protection delineation approach in New York State recognizes aquifers as the fundamental geographic unit for targeting management efforts. This approach must be modified where aquifers are broad regional systems (DEC considers this case to occur only on Long Island), or where aquifers are not well characterized (considered to be the case for bedrock aquifers, in general). Elsewhere, the unconsolidated aquifers of New York tend to be of limited areal extent and they generally include the important recharge areas within their boundaries. These unconsolidated aquifers also are the source of the large majority of groundwater-derived public water supply systems.

The New York State Wellhead Protection Program proposes that unconsolidated aquifer boundaries (the land surface overlying the aquifer) serve as the baseline definition for the overall wellhead protection area (WHPA). For the baseline definition, both confined and unconfined unconsolidated aquifers are grouped together. Revisions are allowable based on site-specific evaluations. This aquifer boundary approach is proposed to be modified on Long Island and for wells in bedrock aquifers as described in Section 3.2. For all public water supply wells, specific proposed WHPA delineation policies are described in Section 3.2.

The aquifer boundary approach for the overall WHPA has several distinct advantages. It takes advantage of considerable recent and ongoing work in mapping and detailed assessments of aquifer boundaries. Incorporating this work directly into the Wellhead Protection Program provides a practical way for more effective targeting to move forward rapidly rather than being constrained by the need to perform modeling to delineate protection areas.

The aquifer approach also encompasses other non-public wells and potential future well sites, and places major focus on the high-yielding groundwater resources which are most important and most vulnerable. This last aspect is considered very important in the education component of wellhead protection, both for local officials and for the general public.

Wellhead protection area delineation is an evolutionary process. The first need for refinement is the further subdivision of the total wellhead protection area, as required for differentiated management objectives. A second area for potential refinement is delineation of the overall WHPA in the Glacial Aquifer on Long Island and in bedrock aquifers. Issues related to these topics are reviewed in both Sections 3.2 and 3.3. Flexibility for refinement or revision is very important due to the wide variability in

TABLE 3.1.
WELLHEAD PROTECTION AREA
DELINEATION SUMMARY

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers	Deep Flow Recharge Area
	Glacial Aquifer	Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers	Aquifer Boundaries (land surface)
	Bedrock Aquifers	Fixed Radius: 1,500 ft. radius

alternative site-specific delineations according to conditions stipulated through the Water Supply Permit Program (refer to Chapter 7).

The proposed WHPA delineations are described according to the following geographic and hydrogeologic settings. They are also summarized in Table 3.1.

- Unconsolidated Aquifers - Upstate New York

1. WHPA Definition:

The boundaries of wellhead protection areas for public water supplies in unconsolidated aquifers in Upstate New York are the land surface boundaries of the aquifers as illustrated on the five-aquifer sheet maps for Upstate published and distributed by the U.S. Geological Survey (see earlier reference). These boundaries may be revised in accordance with more detailed primary and principal aquifer maps and boundary determinations as approved by the Department of Environmental Conservation. The maps provide definition for both unconfined and confined aquifers. Revisions of these boundaries may be made, pending approval by the Department of Environmental Conservation.

2. Rationale:

The delineations proposed above are hydrogeologically-based and are consistent with the policies and goals of the Upstate Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Plan.

3. Mapping and Case Studies:

Mapping of these areas is already completed and published. Case studies are not considered appropriate, as the maps have been reviewed and approved by the U.S. Geological Survey and the Department of Environmental Conservation as part of the publication process.

4. Public Water Supply Significance:

The large majority of public water supplies using groundwater, particularly for municipal and community systems, are located in unconsolidated aquifers. It is expected that a significant proportion of additional future supplies will also tap these systems.

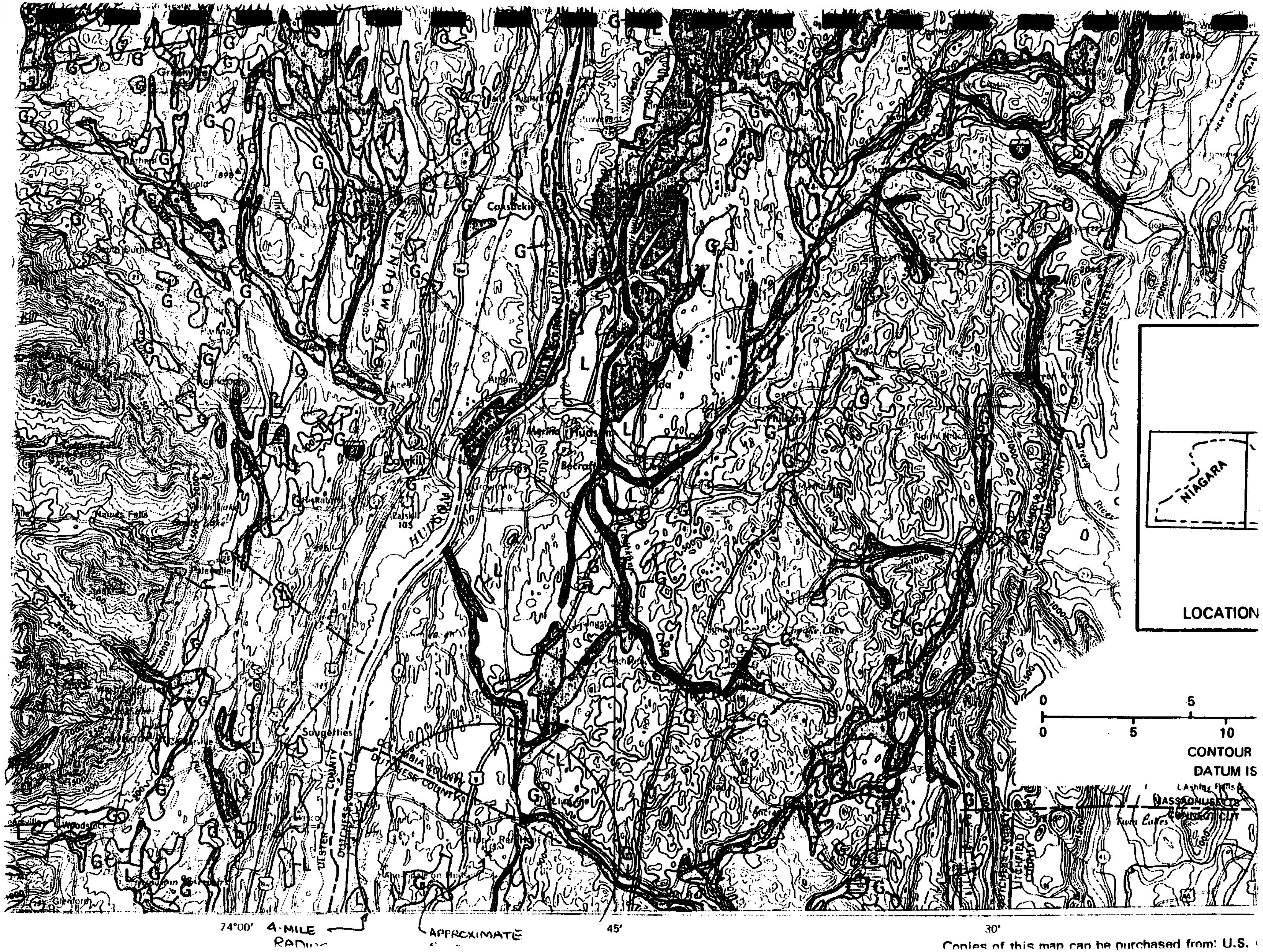
- Bedrock Aquifers - Upstate New York

1. WHPA Definition:

The baseline boundaries of wellhead protection areas for public water supplies in bedrock aquifers are fixed radius areas with a radius of 1,500 feet from the wellhead. Revisions based on site-specific information are desirable, with the goals being to identify and delineate principal recharge areas. Revisions may be developed, pending approval by the Department of Environmental Conservation.

2. Rationale:

The fixed radius approach for the initial WHPA is not based on estimated times-of-travel or drawdown. It provides a substantial increase in protection over more commonly existing protection zones (typically 100 feet or 200 feet). The principal rationale is that the baseline delineation gives a basis for immediate action on wellfield management without requiring expensive site-specific delineations. Revisions based on local conditions are encouraged, particularly for municipal community systems, of which there are relatively few in the State. The geographic targeting benefits of uniformly delineating substantially larger fixed radius areas for all bedrock wells are very questionable. Many of the bedrock public water supply wells are among the approximately 10,000 non-community public wells (e.g., isolated public buildings, roadside rest areas, etc.). There will be little geographic targeting advantage for groundwater protection programs if



Copies of this map can be purchased from: U.S.

EXPLANATION

POTENTIAL YIELD OF WATER TO WELLS IN UNCONSOLIDATED AQUIFERS

UNCONFINED AQUIFERS, 10 to 100 GALLONS PER MINUTE--Sand and gravel with saturated zone generally less than 10 ft thick, or thicker but with less permeable silty sand and gravel. Yields in areas adjacent to streams may exceed 100 gal/min through pumping-induced infiltration, but these areas are too small to show at this scale.

UNCONFINED AQUIFERS, MORE THAN 100 GALLONS PER MINUTE--Sand and gravel of high transmissivity and with saturated thickness greater than 10 ft. Many such areas are associated with surface-water sources that can provide additional water through pumping-induced recharge.

AQUIFER OF UNKNOWN POTENTIAL--Areas of sand or sand and gravel for which little or no well data are on file to determine yield potential. Letter symbols, explained below, indicate the type of deposit.

L — Lacustrine or eolian--Fine to medium sand that probably yields less than 10 gal/min.

G — Kame, kame terrace, kame moraine, outwash, or alluvium--Sand and gravel of unknown thickness or saturation. Yield potential is greater where streams are present.

1 — PRIMARY WATER-SUPPLY AQUIFER--A highly productive aquifer that is being used as a source of water supply by major public-supply systems. Number indicates name of aquifer area (see key below) and report number in list of related publications. Reports and maps cited describe these aquifers in detail.

Primary aquifer number	Aquifer area
1	South Fallsburg-Woodbourne area
3	Ramapo and Mahwah Rivers area
4	Fishkill and Sprout Creeks area
5	Croton-Ossining area

REFERENCE NO. 9

WESTON

Michelle L Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name: Kathy

Company: Red Hook Paper Company

Address: Spring Lake Rd
Red Hook, NY

Phone: (914) 758 - 9200

Subject: No. of Workers at the Site

Date: 5 / 30 / 95

Time: 8:30 AM/PM

☑ Originator Placed Call

☐ Originator Received Call

W.O. NO.

Notes: Kathy said that there are 10 people working at the Red Hook Paper Company in Red Hook, NY and that access to the public is not prohibited by a fenced in area.

☐ File

☐ Tickle File ___/___/___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials: MLH

RFW 110-4-83

REFERENCE NO. 10

WESTON

PROJECT NOTE

TO: Atlantic Asbestos File DATE: 6/1/95

FROM: Michelle L. Hunter W.O. NO.: 04200-022-051-0051

SUBJECT: Wetland Frontage (miles) for Surface Water Pathway and Wetland Acreage for Air Pathway.

Frontage (Miles)	Surface Water Body
0	Spring Lake
.40	Lakes Kill
0	Saw Kill
0	Hudson River

Wetland Acreage	Distance Ring
2	0 - .25
5	.25 - .50
18	.50 - 1.0
44	1.0 - 2.0
60	2.0 - 3.0
100	3.0 - 4.0
20	>4.0

REFERENCE NO. 11

CERCLIS DATA BASE DATE: 10/14/94 ** PROD VERSION ** PAGE NO: 294

CERCLIS DATA BASE TIME: 16:40:05 U.S. EPA SUPERFUND PROGRAM VERSION 2.01
LEVEL: REGION 02 ** C E R C L I S ** RUN DATE: 10/17/94
SELECTION: INTEGRATED LIST-4: SITE ALIAS LOCATION LISTING RUN TIME: 12:19:23

SEQUENCE: REG, ST, SITE NAME
REGION: 02

EPA IDENTIFICATION NUMBER	SITE NAME/ALIAS NAME STREET/ALIAS STREET CITY/ALIAS CITY COUNTY NAME	STATE/ALIAS STATE COUNTY CODE	ZIP CODE	ALIAS SEQ. #	NAME SOURCE	FEDERAL FACILITY FLAG	CONGRESSIONAL DISTRICT (S)
NYD980593636 (CONTINUED)	ASTORIA CENTRAL TREATMENT FAC/CON ED.			01			
	QUEENS	NY					
NYD982273971	ASTRO ELECTROPLATING					N	
	33 DIXON AVE.						
	COPIAGUE	NY	11701				
	SUFFOLK	103					
	ASTRO ELECTROPLATING (NYD072366453)			01			
NYD980202014	ATLANTIC ASBESTOS				STS	N	
	SPRING LAKE RD						
	RED HOOK	NY	12571				
	DUTCHESS	027					
NYD002069557	ATLANTIC CEMENT				STS	N	
	ROUTE 9W						
	COEYMANS	NY	12045				
	ALBANY	001					
	BLUE CIRCLE CEMENT INC			01			
NYD980531685	ATLANTIC WHITE LEAD & LINSEED OIL CO				NOTIS	N	
	135 MARSHALL ST OR 287 PEARL S						
	BROOKLYN	NY	11201				
	KINGS	047					
NYD002106540	ATLAS ELECTROPLATING					N	
	345 FILLMORE AVE.						
	BUFFALO	NY	14201				
	ERIE	029					
NYD074037193	ATTICA CORRECTIONAL FACIL IND				HWDMS	N	
	EXCHANGE ST						
	ATTICA	NY	14011				
	WYOMING	121					
	ATTICA CORRECTIONAL FACIL IND			01			
	WYOMING	NY					

SELECTION:
SEQUENCE: REGION, STATE, SITE NAME

EVENTS: ALL

EPA ID NO.	SITE NAME / STREET / CITY / COUNTY CODE AND NAME / (ASSOCIATED NPL SITE) / (ASSOCIATED NPL ID)	STATE	ZIP / CONG DIST.	OPRBLE UNIT	EVENT TYPE	EVENT QUAL	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NYD000688630	ASHLAND II			00	DS1			12/15/80	EPA (FUND)
	3701 RIVER RD.				PA1			10/30/88	STATE(FUND)
	TONAWANDA	NY	14150		HR1			01/15/88	OTHER
	029 ERIE				SI1		03/01/89	05/31/90	STATE(FUND)
NYD980593636	ASTORIA CENTRAL TREATMENT FAC/CON ED.			00	DS1			06/13/89	EPA (FUND)
	20 AVE. AND 21 ST.				PA1			09/22/89	EPA (FUND)
	ASTORIA	NY	11105						
	081 QUEENS								
NYD982273971	ASTRO ELECTROPLATING			00	DS1			06/29/87	STATE(FUND)
	33 DIXON AVE.				PA1			07/01/87	STATE(FUND)
	COPIAGUE	NY	11701		SI1		06/29/87	07/01/87	STATE(FUND)
	103 SUFFOLK								
NYD980202014	ATLANTIC ASBESTOS			00	DS1			04/01/80	EPA (FUND)
	SPRING LAKE RD				PA1			08/01/83	STATE(FUND)
	RED HOOK	NY	12571		SI1		04/01/91	06/24/91	STATE(FUND)
	027 DUTCHESS								
NYD002069557	ATLANTIC CEMENT			00	DS1			06/15/87	EPA (FUND)
	ROUTE 9W				PA1		06/17/87	06/23/87	EPA (FUND)
	COEYMANS	NY	12045		SI1			04/08/94	EPA (FUND)
	001 ALBANY								
NYD980531685	ATLANTIC WHITE LEAD & LINSEED OIL CO			00	DS1			06/01/81	EPA (FUND)
	135 MARSHALL ST DE 287 PEARL S				PA1 NO FURTHER REMDL ACT PLND			01/26/87	EPA (FUND)
	BROOKLYN	NY	11201						
	047 KINGS								
NYD002106540	ATLAS ELECTROPLATING			00	RV1		06/17/88	05/03/89	EPA (FUND)
	845 FILLMORE AVE.								
	BUFFALO	NY	14201						
	029 ERIE								
NYD074037193	ATTICA CORRECTIONAL FACIL IND			00	DS1			06/01/81	EPA (FUND)
	EXCHANGE ST				PA1		12/17/87	12/30/87	EPA (FUND)
	ATTICA	NY	14011		SI1		01/01/90	03/30/90	EPA (FUND)
	121 WYOMING								

REFERENCE NO. 12

WESTON

PROJECT NOTE

TO: Atlantic Asbestos File

DATE: 8/4/95

FROM: Michelle L. Hunter

W.O. NO.: 04200-022-081-0051

SUBJECT: Stream Flow Information

Stream flow data was not available for Spring Lake, but since it is a lake, not a river, and it has a small drainage area, a flow rate of less than 10 cfs was estimated for Spring Lake. Stream flow data was also not available for Lake's Kill or Sawkill, but since they are similar in size, they will probably have similar flow rates, which will be greater than Spring Lake but less than a large river; a flow rate of 100-1,000 cfs was estimated for both water bodies. The Hudson River's flow rate (14,060 cfs) was estimated by taking an average discharge rate over a 1 year period.

01358000 HUDSON RIVER AT GREEN ISLAND, NY

(National stream-quality accounting network station)
(National pesticide network station)
(National radiochemical network station)

LOCATION.--Lat 42°45'08", long 73°41'22", Albany County, Hydrologic Unit 02020003, on right bank at Green Island, just upstream from Troy lock and dam, and 0.5 mi (0.8 km) downstream from 5th branch Mohawk River. Water-quality sampling site at bridge on State Highway 7, 1.7 mi (2.7 km) downstream from discharge station.

DRAINAGE AREA.--8,090 mi^2 (20,953 km^2), approximately (including that above site of former auxiliary gage).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1946 to current year.

GAGE.--Water-stage recorder. Datum of gage is 0.31 ft (0.094 m) below National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). From July 1, 1946 to Mar. 12, 1962 auxiliary water-stage recorder on bypass channel at datum 10.59 ft (3.228 m) higher.

REMARKS.--Records fair above 15,000 ft^3/s (424.8 m^3/s), and poor below. Records include flow over spillway, estimates of flow through lock, and flow through powerplant. Powerplant, located on right bank just downstream from gage, was inoperative from Nov. 20, 1960 to Feb. 23, 1971. See Diversions in Hudson River Basin for regulation and diversions upstream from this station.

AVERAGE DISCHARGE.--35 years, 13,710 ft^3/s (388.3 m^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 181,000 ft^3/s (5,130 m^3/s) Dec. 31, 1948, gage height, 27.05 ft (8.245 m), from high-water mark in gage well; maximum daily, 152,000 ft^3/s (4,305 m^3/s) Mar. 14, 1977; minimum daily, 882 ft^3/s (25.0 m^3/s) Sept. 2, 1968; minimum gage height 13.68 ft (4.170 m) July 6, 1981, when pool was lowered for inspection of flashboards.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 19, 1936, reached a stage of 29.48 ft (8.986 m) at gage on opposite bank, from information by Corps of Engineers (discharge, 215,000 ft^3/s or 6,090 m^3/s). Flood of Mar. 28, 1913, prior to construction of Sacandaga Reservoir and Troy lock and dam, reached a stage about 0.2 ft (0.06 m) higher upstream from former dam near same site. Downstream from dams, flood in 1913 was about 3.3 ft (1.01 m) higher than flood in 1936, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 91,100 ft^3/s (2,580 m^3/s) Feb. 22, gage height, 22.05 ft (6.721 m); minimum daily, 2,660 ft^3/s (75.3 m^3/s) July 20; minimum gage height, 13.68 ft (4.170 m) July 6, when pool was lowered for inspection of flashboards.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4380	8030	12300	6210	5100	28200	17800	9940	6500	5370	5900	3840
2	4390	5990	12900	4940	6270	25100	21100	9120	7290	5430	4330	3980
3	4450	4770	19700	5960	16500	21500	24700	8420	7130	5080	3680	4320
4	3720	6640	20200	5230	15000	18400	20700	7880	5580	5120	3900	5800
5	3700	7280	14600	4000	12400	16400	17800	7570	5440	4460	5090	6090
6	3270	6850	10600	4890	10500	15200	18500	7920	5130	3920	5600	4640
7	4870	7160	9290	5210	9940	14700	19200	7440	5150	7970	6070	2860
8	4760	7140	8680	5130	8440	13500	16100	7090	3970	6660	4800	3410
9	4300	7130	12000	5680	7430	12300	15800	6670	6070	5570	4260	7070
10	4180	10800	15400	5700	8760	12100	14200	5800	5590	5170	4090	9160
11	4420	10600	16400	4820	9950	11800	13200	6490	5830	4610	5870	6240
12	3580	9730	11600	3560	31000	12300	10900	9920	5270	3880	4200	5910
13	5070	7570	9770	5060	30300	12300	10500	27400	5160	3360	4980	7280
14	5210	7660	9240	5350	23800	11900	10900	26400	4330	4160	4860	6130
15	4860	7420	8410	5840	20500	10500	11000	22300	4250	3880	5150	6660
16	3670	5970	8110	5350	17800	10100	11600	23200	6840	3730	5270	7260
17	3580	5820	7930	5650	17700	11000	10700	24200	7660	4070	5850	6090
18	4230	7010	7970	5580	20900	11200	11400	22400	8900	3800	6730	5620
19	2910	7330	7740	4220	27500	9710	14000	16300	6360	3490	6470	6180
20	3530	7670	7900	4860	38100	9180	14000	13200	6060	2660	5270	4370
21	5700	7290	6410	5670	78200	8710	10700	12200	5300	5140	5220	5130
22	5130	7190	5310	5580	84800	8600	12500	11200	4390	6110	4210	7990
23	5530	5860	7010	5380	65500	8530	8650	9510	6270	6180	3940	19900
24	5230	5450	7470	4950	64100	8360	8280	8090	6030	5170	3020	20200
25	5280	16400	6800	4630	71100	8650	10800	7210	6950	3850	4200	19600
26	9390	17900	4340	4180	61200	8030	12500	7620	6950	3770	4180	13000
27	16000	12500	6340	4940	44800	8850	10800	8510	8520	3950	4070	12700
28	12100	10900	5510	6020	34100	8880	11200	6370	5620	5090	4210	10600
29	8550	11300	5330	6320	---	8000	9510	6050	4710	6710	3120	13300
30	8650	12900	6530	6120	---	7540	8340	6320	5940	7550	4050	11400
31	8520	---	6810	5370	---	11000	---	6120	---	7320	3630	---
TOTAL	173160	256260	298600	162400	841690	382540	407380	358860	179190	153230	146220	246730
MEAN	5586	8542	9632	5239	30060	12340	13580	11580	5973	4943	4717	8224
MAX	16000	17900	20200	6320	84800	28200	24700	27400	8900	7970	6730	20200
MIN	2910	4770	4340	3560	5100	7540	8280	5800	3970	2660	3020	2860

CAL YR 1980 TOTAL 3555210 MEAN 9714 MAX 97900 MIN 2100
WTR YR 1981 TOTAL 3606260 MEAN 9880 MAX 84800 MIN 2660

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in New York write to
District Chief, Water Resources Division
U.S. Geological Survey
U.S. Post Office and Courthouse
P.O. Box 1350
Albany, New York 12201

1982

HUDSON RIVER BASIN

01358000 HUDSON RIVER AT GREEN ISLAND, NY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1955 to current year.
CHEMICAL DATA: 1963 (a), 1964-65 (e), 1966-77 (d), 1978 (c), 1979-81 (d).
MINOR ELEMENTS DATA: 1970-71 (a); 1972-73, 1975-79 (b), 1980-81 (b).
RADIOCHEMICAL DATA: 1968-71 (c), 1973-75 (a), 1976 (d), 1977 (a),1978 (b), 1979-80 (a), 1981 (b).
PESTICIDE DATA: 1976-77 (b), 1978 (a), 1979 (c), 1980 (a).
ORGANIC DATA: OC--1974 (a), 1975 (c), 1976-77 (b), 1978 (a), 1979 (c), 1980-81 (d).
PCB--1978 (a), 1979 (b), 1980 (a).
NUTRIENT DATA: 1968 (b), 1969-76 (d), 1977-79 (c), 1980-81 (d).
BIOLOGICAL DATA:
Bacteria--1971 (a), 1973-74 (d), 1975 (a), 1976-78 (c), 1979-81 (d).
Phytoplankton--1975 (a), 1976-77 (c), 1978 (b), 1979-81 (c).
Periphyton--1976-77 (b), 1978 (a), 1979-80 (b).
SEDIMENT DATA: 1975 (b), 1976 (d), 1977 (b), 1978 (c), 1979-81 (d).

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1964 to September 1965, once-daily measurements, unpublished.
pH: October 1964 to September 1965, once-daily measurements, unpublished.
WATER TEMPERATURES: April 1947 to September 1954, once-daily measurements, unpublished; October 1954 to September 1981 (discontinued).

REMARKS.--Daily water-temperature measurements (at 0800 hours) made at Troy lock and dam. Prior to October 1968 sampling site at old bridge on State Highway 7 about 100 ft (33 m) upstream, and between April 1971 and September 1973 sampling site at former bridge on road between Green Island and Troy at Starbuck Island. No water temperature record Dec. 18 to Mar. 31 (stream frozen during winter period) or Apr. 4 to 15, Sept. 24, 25.

COOPERATION.--Water-temperature record furnished by the Corps of Engineers.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily (water years 1947-76, 1978-81), 29.0°C Aug. 8, 9, 1949, July 31, 1981; minimum daily, freezing point on many days during most winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 29.0°C July 31; minimum daily, freezing point on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT												
02...	1100	4390	205	7.5	17.5	.50	—	9.0	93	480	31	75
NOV												
04...	1300	6640			.0	.20	760	11.8	110	390	39	64
DEC												
02...	1300	12900			.5	2.7	760	11.5	85	>240	120	76
FEB												
25...	1300	71100			.5	7.6	757	11.7	89	860	520	55
MAR												
11...	1300	11800			.0	.40	760	12.0	92	100	78	74
APR												
01...	1200	17800			.5	4.4	760	11.4	102	1800	43	67
28...	1100	11200			—	1.1	—	—	—	>1200	100	63
MAY												
12...	1100	9920			.5	—	757	8.0	85	2200	400	66
JUN												
09...	1100	6070			.5	2.6	746	7.6	89	980	140	73
JUL												
07...	1100	7970			.5	2.4	761	7.6	94	K330	K88	90
AUG												
05...	1030	5090			.0	2.5	758	7.2	89	2400	K300	66
SEP												
01...	1100	3840			.0	1.7	766	8.0	93	1000	120	72

use the mean of this column

168,720 (7,4060) = Average

K Results based on colony count outside the acceptable range (non-ideal colony count).

REFERENCE NO. 13

WESTON

PROJECT NOTE

TO: Atlantic Asbestos

DATE: 6/1/95

FROM: Michelle L. Hunter

W.O. NO.: 04200-022-081-0051

SUBJECT: Stream Classification Information

Stream Classes were obtained from Codes, Rules, and Regulations of the State of New York, Conservation (D). Both Spring Lakes and Lakes Kill (Sawkill River) are classified as B. The following attachments explain the meaning of Class designation "B" and "A", Hudson River. Hudson River Classification Information came from a correspondance between Sandra Klepacki, WESTON, and Joseph Marcogliese, NYSDEC.

CODES
RULES
and
REGULA

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(12)

6 CONSERVATION (A-2)

TABLE I (contd.)

Item No.	Waters Index Number	Name	Comments	Map Ref. No.	Class	Standards
506	H 140 including trib. and P 441a; 141;142 and P 442a; P 821;145 and P 822; 147;148;149 and tribs.;151;152 and tribs.;155 and tribs.	Tribs. and subtribs. of Hudson River, Devils Lake (P 821), Muddler Kill (trib. 152), unnamed ponds	Isolated pond (P 821).	N-24 M-24	D	D
*507	H 158 including P 823,P 829	Saw Kill, Lower Spring Lake (P 829), unnamed pond		M-24 N-24	B	B(T)
508	H 158-4 and trib.	Trib. of Saw Kill		M-24 N-24	C	C(T)
509	H 158-5 and trib., 9 and tribs.	Tribs. and subtribs. of Saw Kill		M-24 N-24	D	D
510	H 158-13 portion including P 826a	Trib. of Saw Kill, unnamed pond	From mouth to trib. 4.	N-24	C	C(T)
511	H 158-13 portion including P 826b	Trib. of Saw Kill, unnamed pond	From trib. 4 to source.	N-24 M-24	C	C
512	H 158-13-1 and trib.	Subtribs. of Saw Kill		N-24	D	D
513	H 158-13-P 825	Shooks Pond	Isolated pond.	N-24	B	B

Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "A"

Best usage of waters. Source of water supply for drinking, culinary or food processing rposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved atment equal to coagulation, sedimentation, filtration and disinfection, with additnal treatment if necessary to reduce naturally present impurities, will meet New York ate Department of Health drinking water standards and will be considered safe and tisfactory for drinking water purposes.

Quality Standards for Class "A" Waters

ems	*Specifications*
Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.
pH	Shall be between 6.5 and 8.5.
Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

701.19 Classes and standards for fresh surface waters. The following items and specifications shall be the standards applicable to all New York fresh waters which are assigned the classification of AA, A, B, C or D, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Fresh Surface Waters

Items	*Specifications*
1. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
2. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
3. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
4. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.
5. Taste and odor-producing substances, toxic wastes and deleterious substances.	None in amounts that will be injurious to fishlife or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the waters for any best usage as determined for the specific water which are assigned to each class.
6. Thermal discharges.	(See Part 704 of this Title.)

CLASS "AA"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "AA" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 50 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 240 for 100 ml of sample.
2. pH	Shall be between 6.5 and 8.5.

CLASS "B"

Best usage of waters. Primary contact recreation and any other uses except as source of water supply for drinking, culinary or food processing purposes.

Quality Standards for Class "B" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l

CLASS "C"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "C" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "D"

Best usage of waters. The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters. The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	*Specifications*
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Historical Note

Sec. added by renum. and amd. 701.4, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

701.29 Classes and standards for saline surface waters. The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "D"

Best usage of waters. The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters. The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	*Specifications*
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Historical Note

Sec. added by renum. and amd. 701.4, filed July 3, 1965; amd. filed Sept. 20, 1965 eff. 30 days after filing.

701.20 Classes and standards for saline surface waters. The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Class "SB" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any tim
3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS "SC"

Best usage of waters. The waters are suitable for fishing and fish propagation. T water quality shall be suitable for primary and secondary contact recreation ev though other factors may limit the use for that purpose.

Quality Standards for Class "SC" Waters

Items	*Specifications*
1. Coliform.	The monthly medial coliform value for 1 ml of sample shall not exceed 2,400 from minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthl geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 fron a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time

3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for secondary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS "SD"

Best usage of waters. All waters not primarily for recreational purposes, shellfish culture or the development of fishlife, and because of natural or man-made conditions cannot meet the requirements of these uses.

Quality Standards for Class "SD" Waters

Items	*Specifications*
1. Dissolved oxygen.	Shall not be less than 3.0 mg/l at any time.
2. Toxic wastes and deleterious substances.	None alone or in combination with other substances or wastes in sufficient amounts to prevent survival of fishlife, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

Historical Note

Sec. added by renum. 701.5, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

New York State Department of Environmental Conservation
200 White Plains Road - 5th Floor
Tarrytown, New York 10591-5805
(914) 332-1835

Langdon Marsh
Acting
Commissioner

May 27, 1994

Ms. Sandra Klepacki
Roy F. Weston of New York, Inc.
Sutton Park Suite 180
465 Columbus Avenue
Valhalla, New York 10595-1336

Dear Ms. Klepacki:

In response to your request please be advised as follows:

Tenmile River	-	B(T) Between tribs 6 and 7
	-	C(T) From trib 7 to source
Wassaic Creek and Trib 1	-	C(T)
Ponds P 1121 and P 1122	-	C
Fallkill Creek	-	C
Hudson River	-	A

I trust this information is helpful.

Very truly yours,

Joseph F. Marcogliese, P.E.
Environmental Engineer III
Division of Water
Region III

JFM:jm

printed on recycled paper

REFERENCE NO. 14

WESTON

Michelle L. Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Robert Angyal
Company NYSDEC - Fish Division
Address
New Paltz NY
Phone (914) 255-5453
Subject fishery information

Date 5 / 23 / 94
Time 11:00 AM/PM

☑ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Notes: Fall Kill Creek: not stocked, no commercial fisheries know but is privately fished for consumption.

Hudson River: Not stocked, but there is both private and commercial fishing and consumption of fish

Saw Kill Creek: Privately fished.

☐ File
☐ Tickle File / /
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials MLH

RFW 110-4-83

REFERENCE NO. 15

90-GU8 10/91

1990 CENSUS POPULATION AND GROUP QUARTERS COUNTS, VACANCY STATUS, AND PERSONS PER UNIT

FOR

ALL GOVERNMENTAL UNITS

Prepared by: New York State, Dept. of Economic Development, State Data Center

The data presented in this report are derived from the 1990 Census of Population and Housing.

Data are presented for all local governments by county. Census Designated Places (CDP) are statistical counterparts to incorporated places. They comprise populated areas that are identified with a name but are not incorporated as a city or village.

The notation "(pt.)" indicates that an area is split by a higher level of geography. The totals for the entire area can be obtained by adding the parts together.

The following Affiliate Data Center organizations serve as contacts for more detailed Census information on a county or regional basis.

Buffalo and Erie County Library	Ms. Joyce Davoli	(716) 858-7099
Capital District Regional Planning Commission	Mr. Rocco Ferraro	(518) 393-1715
Center for Governmental Research, Inc.	Mr. Peter Young	(716) 325-6360
Central NY Regional Planning & Development Board	Mr. Tom Wight	(315) 422-8276
City University of New York	Ms. Marta Fisch	(212) 642-2085
Columbia County Planning and Econ. Devel. Dept.	Ms. Barbara LaFleur	(518) 828-3375
Columbia University, Electronic Data Service	Mr. Bill Middleton	(212) 854-5002
Cornell University, Olin Library	Ms. Janie Harris	(607) 255-9481
Dutchess County Department of Planning	Ms. Carolyn Purcell	(914) 485-9681
Erie County Dept. of Environment and Planning	Mr. Michael Alspaugh	(716) 858-6013
Genesee/Finger Lakes Regional Planning Council	Ms. Lisa Nagle	(716) 546-5902
Greater Syracuse Chamber of Commerce	Ms. Beth Crough	(315) 470-1800
Greene County Department of Planning	Mr. Ron Roth	(518) 622-3251
Herkimer Oneida Comprehensive Planning Program	Mr. Steve Olney	(315) 798-5710
Lake Champlain/Lake George Reg. Planning Board	Mr. Mark Galough	(518) 668-5773
Long Island Regional Planning Board	Mr. Roy Fedelem	(516) 853-5111
Marist College, Div. of Management Studies	Dr. Ann Davis	(914) 575-3225
New York City, Dept. of City Planning	Mr. Ron Ortiz	(212) 720-3446
New York Metropolitan Transportation Council	Ms. Juliette Bergman	(212) 938-3352
Niagara County Planning and Industrial Devel. Dept.	Mr. Rick Seekins	(716) 439-6033
Niagara Frontier Econ. Devel. Technical Assist. Ctr.	Ms. Beth Lauzonis	(716) 731-3271
Orange County Planning Dept.	Ms. Kathy Murphy	(914) 294-5151
Port Authority of New York and New Jersey	Mr. Gene Spruck	(212) 435-5315
Putnam County Dept. of Planning	Ms. Michelle Powers	(914) 878-3480
Rockland County Planning Dept.	Mr. George O'Lear	(914) 638-5480
St. Lawrence County Planning Board	Ms. Mary Burns Verlaque	(315) 379-2292
Southern Tier Central Reg. Planning andDevel. Board	Mr. Gary Petrichick	(607) 962-5092
Southern Tier East Reg. Planning Devel. Board	Ms. Sally Nelson	(607) 724-1327
Southern Tier West Reg. Planning and Devel. Board	Mr. Ronald Southard	(716) 945-5301
State University of New York at Albany	Mr. Brian Fisher	(518) 442-4905
State University of New York at Buffalo	Mr. Ed Herman	(716) 636-2821
State University of New York at Plattsburgh	Mr. Gordon DeVries	(518) 564-4107
Syracuse University, Bird Library	Mr. George Abbott	(315) 443-2438
Syracuse-Onondaga County Planning Agency	Mr. Doug Morris	(315) 425-2611
Westchester County Department of Planning	Ms. Mary Carlson	(914) 285-4412

1990 Census Population and Group Quarter Counts, Vacancy Status and Persons Per Occupied Housing Units
For
New York State Minor Civil Divisions by County and Places.

Area Name	Total Population	Total Group Quarters Population	Insitutional Group Quarters Population	Percent Total Group Quarters Population	Total Housing Units	Total Vacant Housing Units	Percent Vacant Housing Units	Persons Per Occupied Housing Units
Poughkeepsie city.....	28,844	782	619	2.71	13,112	1,238	9.44	2.36
Poughkeepsie town.....	40,143	4,178	100	10.41	14,329	560	3.91	2.61
Arlington CDP.....	11,948	2,160	0	18.08	4,501	277	6.15	2.32
Crown Heights CDP.....	3,200	114	0	3.56	1,041	17	1.63	3.01
Fairview CDP (pt.).....	3,337	131	39	3.93	1,283	55	4.29	2.61
Red Oaks Mill CDP (pt.).....	2,786	0	0	0.00	961	24	2.50	2.97
Spackenkill CDP.....	4,660	45	0	0.97	1,596	20	1.25	2.93
Wappingers Falls village (pt.)....	889	0	0	0.00	430	36	8.37	2.26
Red Hook town.....	9,565	1,002	56	10.48	3,405	275	8.08	2.74
Red Hook village.....	1,794	24	0	1.34	760	49	6.45	2.49
Tivoli village.....	1,035	0	0	0.00	474	62	13.08	2.51
Rhinebeck town.....	7,558	1,018	899	13.47	3,047	248	8.14	2.34
Rhinebeck village.....	2,725	152	125	5.58	1,345	99	7.36	2.07
Stanford town.....	3,495	49	16	1.40	1,564	302	19.31	2.73
Union Vale town.....	3,577	14	0	0.39	1,340	150	11.19	2.99
Wappinger town.....	26,008	207	124	0.80	9,728	482	4.95	2.79
Myers Corner CDP.....	5,599	17	0	0.30	1,753	40	2.28	3.26
Wappingers Falls village (pt.)....	3,716	84	62	2.26	1,628	160	9.83	2.47
Washington town.....	4,479	235	163	5.25	2,070	334	16.14	2.44
Dover Plains CDP (pt.).....	44	0	0	0.00	23	5	21.74	2.44
Millbrook village.....	1,339	0	0	0.00	709	86	12.13	2.15
Erie County.....	968,532	24,417	13,138	2.52	402,131	25,137	6.25	2.50
Alden town.....	10,372	1,785	1,771	17.21	3,080	89	2.89	2.87
Alden village.....	2,457	14	0	0.57	985	30	3.05	2.56
Town Line CDP (pt.).....	2,537	0	0	0.00	822	11	1.34	3.13
Amherst town.....	111,711	6,023	1,485	5.39	43,303	1,983	4.58	2.56
Williamsville village (pt.).....	5,554	219	199	3.94	2,600	91	3.50	2.13
Aurora town.....	13,433	389	315	2.90	5,128	168	3.28	2.63
Billington Heights CDP (pt.).....	727	0	0	0.00	262	9	3.44	2.87
East Aurora village.....	6,647	356	315	5.36	2,576	88	3.42	2.53
Boston town.....	7,445	0	0	0.00	2,772	149	5.38	2.84
North Boston CDP.....	2,581	0	0	0.00	953	22	2.31	2.77
Brant town.....	2,119	0	0	0.00	883	109	12.34	2.74
Farnham village.....	427	0	0	0.00	162	13	8.02	2.87
Buffalo city.....	328,123	9,920	4,431	3.02	151,971	15,535	10.22	2.33
Cattaraugus Reservation.....	1,789	0	0	0.00	667	73	10.94	3.01
Cheektowaga town.....	99,314	527	333	0.53	40,760	1,065	2.61	2.49
Cheektowaga CDP.....	84,387	527	333	0.62	34,827	923	2.65	2.47
Depew village (pt.).....	11,068	0	0	0.00	4,220	78	1.85	2.67
Sloan village.....	3,830	0	0	0.00	1,700	64	3.76	2.34
Williamsville village (pt.).....	29	0	0	0.00	13	0	0.00	2.23
Clarence town.....	20,041	398	326	1.99	7,215	248	3.44	2.82
Clarence Center CDP.....	1,376	0	0	0.00	492	17	3.46	2.90
Harris Hill CDP.....	4,577	10	10	0.22	1,702	34	2.00	2.74
Colden town.....	2,899	0	0	0.00	1,141	92	8.06	2.76
Collins town.....	6,020	1,785	1,764	29.65	1,767	118	6.68	2.57
Gowanda village (pt.).....	885	10	10	1.13	448	39	8.71	2.14
Concord town.....	8,387	175	161	2.09	3,274	221	6.75	2.69
Springville village.....	4,310	175	161	4.06	1,710	76	4.44	2.53
Eden town.....	7,416	153	148	2.06	2,650	124	4.68	2.88
Eden CDP.....	3,088	44	39	1.42	1,106	39	3.53	2.85
Elma town.....	10,355	10	0	0.10	3,800	132	3.47	2.82
Billington Heights CDP (pt.).....	1,002	10	0	1.00	351	8	2.28	2.89
Elma Center CDP.....	2,354	0	0	0.00	899	37	4.12	2.73
Evans town.....	17,478	61	40	0.35	6,854	708	10.33	2.83
Angola village.....	2,231	0	0	0.00	852	30	3.52	2.71
Angola on the Lake CDP.....	1,719	0	0	0.00	794	133	16.75	2.60
Lake Erie Beach CDP.....	4,509	0	0	0.00	2,001	427	21.34	2.86
Grand Island town.....	17,561	88	78	0.50	6,528	283	4.34	2.80
Hamburg town.....	53,735	851	429	1.58	20,462	615	3.01	2.66
Blasdell village.....	2,900	0	0	0.00	1,222	38	3.11	2.45
Hamburg village.....	10,442	32	0	0.31	4,146	111	2.68	2.58
Holland town.....	3,572	0	0	0.00	1,343	84	6.25	2.84
Holland CDP.....	1,288	0	0	0.00	508	20	3.94	2.64
Lackawanna city.....	20,585	203	88	0.99	8,986	527	5.86	2.41