Considerations for Monitoring Water Quality of the Schenectady Aquifer, Schenectady County, New York

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations 80-103

Prepared in cooperation with the
SCHENECTADY COUNTY PLANNING DEPARTMENT

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Six public water-supply systems in Schenectady County obtain water from sand and gravel units that form a more or less continuous aquifer system contiguous to the Mohawk River. The aquifer is under water-table conditions and in hydraulic contact with the river, so that pumping wells induces recharge from the river. Direct recharge to the aquifer from precipitation and runoff occurs throughout the valley floor.

Chemical analyses since 1972 have indicated no water-quality deterioration from toxic substances, including pesticides. Geohydrologic conditions at each of the six well fields were evaluated to determine the feasibility of a monitoring system to provide warning of contamination before it reaches a pumping center. Potential contamination sources in the area are landfills, gravel pits, industrial sites, and transporation corridors. Only two of the well fields have wells that could be used for monitoring; at most sites, two or more wells would need to be installed to provide minimal means of detecting contaminants migrating toward a pumping center.

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CONSIDERATIONS FOR MONITORING WATER QUALITY OF THE SCHENECTADY AQUIFER, SCHENECTADY COUNTY, NEW YORK

Ronald V. Allen and Roger M. Waller

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Albany, New York

1981

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

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CONVERSION FACTORS

The following factors may be used to convert inch-pound units of measurement in this report to the International System (SI) units.

Multiply	By	To obtain
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)

CONSIDERATIONS FOR MONITORING WATER QUALITY OF THE SCHENECTADY AQUIFER, SCHENECTADY COUNTY, NEW YORK

By

Ronald V. Allen and Roger M. Waller

ABSTRACT

Public water-supply systems in eastern Schenectady County obtain water from sand and gravel units that form a virtually continuous aquifer system contiguous to the Mohawk River. Water in the aquifer is principally under water-table conditions and in hydraulic contact with the river, so that pumping of most wells induces recharge from the river. Direct recharge to the aquifer from precipitation and runoff occurs throughout the valley floor.

No water-quality deterioration from toxic substances, including pesticides, has been detected from chemical analyses of water since 1972. Geohydrologic conditions at six well fields were evaluated to determine the feasibility of a monitoring system to provide warning of contamination before it reaches a pumping center. Potential contamination sources in the area are landfills, gravel pits, industrial sites, and transportation corridors. Wells that could be used for monitoring were present in two of the well fields. At the other sites, two or more wells would need to be installed to provide minimal means of detecting contaminants migrating toward a pumping center.

Water-quality monitoring, as required by the New York State Department of Health since the early 1970's, includes an annual evaluation of public water supplies to determine concentrations of inorganic chemicals and some heavy metals. The Mohawk River is sampled 9 miles east of the Niskayuna water supply (the well field farthest downstream), and 9 miles west of Rotterdam Junction (the site farthest upstream). Phenol concentrations have been noted in the river analyses, and chloride increases occur in the ground-water analyses. Chemical analyses of three water samples from privately owned wells near well fields showed minor concentrations of arsenic, lead, and zinc; however, all three metals could be derived from domestic plumbing.

Monitoring sites near each well field are indicated. Monitoring would be most effective by constructing pairs of wells to sample both shallow and deep zones of the aquifer. Frequency of water sampling for chemical analysis would be determined after an initial sampling period. An annual sample probably would be sufficient at most sites under ordinary circumstances.

INTRODUCTION

Ground water used for public supply in Schenectady County has a potential for contamination. Six public water-supply systems in eastern Schenectady County have well fields in sand and gravel deposits that underlie the Mohawk River valley; these deposits form an aquifer system that is locally referred to as the Schenectady aquifer.

A recent hydrologic study for Schenectady County (C. T. Male Associates, P. C., 1978) designated nine parts of the aquifer system to be protected from land-use practices that may contaminate the aquifer and result in shutdown of a well field for an indefinite period. The report also documented potential sources of contamination and recommended that the county develop a "... centrally coordinated water quality monitoring and surveillance program" where "... land use activity could affect the quality of the supply" (C. T. Male Associates, P. C., 1978, p. vii).

The U.S. Geological Survey, in cooperation with the Schenectady County Planning Department, evaluated the local hydrology to determine areas of recharge and possible sources of contamination. Monitoring and surveillance of the quality of ground water near the well fields could prevent contaminated water from being pumped into a distribution system that serves the public.

Methods and Scope

The six well fields--in the villages of Rotterdam Junction and Scotia, the towns of Glenville, Rotterdam, and Niskayuna, and the city of Schenectady--were evaluated for probable source and direction of recharge, potential sources of contamination, availability of wells for monitoring, and results of present or former monitoring programs. Information on the hydrology and geology, in addition to much well data, were available from a study by Winslow and others (1965). Possible sources of contamination were designated by C. T. Male Associates, P. C. (1978) and public water-supply authorities of the six well fields. Additional well inventories and water samplings were done by the USGS. The New York State Department of Health (NYSDH) and New York State Department of Environmental Conservation (NYSDEC) provided information on current and former water-quality programs. Additional water-quality and well data were obtained from files of the USGS in Albany.

Appreciation is extended to the city, county, town, and village officials who made their time available to aid this study.

HYDROLOGY OF THE SCHENECTADY AQUIFER

The six public water-supply well fields (fig. 1) tap the Schenectady aquifer, which consists of deposits of coarse sand and gravel that were deposited in a shale bedrock valley by glacial meltwaters and subsequently reworked, in part, by the Mohawk River. The deposits form an extensive linear water-table aquifer system ranging from 30 to 100 feet thick in the city of Schenectady. The system is in hydraulic contact with the Mohawk River. The downstream, southernmost field (Niskayuna) is separated from the upstream sand and gravel units by bedrock in the vicinity of Lock 7.

The Mohawk River is the dominant hydrologic factor in the aquifer system. Under nonflood conditions, the river receives discharge from the aquifer except near well fields in which pumping from the aquifer creates radial

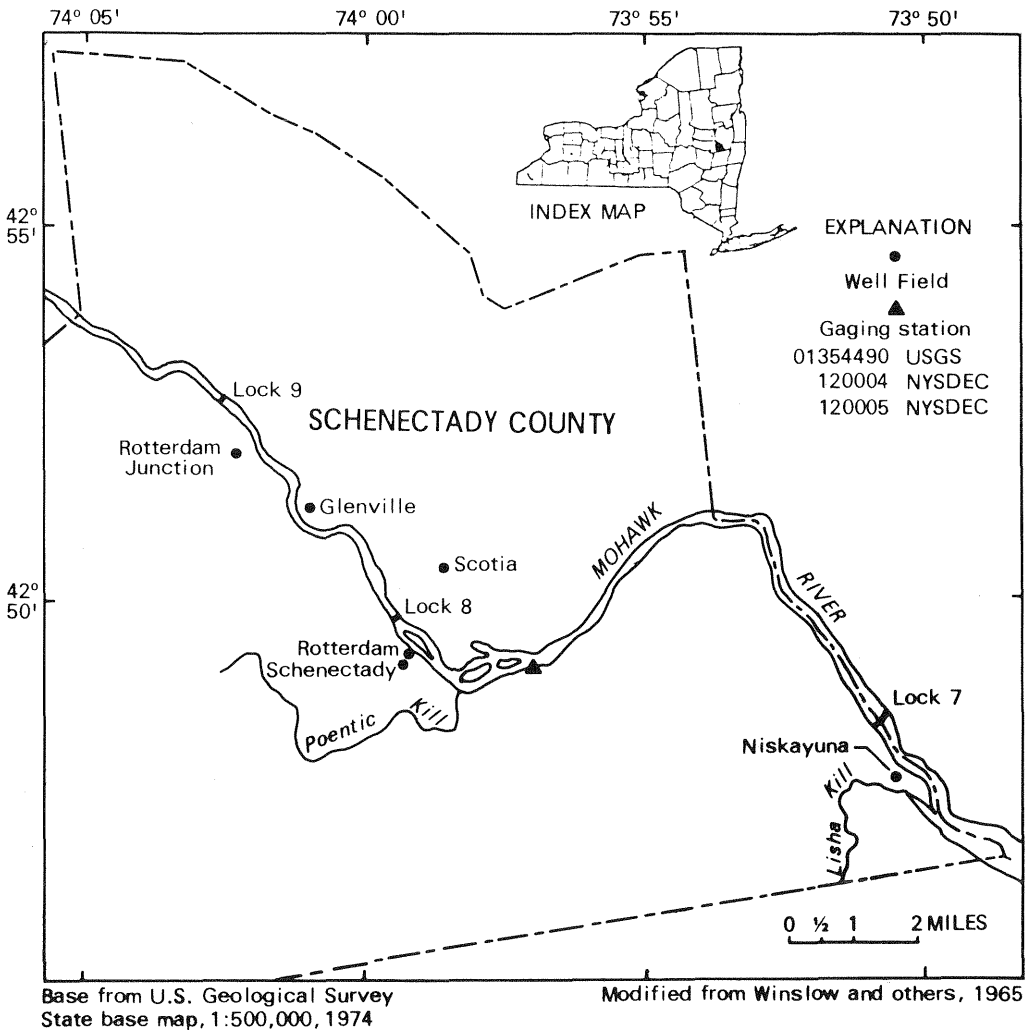

Figure 1.--Major geographic features and location of well fields.

flow toward the pumping centers. Under flood conditions the river recharges the aquifer. Recharge also occurs from precipitation on the valley floor, by underflow from valley deposits upgradient, and from runoff and seepage from adjacent highlands. Consequently, normal ground-water flow is toward the stream in a downvalley direction. Because of the interplay between the river and the aquifer, water moving down the valley may leave and reenter the aquifer several times on its way to the Hudson River. Therefore, the extent and distribution of pumping can greatly influence the movement of contaminants near or below the water table.

WELL FIELDS STUDIED

Village of Rotterdam Junction

The Rotterdam Junction well field, about 300 feet southwest of the Mohawk River (fig. 2), has two wells screened 51 to 83 feet below land surface. Pumping in the well field causes ground water to flow mainly southwestward from the river. Some ground water probably flows eastward and northwestward

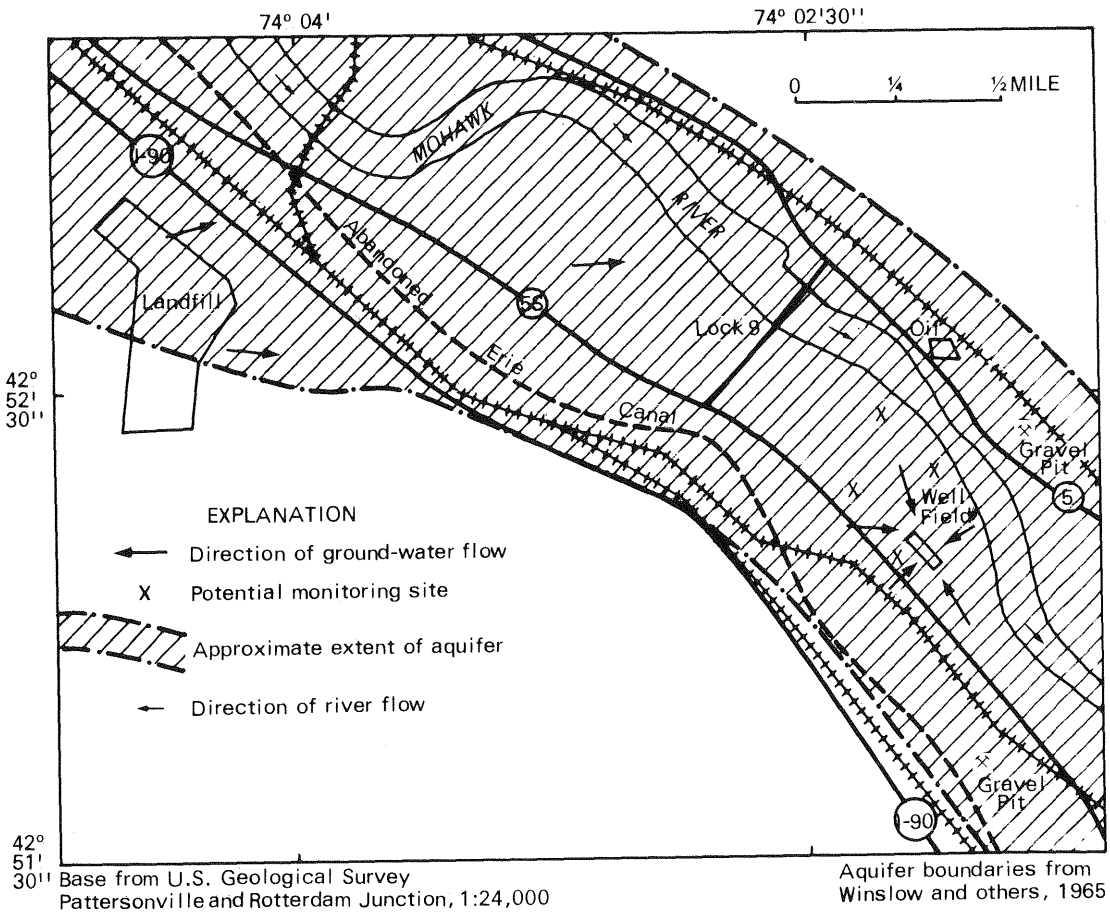

Figure 2.--Village of Rotterdam Junction area showing relation of well field to sources of potential contamination.

toward the field. Winslow and others (1965, p. 38) reported excellent hydraulic contact between the river and the Schenectady aquifer.

Potential sources of contamination of the aquifer are road salt on Route 5S, an abandoned oil-tank storage lot north of the river, a junk-car storage lot southwest of the well field, and a landfill more than a mile to the west. Although these sites are improbable sources of contamination, they are possible sources to monitor.

If a gravel pit to the south were to receive wastes, it could introduce contaminants into the aquifer because it is open to the water table. During periods of low river level and heavy pumpage in the village well field, ground-water conceivably could move upvalley toward the well field.

Village well water has been analyzed annually by NYSDH for several years. Comparison of a 1960 analysis (see well RWD3, table 5) with a 1973 analysis (see well F, table 6) indicates that chloride concentration in the aquifer has increased from 27 to 68 mg/L in the village well field.

None of the observed wells could be used for monitoring. Sites for observation wells should be near the river; northwest, north-northeast, and north-northwest of the well field; and near Route 5S (fig. 2).

Town of Glenville

The Glenville well field, 800 feet northeast of the river (fig. 3), has three screened wells, which tap the aquifer at 55 feet below land surface. A fourth well is planned. An abandoned gravel pit just northeast of the well field probably overlies the principal route of ground-water travel toward the river. Pumping withdrawals cause radial flow of ground water toward the well field and induces eastward and northeastward flow from the river. Stream infiltration is greater during summer than winter because river levels are higher during the summer navigation season, and river water is warmer and thus has a higher viscosity.

Potential sources of ground-water contamination include accidental spills along transportation routes to the north (a railroad 0.2 mile from the well field and Route 5, 0.4 mile from the well field) and the abandoned gravel pit immediately to the northeast. In addition, the river receives industrial effluent from a chemical plant 0.5 mile upstream.

Water samples have been collected annually and analyzed by NYSDH and a consultant chemist. A 1958 analysis (see well 251-401-11, table 5) showed a chloride concentration of 6 mg/L, whereas in 1971 the chloride was 23 mg/L (well B, table 6). Two wells were located for sampling in this study. Water from the Pucci well (well 1, fig. 3), 0.5 mile east of the field, was sampled August 29, 1979. Concentrations of minor elements, nutrients, and organic compounds were within recommended limits, and no pesticides were detected (table 1). The Widmer well (well 2, fig. 3) was sampled on August 30, 1979. This water had 1 mg/L of arsenic; zinc and iron were unusually high (320 and 450 ug/L, table 2). All three elements could be derived from plumbing metals.

Analyses of five samples by NYSDH for nutrients and major ions (both raw and distribution water) during 1971-78 indicate concentrations below recommended limits for these constituents. However, raw water from wells require routine analysis for organic compounds and minor elements to establish a baseline for future comparisons.

No wells are available for monitoring in the immediate vicinity of the well field. Potential locations for observation wells are 900 feet northwest and 800 feet northeast of the well field.

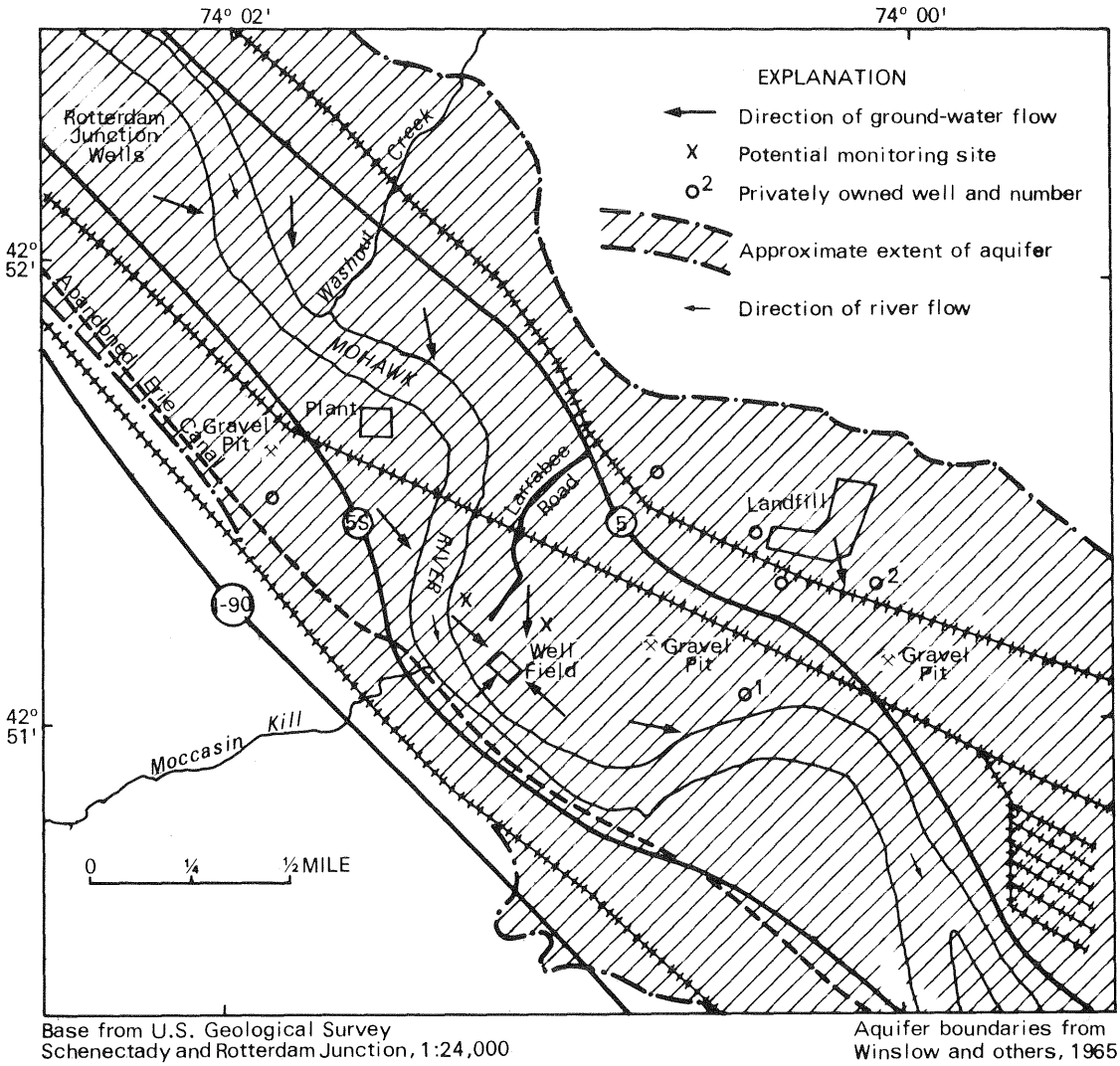

Figure 3.--Town of Glenville area showing relation of well field to sources of potential contamination.

Village of Scotia

The Scotia well field, 0.9 mile northeast of the river (fig. 4), has three wells screened between 60 and 98 feet below land surface. The wells probably receive little infiltration from the river because of their relatively long distance from it and because the pumping level is generally 10 to 20 feet higher than the stream elevation above Lock 8 (fig. 1). Recharge is derived principally from the north and from an unnamed stream that drains the higher elevations and crosses the aquifer 0.2 mile northeast of the well field.

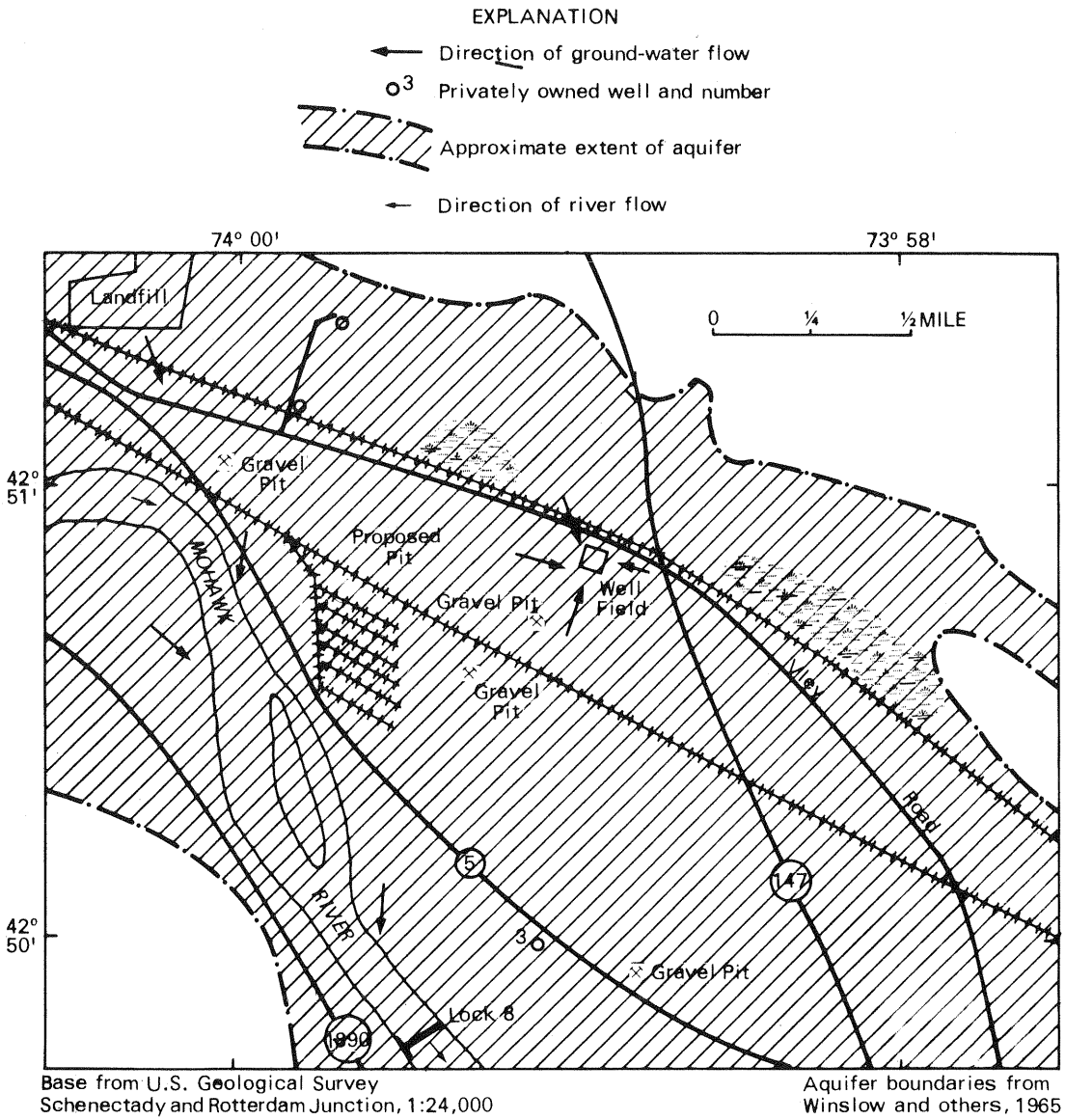

Figure 4.--Village of Scotia area showing relation of well field to sources of potential contamination.

The area surrounding the well field is prone to contamination from accidental spills. Transportation lanes immediately to the north (Route 147, Vley Road, and Amtrak) overlie the probable area of pumping influence. The town of Glenville landfill is about 1 mile northwest of the well field, and a large gravel pit 0.1 mile south of the well field has been excavated to the upper limits of the water table, which was visible in June 1979. The planned expansion of the pit westward will eventually increase this area of vulnerability. Contaminants introduced to the lower elevations of the pit would be in contact with the upper zone of the source of water withdrawn at the well field.

Analyses of raw water that was routinely sampled by NYSDH from 1972-78 showed no concentrations of the constituents analyzed to be above established or recommended limits. Analyses of a combined sample from two of the wells in 1943 (table 5) and one in 1971 (table 6) show that chloride has increased from 3 to 43 mg/L. One well was located in this study to obtain a water sample. The Lewis well (well 3, fig. 4), along Route 5 and south of the field, was sampled August 30, 1979 (table 3) and showed arsenic to be present. Sodium and chloride were somewhat higher than in most analyses. This is not surprising because the site is subject to road-salt contamination.

The well field may require four or five observation wells. The Village of Scotia has abandoned two wells along Vley Road just north of their present wells; if accessible, these could be used for monitoring. Observation wells tapping the upper part of the aquifer could provide early evidence of contaminants moving toward production wells, and an observation well screened in a lower part could identify contaminant migration or mixing characteristics within the cone of depression.

Town of Rotterdam

The Rotterdam well field is southwest of Isle of the Oneidas Island, about 300 feet from the river (fig. 5). The field consists of three wells 80 feet deep. Ground water moves principally from the river to the well field. The quality of water infiltrating from the river can be determined by analysis of water pumped from wells 61 and 54 (Winslow and others, 1965, fig. 26).

Route 5S, 400 feet southwest, and Route I-890, 900 feet southwest, may contribute chloride from winter road salt. The aquifer is also subject to spills from vehicles on the highways.

Chemical analyses of water from the Rotterdam well field have been made routinely by the NYSDH for several years. A 1971 analysis, presented in table 6 (site G), shows chloride at 19 mg/L. One of the wells was sampled for analysis of organic compounds in 1978 by the USGS; no contaminants were detected.

The Mantika well (well no. 4, fig. 5), 0.4 mile northwest of the well field, reportedly taps the aquifer at 60 feet below land surface. Water sampled from this well on August 29, 1979 was free of pesticides and contained concentrations below recommended limits for minor elements (table 4). However, the sum of iron plus manganese (0.54 mg/L) and the phenol concentration (0.0001 mg/L) equaled NYSDEC quality standards. The chloride concentration, 16 mg/L, was slightly above that from most other wells in the area.

Two of the well field s original observation wells--wells 54 and 61, to the north and northeast, were found in July 1979. A portable pump would be required for sampling. An additional well west of the field should also be considered for monitoring.

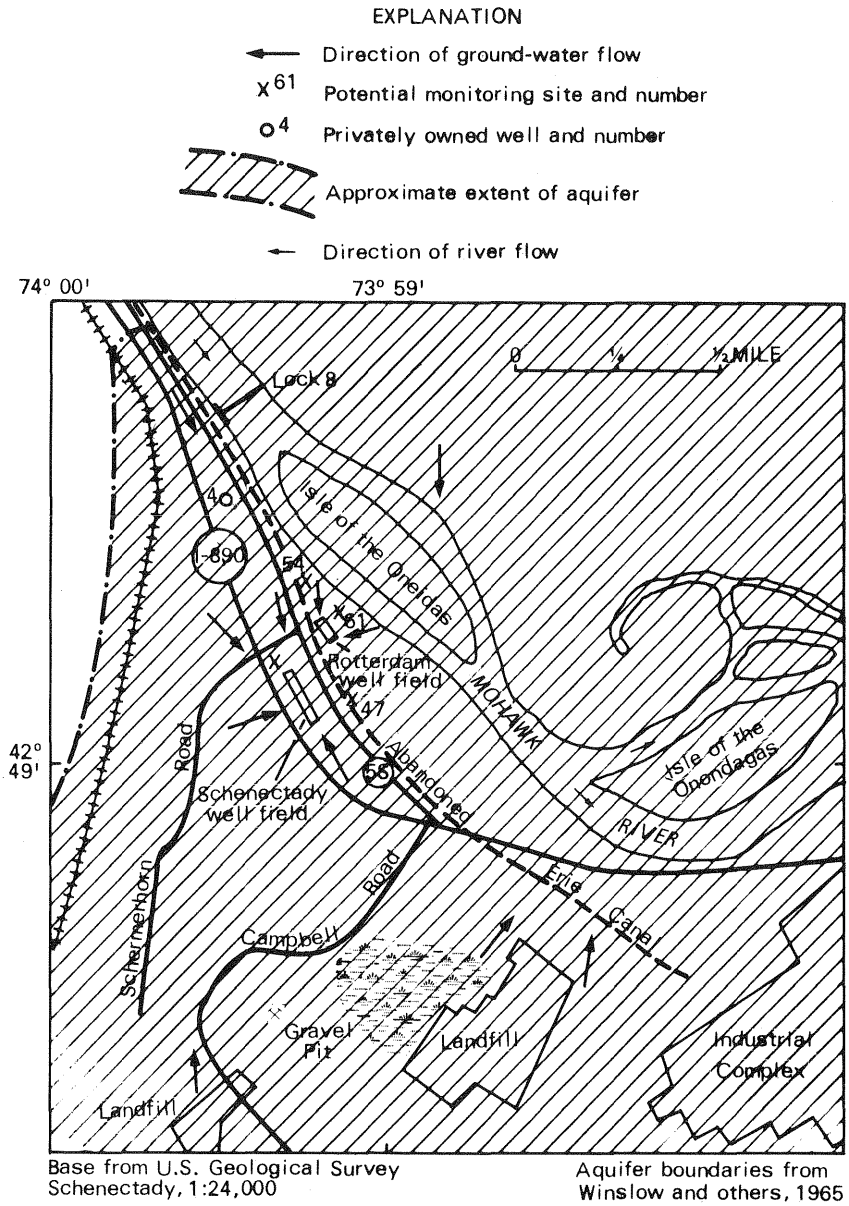

Figure 5.--Town of Rotterdam and city of Schenectady area showing relation of well field to sources of potential contamination.

City of Schenectady

The Schenectady well field, which has 12 wells, is 1,200 feet southwest of the Mohawk River and 900 feet south of the Rotterdam well field (fig. 5). The water originates primarily from induced river infiltration from the north at Lock 8, but water flows from all other directions (Winslow and others, 1965).

The river is a potential source of contamination to the well field. Route I-890, which traverses the length of the well field 300 feet to the southwest, may contribute chloride leachate from road-salt applications and is also subject to accidental spills. Potential areas of contamination to the south include a truck terminal and gravel pits near Campbell Road. An industrial complex, 1 mile to the southeast and downgradient from the well field, may be too far away to threaten the well field.

A review of analyses made by NYSDH during 1971-78 shows the water to be of excellent quality. Several determinations for pesticides revealed zero or near-zero concentrations (see table 7). Fluoride and manganese concentrations were above recommended limits in a few analyses. Selected analyses by the USGS are given in tables 5 and 6. Two of the city wells were sampled in 1978 by the USGS for analyses of organic compounds, but none were noted.

An excess of chloride, which is a common problem in shallow ground waters in much of the Northeast, is also common in this area. Table 5 shows that chloride concentration in the Schenectady City water averaged 6 mg/L in the 1940's and 18 mg/L (table 6) in the 1970's (the State and Federal recommended limit is 250 mg/L).

Observation well 47 (Winslow and others, 1965, fig. 26) is available to sample water moving toward the well field from the river. The observation wells to the northwest, nos. 57, 36, 46, and 24 (Winslow and others, 1965, fig. 26), were not found during field reconaissance and are assumed to have been destroyed during construction of Route I-890. A well drilled in this area north of Schermerhorn Road would give early notice of contaminants moving toward the well field from the northwest. Observation wells could be drilled 0.1 mile northwest of Campbell Road to monitor the southern part of the area influenced by pumping.

Town of Niskayuna (Water District 5)

Niskayuna's Water District 5 well field is along the south shore of the Mohawk River 0.6 mile downstream from Lock 7 (fig. 6). Its four wells are about 60 feet deep and are located 150 to 200 feet southwest of the river, which is the principal source of water to the well field. This reach of the river is subject to flooding as a result of ice jams; flood water in February 1979 reached within a few feet of the pumping station.

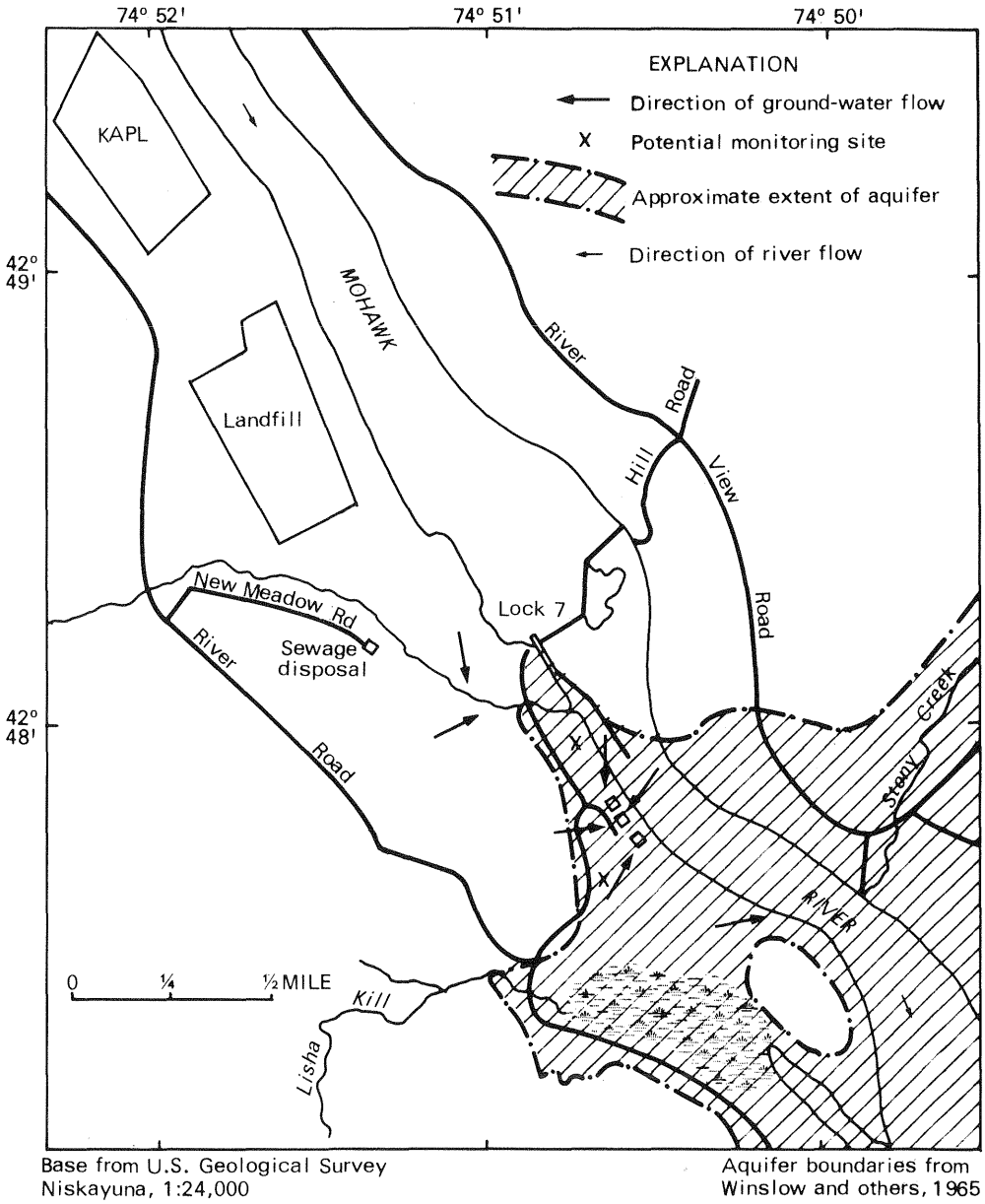

Figure 6.--Town of Niskayuna area showing relation of well field to sources of potential contamination.

A potential source of contamination to the Schenectady aquifer is runoff in the unnamed stream that drains the area occupied by the sewage-disposal plant on New Meadow Road. The stream discharges into the river below Lock 7, 0.4 mile upstream from the well field. Other areas of potential contamination along the south side of the river are the town of Niskayuna landfill, 1.5 miles northwest of the well field, the Knolls Atomic Power Laboratory (KAPL), and General Electric (GE) plant, about 2 miles north of the well field (not shown in fig. 6).

Chemical analyses of water from the well field have been made routinely by the NYSDH for several years. Water from the well field contains large amounts of iron and manganese, which are removed by chemical treatment (see table 6). Observation wells could be located in a number of places. Two potential sites are between the bedrock outcrop and the river, 0.3 mile upstream from the well field, and adjacent to Lock 7 Road, about 1,800 feet west of the well field.

MOHAWK RIVER MONITORING

River water has been sampled monthly since 1972 at Route 5 on the north side of the Mohawk River (USGS station 01354490, fig. 1). In addition, water from the river at Lock 10, 7 miles upstream from Rotterdam Junction, and Cresent Dam, 9 miles downstream from Niskayuna's well field, have been sampled by NYSDEC. Crescent Dam is the only monitoring site at present. The period of record and types of analyses are as follows:

Sites	Record	Type of analysis
USGS 01354000, at Tribes Hill	Monthly, April 1973 - March 1979	Chemical, nutrients, heavy metals
USGS 01354160, Lock 10 at Cranesville	Monthly April 1969 - April 1979	Chemical, nutrients, heavy metals
NYSDEC 12-0300, Lock 10	Biweekly November 1967. to present	Chemical, biological, heavy metals
USGS 01354490, at Schenectady, at Rte. 5	Monthly April 1969 - May 1979	Chemical, nutrients, heavy metals
NYSDEC 12-0004.5; at Schenectady, at Rte. 5 (Washington Avenue Branch)	Biweekly October 1964 - October 1976	Chemical, biological, heavy metals
NYSDEC 12-0002, at Cresent Dam	Biweekly Sept. 1965 - Sept. 1976	Chemical, nutrients, biological, heavy metals

The analyses indicates that only phenols have been present occasionally. Chloride does not seem to have been increasing since 1972, although Peters and Turk (in press) indicate a 75-percent increase in mean chloride concentration

in the Mohawk River basin since the 1950's. They also conclude that 41 percent of the current chloride load (maximum 28 mg/L) is due to road-salt operations in the basin. The river-monitoring system can be a useful indicator for aquifer protection, but only in a broad sense and on a long-term basis.

MONITORING DISCUSSION

An adequate monitoring system would include observation wells for each well field. The appraisals given in the previous section suggest observation well sites at each field. However, if only one or two are installed in areas where ground-water flow toward the well field is indicated, local contamination might not be detected. The first priority in site selection would be downgradient from areas having a known source of contamination.

Pairs of observation wells would enable drawing water from both the top of the aquifer and from greater depth because some contaminants move near the top of an aquifer whereas others disperse and move downward. For economy, chemical analyses could be limited to suspected constituents or those most critical in human consumption. Because ground-water movement is relatively slow, monthly or annual sampling may be adequate.

The Scotia well field, in particular, seems to have the greatest potential for contamination and, in addition, has the least, if any, directly induced river water. Potential sources of contamination are on all sides of the field.

Of critical importance is curtailment of pumping to allow spilled contaminants to move away from a well field. Once a contaminant is known to have entered a system, a program of well installation and sampling can be set up to map the movement of the contaminanted water or, if necessary, to pump the contaminated water from the aquifer.

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Winslow, J. D., Stewart, H. G., Jr., Johnston, R. H., and Crain, L. J., 1965, Ground-water resources of eastern Schenectady County, New York, with emphasis on infiltration from the Mohawk River: New York State Conservation Department, Bulletin 57, 148 p.

TABLES 1-5

CHEMICAL ANALYSES OF WELL WATER

Abbreviations Used in Tables 1-5

ALK	Alkalinity	MIN	Minimum
COND	Conductance	NC	Noncarbonate
DEG	Degree	NITR	Nitrogen
DIS, DISS	Dissolved	NONCARB	Noncarbonate
E	Estimated (reported well depths)	PCI/L	Picocuries per liter
		PHOS	Phosphate
FLD	Field	SAR	Sodium absorption ratio
KJD	Kjeldahl	SP, SPEC	Specific
LSD	Land surface datum	TEMP	Temperature
MBAS	Methlene blue active substance	TON/AFT	Tons per acre foot
		TOT	Total
MG/L	Milligrams per liter	UGL	Micrograms per liter
MEQ/L	Millequivalents per liter		

Table 1.--Chemical analysis of water from Pucci well (well 1)
Town of Glenville

[Analysis by U.S. Geological Survey]

SAMPLE LOCATION: RALPH PUCCI
STATION ID: 425102074003601 LAT.LONG.SEQ.: 425102 0840037 01
DATE OF COLLECTION: BEGIN--790829 END-- TIME--1445
STATE CODE: 36 COUNTY CODE: 093 PROJECT IDENTIFICATION: 443607200
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT: 1125DGV
COMMENTS:
COLL BY RV ALLEN FILTERED FOR METALS BUT ACID ADDED BEFORE FILTERING
AND NO VISIBLE SEDIMENT ON FILTER

ALDRIN TOTAL (WATER)	UG/L	0.00	NITR. NH_4 AS NH_4 DIS	MG/L	0.01
ALK,TOT($CACO_3$)	MG/L	160	NITR. NO_2 AS NO_2 DIS	MG/L	0.00
ANALYZING AGENCY		80010	NITR. NO_3 AS NO_3 DIS	MG/L	3.9
ARSENIC TOTAL	UG/L	1	NITROGEN DIS ORG ASN	MG/L	0.00
CADMIUM TOTAL	UG/L	0	NITROGEN DISS AS N	MG/L	0.87
CALCIUM DISS	MG/L	54	NITROGEN DISS KJD	MG/L	0.00
CARBON DIOXIDE	MG/L	16	NITROGEN NH_4 ASN DIS	MG/L	0.01
CARBON TOT ORGANIC	MG/L	1.2	NITROGEN NO_2 ASN DIS	MG/L	0.00
CHLORDANE TOT(WATER)	UG/L	0.0	NITROGEN NO_3 ASN DIS	MG/L	0.87
CHLORIDE DISS	MG/L	11	NO_2+NO_3 AS N DISS	MG/L	0.87
CHROMIUM TOTAL	UG/L	10	OIL AND GREASE	MG/L	1
COPPER TOTAL	UG/L	40	PCB TOTAL (WATER)	UG/L	0.0
DDD TOTAL (WATER)	UG/L	0.00	PCN TOTAL (WATER)	UG/L	0.0
DDE TOTAL (WATER)	UG/L	0.00	PERTHANE TOTAL	UG/L	0.00
DDT TOTAL (WATER)	UG/L	0.00	PH FIELD		7.3
DEPTH BELOW LSD (FT)	E	68.0	PH LAB		7.7
DEPTH OF WELL IN FT.	E	75.0	PHENOLS	UG/L	0
DIAZINON TOT (WATER)	UG/L	0.00	PHOS ORTHO DIS AS P	MG/L	0.00
DIELDRIN TOT (WATER)	UG/L	0.00	PHOSPHATE DIS ORTHO	MG/L	0.00
ENDOSULFAN I TOTAL	UG/L	0.00	PHOSPHORUS DIS AS P	MG/L	0.00
ENDRIN TOTAL (WATER)	UG/L	0.00	POTASSIUM DISS	MG/L	0.9
ETH PARTH TOT(WATER)	UG/L	0.00	POTASSIUM 40.D.PCI/L		0.7
ETH TRITH TOT(WATER)	UG/L	0.00	PUMP PERIOD (MIN)		20.0
ETHION TOTAL (WATER)	UG/L	0.00	RESIDUE DIS CALC SUM	MG/L	228
FLUORIDE DISS	MG/L	0.1	RESIDUE DIS TON/AFT		0.36
HARDNESS NONCARB	MG/L	33	RESIDUE DIS 180C	MG/L	266
HARDNESS TOTAL	MG/L	190	SAMPLE SOURCE CODE		30
HEPT EPOX TOT(WATER)	UG/L	0.00	SAR		0.2
HEPTACHLOR T.(WATER)	UG/L	0.00	SELENIUM TOTAL	UG/L	0
IRON TOTAL	UG/L	70	SILICA DISSOLVED	MG/L	9.4
LEAD TOTAL	UG/L	0	SODIUM + POTASSIUM	MG/L	8.2
LINDANE TOTAL(WATER)	UG/L	0.00	SODIUM DISS	MG/L	7.3
MAGNESIUM DISS	MG/L	14	SODIUM PERCENT		8
MALATHION TOT(WATER)	UG/L	0.00	SP. CONDUCTANCE FLD		423
MANGANESE TOTAL	UG/L	20	SP. CONDUCTANCE LAB		405
MERCURY TOTAL	UG/L	<0.5	SULFATE DISS	MG/L	31
MET PARTH TOT(WATER)	UG/L	0.00	TOXAPHENE TOT(WATER)	UG/L	0.0
MET TRITH TOT(WATER)	UG/L	0.00	WATER TEMP (DEG C)		13.5
			ZINC TOTAL	UG/L	60

CATIONS			ANIONS		
	(MG/L)	(MEQ/L)		(MG/L)	(MEQ/L)
CALCIUM DISS	54	2.695	CHLORIDE DISS	11	0.311
MAGNESIUM DISS	14	1.152	FLUORIDE DISS	0.1	0.006
POTASSIUM DISS	0.9	0.024	SULFATE DISS	31	0.646
SODIUM DISS	7.3	0.318	ALK.TOT($CACO_3$)	160	3.197
			NO_2+NO_3 AS N D	0.87	0.063
TOTAL		4.187	TOTAL		4.220

Table 2.--Chemical analysis of water from Widmer well (well 2)
Town of Glenville

[Analysis by U.S. Geological Survey]

SAMPLE LOCATION: FRED WIDMER
STATION ID: 425118074000801 LAT.LONG.SEQ.: 425118 0740008 01
DATE OF COLLECTION: BEGIN--790830 END-- TIME--1045
STATE CODE: 36 COUNTY CODE: 093 PROJECT IDENTIFICATION: 443607200
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT:
COMMENTS:
COLL BY RV ALLEN

ALDRIN TOTAL (WATER)	UG/L		0.00	NITR. NH_4 AS NH_4 DIS	MG/L	0.01
ALK,TOT($CACO_3$)	MG/L		87	NITR. NO_2 AS NO_2 DIS	MG/L	0.00
ANALYZING AGENCY			80010	NITR. NO_3 AS NO_3 DIS	MG/L	1.2
ARSENIC TOTAL	UG/L		1	NITROGEN DIS ORG ASN	MG/L	0.00
CADMIUM TOTAL	UG/L		0	NITROGEN DISS AS N	MG/L	0.27
CALCIUM DISS	MG/L		48	NITROGEN DISS KJD	MG/L	0.00
CARBON DIOXIDE	MG/L		2.1	NITROGEN NH_4 ASN DIS	MG/L	0.01
CARBON TOT ORGANIC	MG/L		0.9	NITROGEN NO_2 ASN DIS	MG/L	0.00
CHLORDANE TOT(WATER)	UG/L		0.0	NITROGEN NO_3 ASN DIS	MG/L	0.27
CHLORIDE DISS	MG/L		6.4	NO_2+NO_3 AS N DISS	MG/L	0.27
CHROMIUM TOTAL	UG/L		10	OIL AND GREASE	MG/L	1
COPPER TOTAL	UG/L		20	PCB TOTAL (WATER)	UG/L	0.0
DDD TOTAL (WATER)	UG/L		0.00	PCN TOTAL (WATER)	UG/L	0.0
DDE TOTAL (WATER)	UG/L		0.00	PERTHANE TOTAL	UG/L	0.00
DDT TOTAL (WATER)	UG/L		0.00	PH FIELD		7.9
DEPTH BELOW LSD (FT)		E	60.0	PH LAB		7.8
DEPTH OF WELL IN FT.		E	92.0	PHENOLS	UG/L	0
DIAZINON TOT (WATER)	UG/L		0.00	PHOS ORTHO DIS AS P	MG/L	0.00
DIELDRIN TOT (WATER)	UG/L		0.00	PHOSPHATE DIS ORTHO	MG/L	0.00
ENDOSULFAN I TOTAL	UG/L		0.00	PHOSPHORUS DIS AS P	MG/L	0.00
ENDRIN TOTAL (WATER)	UG/L		0.00	POTASSIUM DISS	MG/L	1.4
ETH PARTH TOT(WATER)	UG/L		0.00	POTASSIUM 40.D.PCI/L		1.0
ETH TRITH TOT(WATER)	UG/L		0.00	PUMP PERIOD (MIN)		30.0
ETHION TOTAL (WATER)	UG/L		0.00	RESIDUE DIS CALC SUM	MG/L	210
FLUORIDE DISS	MG/L		0.1	RESIDUE DIS TON/AFT		0.34
HARDNESS NONCARB	MG/L		82	RESIDUE DIS 180C	MG/L	251
HARDNESS TOTAL	MG/L		170	SAMPLE SOURCE CODE		30
HEPT EPOX TOT(WATER)	UG/L		0.00	SAR		0.2
HEPTACHLOR T.(WATER)	UG/L		0.00	SELENIUM TOTAL	UG/L	0
IRON TOTAL	UG/L		450	SILICA DISSOLVED	MG/L	11
LEAD TOTAL	UG/L		0	SODIUM + POTASSIUM	MG/L	7.5
LINDANE TOTAL(WATER)	UG/L		0.00	SODIUM DISS	MG/L	6.1
MAGNESIUM DISS	MG/L		12	SODIUM PERCENT		7
MALATHION TOT(WATER)	UG/L		0.00	SP. CONDUCTANCE FLD		378
MANGANESE TOTAL	UG/L		20	SP. CONDUCTANCE LAB		347
MERCURY TOTAL	UG/L		<0.5	SULFATE DISS	MG/L	71
MET PARTH TOT(WATER)	UG/L		0.00	TOXAPHENE TOT(WATER)	UG/L	0.0
MET TRITH TOT(WATER)	UG/L		0.00	WATER TEMP (DEG C)		8.0
				ZINC TOTAL	UG/L	320

CATIONS	(MG/L)	(MEQ/L)	ANIONS	(MG/L)	(MEQ/L)
CALCIUM DISS	48	2.396	CHLORIDE DISS	6.4	0.181
MAGNESIUM DISS	12	0.988	FLUORIDE DISS	0.1	0.006
POTASSIUM DISS	1.4	0.036	SULFATE DISS	71	1.479
SODIUM DISS	6.1	0.266	ALK.TOT($CACO_3$)	87	1.739
			NO_2+NO_3 AS N D	0.27	0.020
TOTAL		3.683	TOTAL		3.422

PERCENT DIFFERENCE = 3.69

Table 3.--Chemical analysis of water from Lewis well (well 3)
Village of Scotia

[Analysis by U.S. Geological Survey]

SAMPLE LOCATION: H R LEWIS
STATION ID: 4249570735900 LAT.LONG.SEQ.: 424957 0735900 01
DATE OF COLLECTION: BEGIN--790830 END-- TIME--0905
STATE CODE: 36 COUNTY CODE: 093 PROJECT IDENTIFICATION: 443607200
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT:
COMMENTS:
COLL BY RV ALLEN PUMPED DIR FROM WELL

ALDRIN TOTAL (WATER)	UG/L	0.00	NITR. NH_4 AS NH_4 DIS	MG/L	0.01
ALK,TOT($CACO_3$)	MG/L	270	NITR. NO_2 AS NO_2 DIS	MG/L	0.03
ANALYZING AGENCY		80010	NITR. NO_3 AS NO_3 DIS	MG/L	12
ARSENIC TOTAL	UG/L	1	NITROGEN DIS ORG ASN	MG/L	0.00
CADMIUM TOTAL	UG/L	0	NITROGEN DISS AS N	MG/L	2.7
CALCIUM DISS	MG/L	84	NITROGEN DISS KJD	MG/L	0.00
CARBON DIOXIDE	MG/L	105	NITROGEN NH_4 ASN DIS	MG/L	0.01
CARBON TOT ORGANIC	MG/L	2.4	NITROGEN NO_2 ASN DIS	MG/L	0.01
CHLORDANE TOT(WATER)	UG/L	0.0	NITROGEN NO_3 ASN DIS	MG/L	2.7
CHLORIDE DISS	MG/L	37	NO_2+NO_3 AS N DISS	MG/L	2.7
CHROMIUM TOTAL	UG/L	20	OIL AND GREASE	MG/L	1
COPPER TOTAL	UG/L	10	PCB TOTAL (WATER)	UG/L	0.0
DDD TOTAL (WATER)	UG/L	0.00	PCN TOTAL (WATER)	UG/L	0.0
DDE TOTAL (WATER)	UG/L	0.00	PERTHANE TOTAL	UG/L	0.00
DDT TOTAL (WATER)	UG/L	0.00	PH FIELD		6.7
DEPTH BELOW LSD (FT)	E	29.1	PH LAB		7.6
DEPTH OF WELL IN FT.	E	32.0	PHENOLS	UG/L	0
DIAZINON TOT (WATER)	UG/L	0.00	PHOS ORTHO DIS AS P	MG/L	0.00
DIELDRIN TOT (WATER)	UG/L	0.00	PHOSPHATE DIS ORTHO	MG/L	0.00
ENDOSULFAN I TOTAL	UG/L	0.00	PHOSPHORUS DIS AS P	MG/L	0.00
ENDRIN TOTAL (WATER)	UG/L	0.00	POTASSIUM DISS	MG/L	1.0
ETH PARTH TOT(WATER)	UG/L	0.00	POTASSIUM 40.D.PCI/L		0.7
ETH TRITH TOT(WATER)	UG/L	0.00	PUMP PERIOD (MIN)		20.0
ETHION TOTAL (WATER)	UG/L	0.00	RESIDUE DIS CALC SUM	MG/L	421
FLUORIDE DISS	MG/L	0.1	RESIDUE DIS TON/AFT		0.54
HARDNESS NONCARB	MG/L	22	RESIDUE DIS 180C	MG/L	397
HARDNESS TOTAL	MG/L	290	SAMPLE SOURCE CODE		47
HEPT EPOX TOT(WATER)	UG/L	0.00	SAR		1.1
HEPTACHLOR T.(WATER)	UG/L	0.00	SELENIUM TOTAL	UG/L	0
IRON TOTAL	UG/L	70	SILICA DISSOLVED	MG/L	12
LEAD TOTAL	UG/L	0	SODIUM + POTASSIUM	MG/L	45
LINDANE TOTAL(WATER)	UG/L	0.00	SODIUM DISS	MG/L	44
MAGNESIUM DISS	MG/L	20	SODIUM PERCENT		25
MALATHION TOT(WATER)	UG/L	0.00	SP. CONDUCTANCE FLD		750
MANGANESE TOTAL	UG/L	10	SP. CONDUCTANCE LAB		707
MERCURY TOTAL	UG/L	< 0.5	SULFATE DISS	MG/L	49
MET PARTH TOT(WATER)	UG/L	0.00	TOXAPHENE TOT(WATER)	UG/L	0.0
MET TRITH TOT(WATER)	UG/L	0.00	WATER TEMP (DEG C)		11.5
			ZINC TOTAL	UG/L	30

CATIONS	(MG/L)	(MEQ/L)	ANIONS	(MG/L)	(MEQ/L)
CALCIUM DISS	84	4.192	CHLORIDE DISS	37	1.044
MAGNESIUM DISS	20	1.646	FLUORIDE DISS	0.1	0.006
POTASSIUM DISS	1.0	0.026	SULFATE DISS	49	1.021
SODIUM DISS	44	1.914	ALK.TOT($CACO_3$)	270	5.395
			NO_2+NO_3 AS N D	2.7	0.193
TOTAL		7.776	TOTAL		7.657

PERCENT DIFFERENCE = 0.78

Table 4.--Chemical analysis of water from Mantika well (well 4)
Town of Rotterdam

[Analysis by U.S. Geological Survey]

SAMPLE LOCATION: PAUL MANTIKA
STATION ID: 424938073593101 LAT.LONG.SEQ.: 424938 0735931 01
DATE OF COLLECTION: BEGIN--790829 END-- TIME--1725
STATE CODE: 36 COUNTY CODE: 093 PROJECT IDENTIFICATION: 443607200
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT:
COMMENTS:
COLL BY RV ALLEN

ALDRIN TOTAL (WATER)	UG/L		0.00	NITR. NH_4 AS NH_4 DIS	MG/L	0.08
ALK,TOT($CACO_3$)	MG/L		110	NITR. NO_2 AS NO_2 DIS	MG/L	0.03
ANALYZING AGENCY			80010	NITR. NO_3 AS NO_3 DIS	MG/L	0.04
ARSENIC TOTAL	UG/L		1	NITROGEN DIS ORG ASN	MG/L	0.02
CADMIUM TOTAL	UG/L		0	NITROGEN DISS AS N	MG/L	0.10
CALCIUM DISS	MG/L		44	NITROGEN DISS KJD	MG/L	0.08
CARBON DIOXIDE	MG/L		8.5	NITROGEN NH_4 ASN DIS	MG/L	0.06
CARBON TOT ORGANIC	MG/L		3.6	NITROGEN NO_2 ASN DIS	MG/L	0.01
CHLORDANE TOT(WATER)	UG/L		0.0	NITROGEN NO_3 ASN DIS	MG/L	0.01
CHLORIDE DISS	MG/L		16	NO_2+NO_3 AS N DISS	MG/L	0.02
CHROMIUM TOTAL	UG/L		10	OIL AND GREASE	MG/L	2
COPPER TOTAL	UG/L		10	PCB TOTAL (WATER)	UG/L	0.0
DDD TOTAL (WATER)	UG/L		0.00	PCN TOTAL (WATER)	UG/L	0.0
DDE TOTAL (WATER)	UG/L		0.00	PERTHANE TOTAL	UG/L	0.00
DDT TOTAL (WATER)	UG/L		0.00	PH FIELD		7.4
DEPTH BELOW LSD (FT)		E	20.0	PH LAB		7.8
DEPTH OF WELL IN FT.		E	60.0	PHENOLS	UG/L	1
DIAZINON TOT (WATER)	UG/L		0.00	PHOS ORTHO DIS AS P	MG/L	0.01
DIELDRIN TOT (WATER)	UG/L		0.00	PHOSPHATE DIS ORTHO	MG/L	0.03
ENDOSULFAN I TOTAL	UG/L		0.00	PHOSPHORUS DIS AS P	MG/L	0.00
ENDRIN TOTAL (WATER)	UG/L		0.00	POTASSIUM DISS	MG/L	1.3
ETH PARTH TOT(WATER)	UG/L		0.00	POTASSIUM 40.D.PCI/L		1.0
ETH TRITH TOT(WATER)	UG/L		0.00	PUMP PERIOD (MIN)		25.0
ETHION TOTAL (WATER)	UG/L		0.00	RESIDUE DIS CALC SUM	MG/L	178
FLUORIDE DISS	MG/L		0.1	RESIDUE DIS TON/AFT		0.25
HARDNESS NONCARB	MG/L		28	RESIDUE DIS 180C	MG/L	187
HARDNESS TOTAL	MG/L		140	SAMPLE SOURCE CODE		30
HEPT EPOX TOT(WATER)	UG/L		0.00	SAR		0.4
HEPTACHLOR T.(WATER)	UG/L		0.00	SELENIUM TOTAL	UG/L	0
IRON TOTAL	UG/L		120	SILICA DISSOLVED	MG/L	6.1
LEAD TOTAL	UG/L		0	SODIUM + POTASSIUM	MG/L	12
LINDANE TOTAL(WATER)	UG/L		0.00	SODIUM DISS	MG/L	11
MAGNESIUM DISS	MG/L		6.8	SODIUM PERCENT		15
MALATHION TOT(WATER)	UG/L		0.00	SP. CONDUCTANCE FLD		370
MANGANESE TOTAL	UG/L		420	SP. CONDUCTANCE LAB		314
MERCURY TOTAL	UG/L		<0.5	SULFATE DISS	MG/L	26
MET PARTH TOT(WATER)	UG/L		0.00	TOXAPHENE TOT(WATER)	UG/L	0.0
MET TRITH TOT(WATER)	UG/L		0.00	WATER TEMP (DEG C)		16.5
				ZINC TOTAL	UG/L	0

CATIONS	(MG/L)	(MEQ/L)	ANIONS	(MG/L)	(MEQ/L)
CALCIUM DISS	44	2.196	CHLORIDE DISS	16	0.452
MAGNESIUM DISS	6.8	0.560	FLUORIDE DISS	0.1	0.006
POTASSIUM DISS	1.3	0.034	SULFATE DISS	26	0.542
SODIUM DISS	11	0.479	ALK.TOT($CACO_3$)	110	2.198
			NO_2+NO_3 AS N D	0.02	0.002
TOTAL		3.267	TOTAL		3.197

PERCENT DIFFERENCE = 1.08

Table 5.--Chemical analyses of water from selected wells in Schenectady County, N.Y.

[Analyses by New York State Department of Health unless otherwise indicated. Dissolved constituents given in parts per million.]

Number	Well number or owner	Previous well number[a]	Depth (feet)	Water-bearing formation	Date of collection	Dissolved solids	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)
1	Scotia	Sn 4&5	70 & 85	Pleistocene sand	5-26-43	--	--	.03	--	--	--
2	Schen	Sn 127	44	Pleistocene gravel	6- 1-28	--	--	--	--	--	--
3	Schen	Sn 130[b]	62	Pleistocene gravel	11- 9-49	--	--	.23	--	--	--
4	Schen	Sn 130[b]	62	Pleistocene gravel	9-23-48	187	6.5	.05	--	49	8.6
5	Schen	Sn 133[b]	62	Pleistocene gravel	8-22-47	173	6.0	.09	.13	46	7.5
6	Schen	Sn 134	57	Pleistocene gravel	10- 5-46	195	--	.03	.05	--	--
7	Schen	Sn 126-128[c]	--	Pleistocene gravel	10-13-40	212	--	.15	--	--	--
8	Schen	Sn 126-128[c]	--	Pleistocene gravel	1-27-42	216	--	.2	--	--	--
9	Schen	Sn 129-138[c]	--	Pleistocene gravel	9-14-44	218	--	.1	--	--	--
10	Glen	251-401-11	51	Sand and gravel	1- 9-58	--	--	.08	--	--	--
11	RWD3	252-402-16 (SN 229)	r63	Sand and gravel	12- 7-60	--	--	.08	--	--	--

Number	Sodium and potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Hardness (calculated as $CaCO_3$) Total	Carbonate	Noncarbonate	Total alkalinity (as $CaCO_3$)	pH
1	--	137	--	3.0	--	--	128	112	16	112	7.5
2	--	122	--	5.5	--	--	119	100	19	100	--
3	--	150	32	7.6	.0	.6	154	123	31	123	7.8
4	9.2	157	30	7.2	.1	.3	158	128	30	128	7.7
5	4.4	152	23	4.4	.1	.3	146	125	21	125	7.7
6	--	159	10	8.6	.05	--	148	130	18	130	7.7
7	--	154	--	7.0	--	--	174	126	48	126	7.5
8	--	161	--	5.5	--	--	165	132	33	132	7.5
9	--	146	--	6.0	--	--	164	120	44	120	7.6
10	--	192	--	6	--	1.5	220	220	--	--	7.7
11	--	--	--	27	--	6.5	310	310	--	--	7.5

a Well numbers in Winslow and others, 1965.
b Analysis by the Quality of Water Branch, U.S. Geological Survey.
c Analysis by Schenectady Sewage Disposal Laboratory.

TABLES 6-7

Table 6.--Chemical analyses of water from community systems in Schenectady County, New York

COLUMN(S) ON THIS PAGE	USGS-ASSIGNED LATITUDE-LONGITUDE NUMBER	SYSTEM (QW SITE) NAME AND RAW SOURCE OF WATER SAMPLED
A	424934073575900	SCOTIA(V)-WELL
B	424950073591001	GLENVILLE-WELL
C	424950073591000	GLENVILLE-WELL
D	424745073503401	NISKAYUNA-WELLS
E	424745073503400	NISKAYUNA-WELLS
F	424718073585601	ROTTERDAM JUNCTION-WELLS
G	425725073585700	ROTTERDAM JUNCTION-WELLS

SYSTEM(S) ON THIS PAGE..	A	B	C	D	D	E	E	F	G
TYPE OF WATER SAMPLED...	DISTRBN	RAW	TREATED	RAW	TREATED	RAW	TREATED	RAW	DISTRBN
DATE.....	12/01/71	12/01/71	12/01/71	12/01/71	04/11/75	12/01/71	04/11/75	02/28/73	12/01/71
ALUMINUM UG/L	5.0	89	7.0	67	13	63	20	7.0	46
ARSENIC UG/L	1	2	1	2	1	1	0	0	3
BARIUM UG/L	35	24	< 12	28	32	23	25	37	22
BERYLLIUM UG/L	< 2.0	< 2.0	< 2.0	< .80	< .70	< .90	< .80	< 4.0	< 1.0
BICARBONATE MG/L	210	190	189	115	145	148	178	330	185
BISMUTH UG/L	< 8.0	< 6.0	< 6.0	< 4.0	< 2.0	< 5.0	< 2.0	< 10	< 5.0
BORON UG/L	33	26	24	31	25	25	25	64	30
CADMIUM UG/L	0	0	0	0	0	0	0	0	0
CALCIUM MG/L	70	58	19	37	50	37	45	98	57
CARBONATE MG/L	0	0	0	0	0	0	0	0	0
CHLORIDE MG/L	43	23	22	17	18	21	23	68	19
CHROMIUM UG/L	< 8	< 6	< 6	< 4	< 2	< 5	< 2	< 10	< 5
COBALT UG/L	< 16	< 12	< 12	< 8.0	< 1.0	< 10	< 2.0	< 10	< 10
COLIFORM COL/100 ML	--	--	--	--	--	--	--	--	--
COPPER UG/L	22	< 2.0	14	1.0	.60	37	35	3.0	8.0
CYANIDE MG/L	0	0	0	0	0.1	0	0	0	0
DISS SOLIDS SUM MG/L	320	237	255	173	206	208	240	469	226
FLUORIDE MG/L	.10	.10	.10	.20	0	.20	.10	.10	.20
GALLIUM UG/L	< 2.0	< 2.0	< 2.0	< .80	< .70	< .90	< .80	< 5.0	< 1.0
GERMANIUM UG/L	< 8.0	< 6.0	< 6.0	< 4.0	< 2.0	< 5.0	< 2.0	< 10	< 5.0

SYSTEM(S) ON THIS PAGE..	A	B	C	D	D	E	E	F	G
TYPE OF WATER SAMPLED...	DISTRBN	RAW	TREATED	RAW	TREATED	RAW	TREATED	RAW	DISTRBN
DATE.....	12/01/71	12/01/71	12/01/71	12/01/71	04/11/75	12/01/71	04/11/75	02/28/73	12/01/71
HARDNESS TOTAL MG/L	249	202	66	131	166	130	153	352	188
HARDNESS NONCARB MG/L	77	47	0	36	47	9	7	81	36
IRON UG/L	220	16	4.0	670	650	10	50	< 10	58
LEAD UG/L	< 8.0	< 6.0	< 6.0	< 4.0	< 2.0	< 5.0	< 2.0	< 10	< 5.0
LITHIUM UG/L	< 10	< 10	< 10	< 10	6.0	< 10	6.0	< 10	< 10
MAGNESIUM MG/L	18	14	4.5	9.3	10	9.2	9.8	26	11
MANGANESE UG/L	< 8.0	< 6.0	< 6.0	280	1100	< 5.0	1.0	< 8.0	130
MBAS MG/L	.03	.01	.02	.02	0	.02	0	.02	.01
MERCURY UG/L	< .50	< .50	< .50	< .50	< .50	< .50	< .50	< .50	< .50
MOLYBDENUM UG/L	< 2.0	< 2.0	< 2.0	< .80	< .70	< .90	< .80	< 5.0	< 1.0
NICKEL UG/L	< 8.0	< 6.0	< 6.0	6.0	2.0	< 5.0	< 2.0	< 10	< 5.0
NITRATE AS N MG/L	1.1	.30	.90	.40	.23	.30	.22	4.8	.10
NITRITE AS N MG/L	--	--	--	--	0	--	0	--	--
NITROGEN NH_4 AS N MG/L	--	--	--	--	--	--	--	--	--
NITROGEN NH_4+ORG-N MG/L	.08	.03	.02	.40	.04	.12	.20	.01	.05
PH UNITS	7.7	7.7	7.6	7.1	7.1	7.9	7.6	7.8	7.6
PHENOLS UG/L	1.0	5.0	0	1.0	--	0	--	--	1.0
PHOSPHORUS AS P MG/L	.01	0	0	.01	.01	.00	.02	.00	.80
POTASSIUM MG/L	1.5	1.2	.80	1.4	1.1	1.4	1.2	2.3	1.4
RUBIDIUM UG/L	--	--	--	--	--	--	--	--	--
SELENIUM UG/L	0	0	2	0	0	0	0	0	0
SILICA MG/L	7.0	7.3	6.9	7.2	6.8	7.3	6.7	9.1	6.5
SILVER UG/L	< .50	< .30	< .30	< .20	< .20	< .30	< .20	< 1.0	< .30
SODIUM MG/L	20	10	72	10	10	27	27	34	11
SPECIFIC COND UMHOS	582	422	436	305	369	366	418	818	396
STRONTIUM UG/L	200	140	62	130	220	140	210	240	240
SULFATE MG/L	56	30	36	34	39	32	39	64	28
TIN UG/L	< 8.0	< 6.0	< 6.0	< 4.0	< 2.0	< 5.0	< 2.0	< 10	< 5.0
TITANIUM UG/L	< 4.0	< 3.0	< 3.0	< 2.0	< 2.0	< 3.0	< 2.0	< 10	< 3.0
VANADIUM UG/L	< 4.0	< 3.0	< 3.0	< 2.0	< 2.0	< 3.0	< 2.0	< 10	< 3.0
ZINC UG/L	400	< 250	< 250	< 170	0	< 210	0	50	< 210
ZIRCONIUM UG/L	< 16	< 12	< 12	< 8.0	< 2.0	< 10	< 3.0	< 22	< 10

Table 6.--Chemical analyses of water from community systems in Schenectady County, New York (Continued)

	COLUMN(S) ON THIS PAGE	USGS-ASSIGNED LATITUDE-LONGITUDE NUMBER	SYSTEM (QW SITE) NAME AND RAW SOURCE OF WATER SAMPLED
	A	424910073591700	SCHENECTADY(C)-WELLS

SYSTEM(S) ON THIS PAGE..	A	A	A	A	A	A	A	A	A
TYPE OF WATER SAMPLED...	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED
DATE.....	11/10/70	07/12/71	10/14/71	01/13/72	04/06/72	07/13/72	10/18/72	01/10/73	04/17/73
ALUMINUM UG/L	9.0	3.0	7.0	5.0	73	12	47	13	6.0
ARSENIC UG/L	0	0	0	2	0	1	0	0	0
BARIUM UG/L	34	41	42	33	28	26	36	26	29
BERYLLIUM UG/L	< .50	< .60	< 2.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0
BICARBONATE MG/L	162	192	200	170	152	160	201	173	194
BISMUTH UG/L	< 5.0	< 3.0	< 6.0	< 5.0	< 5.0	< 5.0	< 6.0	< 5.0	< 5.0
BORON UG/L	45	18	39	41	20	16	22	27	17
CADMIUM UG/L	0	0	0	0	0	0	0	0	0
CALCIUM MG/L	52	60	61	54	52	52	62	58	63
CARBONATE MG/L	0	0	0	0	0	0	0	0	0
CHLORIDE MG/L	16	18	18	16	16	14	18	18	18
CHROMIUM UG/L	< 5	< 6	< 6	< 5	< 3	< 5	< 6	< 5	< 6
COBALT UG/L	< 5.0	< 2.0	< 3.0	< 5.0	< 5.0	< 5.0	< 6.0	< 6.0	< 6.0
COLIFORM COL/100 ML	--	--	--	--	--	--	--	--	--
COPPER UG/L	21	160	180	14	330	500	3.0	140	390
CYANIDE MG/L	0	0	0	0	0	0	0	0.1	.01
DISS SOLIDS SUM MG/L	201	232	238	212	197	198	239	225	239
FLUORIDE MG/L	.20	.40	.90	1.1	.20	1.2	.10	.90	.90
GALLIUM UG/L	ND	< 2.0	< 3.0	< 1.0	< 3.0	< 5.0	< 3.0	< 3.0	< 3.0
GERMANIUM UG/L	< 5.0	< 6.0	< 6.0	< 5.0	< 5.0	< 10	< 6.0	< 5.0	< 6.0

SYSTEM(S) ON THIS PAGE..	A	A	A	A	A	A	A	A	A
TYPE OF WATER SAMPLED...	RAW	RAW	RAW	RAW	RAW	RAW	RAW	RAW	RAW
DATE.....	11/10/70	07/12/71	10/14/71	01/13/72	04/06/72	07/13/72	10/18/72	01/10/73	04/17/73
MAGNESIUM MG/L	5.9	12	11	11	10	9.8	10	10	10
MANGANESE UG/L	190	93	180	180	140	95	150	95	190
MBAS MG/L	.01	.01	.02	.02	.01	.02	.02	.07	.01
MERCURY UG/L	< .50	< .50	< .50	< .50	< .50	< .50	< .50	< .50	< .50
MOLYBDENUM UG/L	.70	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 3.0	< 3.0	< 0
NICKEL UG/L	< 2.0	< 6.0	< 6.0	< 3.0	< 6.0	< 5.0	< 6.0	< 5.0	< 6.0
NITRATE AS N MG/L	.10	.44	.20	.30	.30	.20	.30	.30	.50
NITRITE AS N MG/L	0	0	--	--	--	--	--	--	--
NITROGEN NH_4 AS N MG/L	0	0	--	--	--	--	--	--	--
NITROGEN NH_4+ORG-N MG/L	--	0	.02	.11	0	.17	.08	.06	.10
PH UNITS	7.8	7.8	7.6	7.8	7.4	7.8	8.0	7.8	8.3
PHENOLS UG/L	0	0	0	0	1.0	--	--	--	--
PHOSPHORUS AS P MG/L	.02	.01	.01	.01	.01	.02	.02	.02	.01
POTASSIUM MG/L	1.3	2.1	1.4	1.5	1.4	1.1	1.4	1.1	1.2
RUBIDIUM UG/L	< 2.0	< .40	--	--	--	--	--	--	--
SELENIUM UG/L	1	2	6	1	1	0	7	2	0
SILICA MG/L	5.1	6.5	7.1	8.6	8.0	6.8	7.7	7.0	7.0
SILVER UG/L	< .50	< .60	< .60	< 2.0	< 2.0	< 1.0	< .60	< .50	< .60
SODIUM MG/L	11	11	12	12	10	8.6	11	9.4	10
SPECIFIC COND UMHOS	336	433	422	427	413	382	422	395	404
STRONTIUM UG/L	300	240	320	290	280	230	300	290	260
SULFATE MG/L	25	34	30	33	32	28	30	31	33
TIN UG/L	< 5.0	< 6.0	< 6.0	< 6.0	< 6.0	< 11	< 6.0	< 5.0	< 6.0
TITANIUM UG/L	< 3.0	< 6.0	< 3.0	< 3.0	< 6.0	< 5.0	3.0	< 5.0	< 4.0
VANADIUM UG/L	< 5.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 5.0	< 6.0
ZINC UG/L	< 300	< 270	< 270	600	< 250	< 480	< 370	0	0
ZIRCONIUM UG/L	ND	< 3.0	< 13	< 13	< 12	< 11	< 8.0	< 5.0	< 8.0

Table 6.--Chemical analyses of water from community systems in Schenectady County, New York (Continued)

	COLUMN(S) ON THIS PAGE	USGS-ASSIGNED LATITUDE-LONGITUDE NUMBER	SYSTEM (QW SITE) NAME AND RAW SOURCE OF WATER SAMPLED
	A	424910073591701	SCHENECTADY(C)-WELLS

SYSTEM(S) ON THIS PAGE..	A	A	A	A	A	A	A	A	A
TYPE OF WATER SAMPLED...	RAW	RAW	RAW	RAW	RAW	RAW	RAW	RAW	RAW
DATE.....11/10/70	07/12/71	10/14/71	01/13/72	04/06/72	07/13/72	10/18/72	01/10/73	04/17/73	
ALUMINUM UG/L	14	.90	8.0	48	41	7.0	11	48	4.0
ARSENIC UG/L	0	0	0	1	0	2	1	0	0
BARIUM UG/L	30	38	40	41	34	30	36	28	31
BERYLLIUM UG/L	< .50	< .60	< 2.0	< 2.0	< 2.0	< 1.0	< 2.0	< 2.0	< 2.0
BICARBONATE MG/L	150	202	202	206	182	180	201	180	192
BISMUTH UG/L	< 5.0	< 3.0	< 6.0	< 6.0	< 6.0	< 5.0	< 6.0	< 5.0	< 5.0
BORON UG/L	36	16	48	33	27	17	25	24	20
CADMIUM UG/L	0	0	0	0	0	0	0	1	0
CALCIUM MG/L	48	63	66	65	62	57	60	61	68
CARBONATE MG/L	0	0	0	0	0	0	0	0	0
CHLORIDE MG/L	15	20	19	20	20	14	17	25	16
CHROMIUM UG/L	< 5	< 6	< 6	< 6	< 3	< 5	< 6	< 5	< 6
COBALT UG/L	< 5.0	< 2.0	< 3.0	< 6.0	< 6.0	< 5.0	< 6.0	6.0	< 6.0
COLIFORM COL/100 ML	--	--	--	--	--	--	--	--	--
COPPER UG/L	4.0	1.0	25	3.0	5.0	4.0	5.0	1.0	40
CYANIDE MG/L	0	.01	0	0	0	0	0	0.1	.01
DISS SOLIDS SUM MG/L	185	248	246	253	233	214	236	233	240
FLUORIDE MG/L	.10	0	.10	.10	.10	.10	.10	.10	.10
GALLIUM UG/L	ND	< 2.0	< 3.0	< 2.0	< 3.0	< 5.0	< 3.0	< 3.0	< 3.0
GERMANIUM UG/L	< 5.0	< 6.0	< 6.0	< 6.0	< 6.0	< 11	< 6.0	< 5.0	< 6.0
HARDNESS TOTAL MG/L	144	207	210	208	196	183	191	193	211
HARDNESS NONCARB MG/L	21	41	44	39	47	35	26	46	53
IRON UG/L	7.0	3.0	14	5.0	12	9.0	12	< 5.0	12
LEAD UG/L	< 5.0	< 2.0	< 13	< 6.0	< 3.0	< 5.0	< 6.0	< 5.0	< 6.0
LITHIUM UG/L	2.0	2.0	< 10	< 10	< 10	< 10	< 10	< 10	--

SYSTEM(S) ON THIS PAGE..	A	A	A	A	A	A	A	A	A
TYPE OF WATER SAMPLED...	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED	TREATED
DATE.....	11/10/70	07/12/71	10/14/71	01/13/72	04/06/72	07/13/72	10/18/72	01/10/73	04/17/73
HARDNESS TOTAL MG/L	158	191	198	176	164	166	196	185	198
HARDNESS NONCARB MG/L	25	34	34	37	39	35	31	43	39
IRON UG/L	130.0	9.0	15	8.0	35	11	13	< 5.0	11
LEAD UG/L	< 5.0	4.0	< 13	8.0	3.0	37	< 6.0	< 5.0	< 6.0
LITHIUM UG/L	3.0	2.0	< 10	< 10	< 10	< 10	< 10	< 10	--
MAGNESIUM MG/L	6.9	10	11	10	8.2	8.9	10	9.7	10
MANGANESE UG/L	270	290	460	260	150	170	50	160	210
MBAS MG/L	.01	.01	.02	.01	.01	.02	.02	.02	.02
MERCURY UG/L	< .50	< .50	< .50	< .50	< .50	< .50	< .50	< .50	< .50
MOLYBDENUM UG/L	.70	< 2.0	< 2.0	2.0	< 1.0	< 1.0	< 3.0	< 3.0	< 2.0
NICKEL UG/L	< 3.0	< 6.0	15	< 3.0	5.0	22	< 6.0	< 5.0	< 6.0
NITRATE AS N MG/L	.10	.26	.10	0	.10	.50	.30	.50	.50
NITRITE AS N MG/L	0	0	--	--	--	--	--	--	--
NITROGEN NH_4 AS N MG/L	0	.03	--	--	--	--	--	--	--
NITROGEN NH_4+ORG-N MG/L	--	.33	.15	.04	.02	.16	.11	.06	.06
PH UNITS	7.7	7.7	7.4	7.7	7.5	7.7	8.2	7.5	8.2
PHENOLS UG/L	0	0	0	0	28	--	--	--	--
PHOSPHORUS AS P MG/L	.04	0	.01	.18	.08	.26	.01	.28	.01
POTASSIUM MG/L	1.3	1.5	1.4	1.5	1.1	1.0	1.4	1.1	1.1
RUBIDIUM UG/L	< 2.0	< .40	--	--	--	--	--	--	--
SELENIUM UG/L	3	2	5	2	0	0	4	3	0
SILICA MG/L	5.6	7.4	8.0	6.9	5.2	6.1	7.7	6.3	7.9
SILVER UG/L	< .50	< .60	< .60	< 1.0	< 1.0	< 1.0	< .60	< .50	< .60
SODIUM MG/L	11	10	11	11	9.4	8.6	10	10	11
SPECIFIC COND UMHOS	370	406	420	364	351	358	420	392	387
STRONTIUM UG/L	320	280	300	340	320	260	310	290	300
SULFATE MG/L	28	30	28	28	30	27	31	35	31
TIN UG/L	< 5.0	< 6.0	< 6.0	< 5.0	< 5.0	< 10	< 6.0	< 5.0	< 6.0
TITANIUM UG/L	12	< 6.0	< 3.0	< 3.0	7.0	< 5.0	2.0	< 5.0	< 4.0
VANADIUM UG/L	< 5.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 5.0	< 6.0
ZINC UG/L	< 340	< 240	< 270	< 490	< 220	< 450	< 370	< 330	--
ZIRCONIUM UG/L	ND	< 3.0	< 13	< 11	< 11	< 10	< 8.0	< 5.0	< 8.0

Table 7.--Chemical analyses (pesticides and related constituents) of water from City of Schenectady, New York, wells

COLUMN(S) ON THIS PAGE	USGS-ASSIGNED LATITUDE-LONGITUDE NUMBER	SYSTEM (OR SITE) NAME AND RAW SOURCE OF WATER SAMPLED
A	424910073591701	SCHENECTADY(C)-WELLS
B	424910073591700	SCHENECTADY(C)-WELLS

SYSTEM(S) ON THIS PAGE..	A	A	A	A	A
TYPE OF WATER SAMPLED...	RAW	RAW	RAW	RAW	RAW
DATE.....	11/10/70	07/12/71	10/14/71	04/06/72	07/13/72
TOT ORG CARBON MG/L	5.0	6.0	0	0	0
PCB UG/L	--	0	0	0	0
PCN UG/L	--	--	--	--	--
ALDRIN UG/L	0	0	0	0	0
CHLORODANE UG/L	--	0	0	0	0
DDD UG/L	0	0	0	0	0
DDE UG/L	0	0	0	0	0
DDT UG/L	0	0	0	0	0
DIAZINON UG/L	--	0	0	0	0
DIELDRIN UG/L	0	< .01	< .01	0	0
ENDRIN UG/L	0	0	0	0	0
ETHION UG/L	0	0	0	0	0
HEPTACHLOR UG/L	0	0	0	0	0
HEPTACHLOR EPOXIDE UG/L	--	0	0	0	0
LINDANE UG/L	0	0	0	0	0
MALATHION UG/L	0	0	0	0	0
METHYOXYCHLOR UG/L	--	0	0	0	0
METHYL PARATHION UG/L	0	0	0	0	0
METHYL TRITHION UG/L	--	0	0	0	0
PARATHION UG/L	0	0	0	0	0
TOXAPHENE UG/L	--	0	0	0	0
TRITHION UG/L	0	0	0	0	0
2,4-D UG/L	0	0	0	0	0
2,4,5-T UG/L	0	0	0	0	0
SILVEX UG/L	0	0	0	0	0

SYSTEM(S) ON THIS PAGE..	B	B	B	B	B
TYPE OF WATER SAMPLED...	TREATED	TREATED	TREATED	TREATED	TREATED
DATE.....	11/10/70	07/12/71	10/14/71	04/06/72	07/13/72
TOT ORG CARBON MG/L	7.0	4.0	0	0	1.0
PCB UG/L	--	0	0	0	0
PCN UG/L	--	--	--	--	--
ALDRIN UG/L	0	0	0	0	0
CHLORODANE UG/L	--	0	0	0	0
DDD UG/L	0	0	0	0	0
DDE UG/L	0	0	0	0	0
DDT UG/L	0	0	0	0	0
DIAZINON UG/L	--	0	.02	0	0
DIELDRIN UG/L	0	0	< .01	0	0
ENDRIN UG/L	0	0	0	0	0
ETHION UG/L	0	0	0	0	0
HEPTACHLOR UG/L	0	0	0	0	0
HEPTACHLOR EPOXIDE UG/L	--	0	0	0	0
LINDANE UG/L	0	0	0	0	0
MALATHION UG/L	0	0	0	0	0
METHYOXYCHLOR UG/L	--	0	0	0	0
METHYL PARATHION UG/L	0	0	0	0	0
METHYL TRITHION UG/L	--	0	0	0	0
PARATHION UG/L	0	0	0	0	0
TOXAPHENE UG/L	--	0	0	0	0
TRITHION UG/L	0	0	0	0	0
2,4-D UG/L	0	0	0	0	0
2,4,5-T UG/L	0	0	0	0	0
SILVEX UG/L	0	0	0	0	0