

THIRTY-FOURTH ANNUAL REPORT

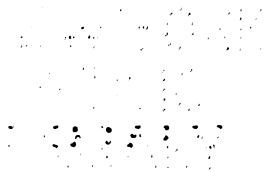
OF THE

State Department of Health

OF

NEW YORK

FOR THE YEAR ENDING DECEMBER 31, 1913



ALBANY
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Copies of the above report were transmitted to the health officer and to the board of water commissioners of Catskill.

COXSACKIE

ALBANY, N. Y., January 31, 1913

EUGENE H. PORTER, M.D., *State Commissioner of Health, Albany, N. Y.:*

DEAR SIR:—I beg to submit the following report upon a recent investigation of the public water supply of the village of Coxsackie, N. Y.

Coxsackie is an incorporated village located in the northwestern part of Greene county on the west bank of the Hudson river about twenty-one miles below the city of Albany. It is on the West Shore railroad which passes through the western part of the village. The present population is about 3,000.

The public water supply is derived from springs issuing from a limestone formation and flowing off in streams together with the run-off of surface waters tributary to these streams. The supply comes from two independent watersheds, one being the upper watershed of the Diep Kill, four miles northwest of the village having a tributary area of about four square miles and the other, the watershed of Murderer Kill, three miles west of the village and containing about six square miles. At the Diep Kill source the water is impounded behind a concrete dam about 40 feet in height and some 150 feet long. The water flows by gravity directly to the village from a small intake dam on the stream at a point just below this large dam and at an elevation of some 175 feet above the average elevation of the village. At the Murderer Kill supply, otherwise known as the Climax supply, the water is taken from a small intake basin at a point where the stream issues from a cavern in the limestone after having flowed subterraneously for a distance of nearly one-quarter of a mile. This intake is at an elevation of about 120 feet above the average elevation of the village and the water is delivered directly to the village by gravity. This latter supply is now the principal one for the village and although there is little or no storage provided considerable water is said to be always available from the springs upon the watershed. The Diep Kill reservoir affords some 4,000,000 gallons storage, but the watershed is inadequate to furnish the village at all times during the dry season.

The distributing system consists of about 7 miles of cast-iron water mains from 4 to 12 inches in diameter. The average pressure in the mains from the Diep Kill supply is about 70 pounds per square inch. The average pressure available from the Murderer Kill or Climax supply is about 50 pounds per square inch.

The original water works were constructed in the year 1895, at which time the water was taken only from the Diep Kill supply. In 1902, the supply was augmented by the development of the Murderer Kill or Climax supply and the construction of a pipe line from this source to connect with the pipe line from the Diep Kill supply. The water works are owned by the village and are under the direction of a board of water commissioners. About two-thirds of the population of the village is supplied from the public system of water supply and there are something over 400 service taps, about 60 of which are metered.

Rules and regulations for the protection from contamination of the public supply of potable waters and their sources for the village of Coxsackie, N. Y., were enacted by the State Board of Health, May 16, 1895. (See Sixteenth Annual Report of the State Board of Health.)

On December 2, 1912, Dr. I. E. Van Hoesen, health officer of the village, visited the Department and conferred with Mr. H. B. Cleveland, Principal Assistant Engineer in the Department, with reference to recent reports of the State Hygienic Laboratory on the results of recent analyses of samples

of water from the public water supply of the village of Coxsackie which appeared to indicate that this supply was not in the best sanitary condition. Dr. Van Hoesen stated that the local board of health had made an inspection of the watershed during the summer of 1912 and had required the removal of several privy vaults, which were very near the stream, to a point farther back from the high water mark. He also stated that he was not familiar with the conditions on all parts of the watershed and requested that steps be taken to insure, if possible, the purity of the water supply. Dr. Van Hoesen was informed that as soon as possible an inspection of the public water supply of the village would be made by a representative of this Department and that the question of enforcing the rules and regulations for the sanitary protection of this supply would be taken up with the village authorities subsequent to this investigation.

On December 20, 1912, I detailed Mr. A. O. True, assistant engineer of this Department, to visit Coxsackie and make an inspection of the conditions surrounding the collection and delivery of this water supply to the village. On this inspection the assistant engineer was accompanied and assisted by Mr. H. A. Jordan, president of the village, and Mr. J. C. McClure, member of the village board of health.

The Diep Kill rises in the foothills of the Catskills in the central part of the town of New Baltimore, about 6 miles northwest of the village of Coxsackie and flows in a general southeasterly direction entering Coxsackie creek about 2 miles north of the village.

Murderer Kill rises in the northwestern part of the town of New Baltimore about 7.5 miles northwest of the village of Coxsackie and flows in a southerly to southeasterly direction to its confluence with Coxsackie creek at a point about 2 miles west of the village.

Time was not taken for an inspection of every part of the watershed areas tributary to this supply where pollution of the water may be taking place. A complete inspection was made by Diep Kill above the storage reservoir. Only that portion of the Murderer Kill watershed immediately adjacent to and a short distance above the intake was inspected.

Near the headwaters of Diep Kill at the premises occupied by Mr. Kelf, there is a chicken house on the edge of a small duck pond tributary to the stream. This is a violation of Rule 10 of the "Rules and Regulations for the Protection from Contamination of the Public Supply of Potable Waters and their Sources for the Village of Coxsackie," enacted by the State Board of Health on May 16, 1895. (See Sixteenth Annual Report, State Board of Health, p. 273.) Also on these premises there are two privies which are not provided with watertight removable containers, 100 feet and 75 feet respectively, from a small tributary stream. These are both violations of Rule 2. Ducks have access to the small pond and stream on these premises in violation of Rule 8.

About a mile east of the Kelf place on the highway following the stream and about one-quarter mile from the fork in the road, there is a barnyard extending to within a few feet of the stream and a drain discharging into a ditch leading to the stream. These are violations of Rules 10 and 7 respectively.

One-quarter mile further east on the same road is a hog pen draining directly into the stream. Violates Rule 10.

One-half mile further east on the same highway and near its intersection with the highway from the south is a watering place for cattle in the stream and at the time of inspection excreta from cattle was seen near the water's edge. Violates Rule 8.

One-quarter of a mile further east and east of the main stream, a little over half a mile above the reservoir there is a barnyard extending to and beyond the stream and a privy with leaky box, 60 feet from the stream. Violates Rules 10 and 2 respectively.

Near the western bank of the reservoir there is an old house, occupied at times. This place is in an insanitary condition and is unprovided with sanitary conveniences and is a menace to the public water supply.

The water from the Climax supply is said to come principally from a spring located a little over one-quarter of a mile above the intake reservoir. Murderer Kill, however, which is tributary to the reservoir and into which the water of the spring flows has a watershed above this point of about 6 square miles and the drainage of a considerable population is directly or indirectly tributary to this source of public water supply. During a large part of the year, at least, this supply must consist largely of the surface water from the watershed. If the conditions on the adjacent watershed of Diep Kill are any indication there are many opportunities on this watershed for pollution of the public water supply by animal organic matters. The analyses of samples of water from both sources of supply, to be discussed below would indicate that at the time of inspection the Diep Kill water, which, as has been pointed out, receives more or less animal pollution, was receiving little more pollution than that from Murderer Kill.

The results of the analyses of samples of water collected by the State Hygienic Laboratory from taps on the system during 1911 and 1912 and also collected at the time of inspection are given in an accompanying table.

These sources of water supply would be classed as hard waters showing close to and in many samples considerably more than 100 parts per million of hardness. The amount of color appears moderate to high and the turbidity even more variable, one or two samples showing clear and one sample carrying as high as 30 parts per million. The results indicate the water to contain a moderate to somewhat more than moderate amount of organic matters. The values for free ammonia are low to moderate for a surface impounded water. The values for albuminoid ammonia are moderate for a surface water supply. The figures for oxygen consumed are about as would be expected for a surface water subject to the surface run-off on fairly steep slopes during heavy rains, together with some organic pollution from barnyards, etc. The amount of chlorine is probably from 2 to 3 parts per million above normal for this part of the State and is due, partially at least, to the drainage from barnyards and other animal enclosures.

The bacteriological results are variable and somewhat unsatisfactory. About half the samples show an excessively high bacterial count even for a surface collected water. Of the remaining half only three samples show what could be termed a moderate count, the remainder showing moderately high counts. The total bacteria in the samples collected at the time of inspection are in all cases very high and would indicate considerable organic pollution. There was a precipitation of about 0.4 of an inch in the Albany district on December 19, 1912, the day previous to the collection of these samples, which probably affected the condition of the water through surface wash. Fecal organisms of the *B. coli* type were prevalent in all the samples of December 20, 1912, indicating undoubted pollution of the water by animal organic wastes. The same is true of the tap sample collected September 6, 1911. The remaining samples do not show the presence of the *B. coli* type in numbers sufficient to be of important sanitary significance except in the cases of the samples of March 1, 1912, October 4, 1912, and November 9, 1912. These samples show a somewhat too high prevalence of this type of organisms. From the results of this examination, I beg to submit the following conclusions:

1. That although some of the violations of the rules and regulations for the sanitary protection of this public water supply have been corrected by the local authorities there remain some violations on the watersheds which have not as yet been abated.
2. That the watersheds of both sources of supply are inhabited by a considerable population which must needs cause a greater or less pollution of the water supply from animal wastes unless the rules and regulations are strictly enforced.
3. That the water derived from the Climax supply is at certain seasons largely from the surface waters of Murderer Kill and should be subject to the same strict supervision as is necessary on the Diep Kill watershed.

ANALYTICAL DATA OF WATER SUPPLIES

Abbreviations used to describe odors of water: 0, none; 1, very faint; 2, faint; 3, distinct; 4, decided; 5 strong; 6, very strong; a, aromatic; d, disagreeable; e, earthy; f, fishy; g, grassy; m, musty; v, vegetable

Laboratory number	Municipality	County	Source	Date of collection	PHYSICAL			CHEMICAL (PARTS PER MILLION)							BACTERIOLOGICAL							
					Color	Turbidity	Odor	SOLIDS		NITROGEN AS				HARDNESS		Bacteria per c.c.	B. COLI TYPE					
								Total	Loss on ignition	Free ammonia	Albuminoid ammonia	Nitrites	Nitrates	Oxygen consumed	Chlorine		Total	Alkalinity	10 c.c.	1 c.c.	1-10 c.c.	
B-6885	Coxsackie	Greene	Tap, public supply	3/27/11	15	8	.....	110	31	79	.016	.046	.002	0.24	2.50	3.00	70	66	1,200	+	10 c.c.	1-10 c.c.
C-4523	Coxsackie	Greene	Tap, public supply	5/16/11	10	5	.....	121	14	107	.008	.072	.002	0.10	1.20	2.75	90	84	3,200	+	10 c.c.	1-10 c.c.
B-4865	Coxsackie	Greene	Tap, public supply	6/30/11	15	10	.....	140	16	124	.018	.032	.001	0.14	1.37	2.50	94.2	87	400	+	10 c.c.	1-10 c.c.
B-9457	Coxsackie	Greene	Tap, public supply	9/ 6/11	20	30	.....	200	13	187	.002	.116	.001	0.10	1.10	3.00	140	119	500	+	10 c.c.	1-10 c.c.
B-6591	Coxsackie	Greene	Tap, public supply	10/17/11	Tr.	Cl.	.....	115	22	93	.022	.062	.001	Tr.	0.80	2.50	92.9	92	110	+	10 c.c.	1-10 c.c.
B-9456	Coxsackie	Greene	Tap, public supply	12/12/11	8	2	.....	150	15	135	.008	.056	.001	0.30	0.43	3.25	117	89	210	+	10 c.c.	1-10 c.c.
C-5590	Coxsackie	Greene	Tap, public supply	1/23/12	5	5	1 v.	149	31	118	.032	.050	.001	0.52	0.40	2.87	114	101	190	2+1	0-3	0-3
B-7275	Coxsackie	Greene	Tap, public supply	3/ 1/12	5	5	1 v.	115	15	100	.026	.054	.002	0.40	1.50	2.50	61.4	56	4,900	3+0	1-2	0-3
B-7631	Coxsackie	Greene	Tap, public supply	4/ 5/12	5	15	2 a.	107	8	99	.008	.054	.001	0.34	1.90	2.00	74.3	63	300	2+1	0-3	0-3
C-5190	Coxsackie	Greene	Tap, public supply	10/ 4/12	5	Tr.	1 v.	177	9	168	.010	.050	Tr.	0.06	2.00	2.25	134	122	325	2+1	1-2	0-3
B-8739	Coxsackie	Greene	Tap, public supply	11/ 9/12	15	5	1 v.	121	13	108	.010	.070	.001	0.24	1.80	2.75	77.1	67	1,100	3+0	2+1	0-3
C-6230	Coxsackie	Greene	Tap, Diep Kill water	12/20/12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,600	3+0	3+0	1-2
B-9455	Coxsackie	Greene	Overflow at dam Diep Kill	12/20/12	15	10	2 v.	125	12	113	.006	.064	.001	0.24	2.60	2.75	78.6	70	5,100	3+0	3+0	1-2
B-9456	Coxsackie	Greene	Reservoir — Climax supply	12/20/12	15	3	1 v.	109	16	93	.010	.040	.001	0.24	3.00	2.25	61.4	53	2,600	3+0	3+0	0-3

In view of these conclusions, I beg to submit the following recommendations:

1. That regular and thorough inspections be made by the board of water commissioners of all parts of the watersheds of Diep Kill and Murderer Kill and the watershed of any other sources of water supply when they shall be used for a public water supply for the village, and that they cause the abatement of any violations of the rules and regulations found thereon as provided for in sections 70, 71 and 73 of the Public Health Law, and maintain strict oversight at all times of all sources of public water supply. This will be in accordance with your general order of December 31, 1912, to municipalities and corporations having control of public water supplies protected by rules and regulations enacted by the Department.

2. That the house near the western bank of the reservoir be destroyed or removed to a safe distance from the reservoir.

3. That should it be found necessary, owing to the considerable population on the watersheds of the public water supply and the possible difficulty of removing all dangerous pollution of the water through an enforcement of the rules and regulations, that the village authorities take steps for establishing works to purify the water supply by filtration or other approved method, and making adequate provision for the careful and efficient operation of such works.

Respectfully submitted,

THEODORE HORTON,
Chief Engineer

Copies of the above report were transmitted to the health officer and to the board of water commissioners of Coxsackie.

GLEN COVE

ALBANY, N. Y., November 17, 1913

EUGENE H. PORTER, M. D., *State Commissioner of Health, Albany, N. Y.:*

DEAR SIR:—I beg to submit the following report on an inspection of the public water supply of the village of Glen Cove, Nassau county. This inspection was made following a request from officers of the North Country Colony and the Red Spring Colony, representing a large portion of the residential district near Glen Cove, and the Village Improvement Society, representing the community at large. A similar request was made by Mr. M. J. Drummond, president of the Nassau County Water Company, which furnishes the public water supply of Glen Cove. The inspection was made on October 28, 1913, by Mr. E. S. Chase, assistant engineer in this Department, accompanied by Mr. J. F. Stehling, superintendent of the water company.

Glen Cove is a residential village with a population of about 6,000, located on the north shore of Long Island on the Oyster Bay branch of the Long Island railroad.

The water supply is derived from driven wells located in a small valley, about one-quarter mile south of the Glen Street station of the Long Island railroad. The works were designed by Mr. Oscar Darling, C.E., and constructed under his direction by the Acme Water Storage Company in 1900. Since then new wells have been driven from time to time. About 4,000 people are served with water from this supply and the average daily consumption is estimated at 250,000 gallons, practically all of which is for domestic use.

The water from the wells is pumped through about 1,600 feet of 10-inch cast-iron force mains to an uncovered steel standpipe on a hill near the Glen Street railroad station. From this standpipe the water is distributed to the village through about 14 miles of cast-iron mains ranging from 4 inches to 10