

Seattle City Clerk's Office

Comptroller File

30466

FILE NO. 50466

FILE NO.

Report  
OF  
Special Board of  
Sanitary Engineers  
upon advisability  
of permitting construction  
and operation of  
C.M. & St. Paul Ry. in  
Cedar River Valley

FILED AUG 13 1906 .190

By

Address

W. W. CARROLL, CITY COMPTROLLER

By

DEPUTY

ACTION OF THE COUNCIL

REFERRED TO COOPERATION  
FIRE & WATER COM.

AUG 13 1906

REFERRED

REPORTED

REPORT ADOPTED

REPORTED

REPORT ADOPTED

REF. FOR ORD.

C. B.

ORD.

DISPOSITION

OCT 15 1906

ON FILE

FILE BOX

REPORT OF COMMITTEE

Mr. President:

Your

Cooperations

Committee

to whom was referred the within

Report

would respectfully report that we have considered the same and respectfully recommend that

it be

placed on file

CHAIRMAN

*[Handwritten signatures]*

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

REPORT TO D. W. BOWEN, Esq., ACTING MAYOR, THE CITY COUNCIL OF SEATTLE, THE STATE BOARD OF HEALTH OF WASHINGTON, THE KING COUNTY MEDICAL SOCIETY, AND THE CHICAGO, MILWAUKEE AND ST. PAUL RAILROAD, ON THE ADVISABILITY OF PERMITTING THE CONSTRUCTION AND OPERATION OF A RAILROAD IN CEDAR VALLEY.

We have been asked to answer two questions: first, whether it is possible to construct a railroad within the watershed of Cedar River, between the water intake and the power house, without danger to the character and wholesomeness of the water supply of Seattle; and second, whether, in the event of such construction, the road can be operated without endangering the public health of said city, through pollution of the stream.

In order to acquire personal knowledge of all the relevant conditions obtaining in and about Cedar Valley and thus to be able to submit replies based upon something more than general principles and a priori reasoning, we have made a careful examination of the area involved, paying particular attention to the configuration of the ground and to the nature of the soil, and we have extended our observations so as to include that part of the watershed between the point where the proposed road leaves it, to enter the Snoqualmie watershed, and the borders of Cedar Lake. The proposed location of the railroad, as indicated by stakes, has been followed practically from end to end, and the adjacent strips have been examined at such points and to such an extent as seemed desirable or necessary.

NOTICE: IF THE DOCUMENT IN THIS FRAME IS LESS CLEAR THAN THIS NOTICE IT IS DUE TO THE QUALITY OF THE DOCUMENT.

2

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

We have also carefully examined and considered the various statements and arguments submitted to us.

In view of all the facts we have no hesitation in answering both questions in the affirmative.

The main question involved in both propositions is whether pollution of the surface of the proposed right of way and of the vicinity by the wastes of the human body can be prevented; and, if it cannot wholly be prevented, whether contamination of the river can be guarded against.

It is a well established fact that sewage matters containing myriads of disease germs can be rendered quite innocuous by filtration through gravel and sand, so that, within a short time and at a distance of but a few feet, the effluent water may have an entirely different character and yield only mineral evidence of its former bad qualities. This fact was the main reason for careful scrutiny of the nature of the soil.

It appears that along much of the proposed location, gravel and sand are not to be found. The forest floor appears to be reasonably thick, but at most points it consists almost wholly of combustible matter; and where fires have occurred, the soil is shown to be chiefly loose rock, with neither sand nor gravel, and consequently not porous and suitable for effective filtration. At some points along the route, clay and silt deposits are evident; but these materials are not suitable filtering media, for they do not permit percolation. In view of these facts, special provisions will be necessary for proper disposal of such waste matters as may find their way to the surface of the ground within and near the limits of the right of way during construction and operation of the road; for, without such provisions, the said wastes would inevitably be

NOTICE: IF THE DOCUMENT IN THIS FRAME IS LESS CLEAR THAN THIS NOTICE IT IS DUE TO THE QUALITY OF THE DOCUMENT.

4 1 washed into the river in times of heavy rainfall; and, in the  
2 event of their containing pathogenic organisms, might lead  
3 to disastrous outbreaks of infective disease. The fact is,  
4 however, that the character of the water can be adequately  
5 safeguarded by the adoption of methods which will be described  
6 in detail farther on.

7 The safeguarding of the water supply during construction  
8 of the proposed road is by no means a simple matter, for  
9 construction involves the introduction of large numbers of  
10 men into the watershed, whose wastes must be prevented from  
11 reaching the river. It will be necessary to establish camps  
12 at various places, and these camps must be supplied with  
13 water, must be drained, must be provided with bathing and  
14 laundry facilities and latrines, and in all respects must be  
15 under constant competent sanitary inspection and control, far  
16 more stringent than, under ordinary conditions, is necessary.  
17 It is fortunate that a number of sites for such camps are  
18 available, at least 500 feet away from the river, on benches,  
19 where the soil, largely gravel, is dry and porous and hence  
20 easily drained and entirely suitable for latrines. Two camps  
21 may easily be established outside the watershed; one below the  
22 intake, and one near the power house and just over the divide,  
23 within the drainage area of the Snoqualmie; and between these  
24 two points are the several sites above mentioned, on not more  
25 than two of which should camps be established. At the several  
26 camps, the necessary latrines should be board outhouses placed  
27 over reasonably deep pits for the reception of the discharges,  
28 which, out of abundant caution, should be disinfected by the  
29 application of milk of lime, made from freshly slaked lime and  
30 kept protected from contact with the air. This should be

4

1 prepared as often as twice per week, since with age it loses  
2 in causticity and germicidal power. As the pits become  
3 nearly filled, the filling should be completed with clean  
4 soil, and new ones should be dug. Between camps, other lat-  
5 rines should be established at intervals of a few hundred feet,  
6 and portable privies may be used, which frequently should be  
7 cleaned out and disinfected. Rules relating to the use of  
8 these conveniences and absolutely prohibiting the discharge  
9 of human wastes elsewhere within the watershed should be  
10 enforced with great strictness and under penalty of dismissal.  
11 It will be necessary for the future needs of the section hands  
12 and others who will constantly be employed and of the wreckers  
13 who may be brought in from time to time as one or another  
14 cause and occasion require, to establish privies at reasonable  
15 intervals; but for the last-mentioned, a portable privy carried  
16 on the train, with water-tight box or tank would be preferable.  
17 Absolute prohibition of bathing and laundry work in the river  
18 must be emphasized.

19 In order that the stretch between the intake and the power  
20 house shall receive the minimum possible amount of human  
21 wastes, it is recommended that, while trains are in the valley,  
22 all closets be kept locked and that no stops be made except  
23 in emergencies; and that no station or roundhouse be estab-  
24 lished between those points, even with the consent of the City  
25 of Seattle by ordinance, so long as the intake of the public  
26 water supply shall be below the present power house. There-  
27 fore, we recommend the amendment of paragraph 2 of Section 2  
28 of the ordinance granting the right of way, by striking out  
29 the words "without the consent of the city of Seattle first  
30 having been granted by ordinance", and, further, by making the

5. 1 prohibition a permanent restriction in the deed.

2 For the most complete safeguarding of the water it is  
3 advised, that, inasmuch as the soil between the location of  
4 the line and the river is frequently impermeable, and where  
5 made up of loose stone, is devoid of the qualities necessary  
6 for slow filtration, the roadbed be trenched wherever necessary  
7 or advisable, the trenches being filled with gravel and sand,  
8 and that dikes be constructed alongside the trenches wherever  
9 necessary or advisable. The necessary bridges should have  
10 steel decks, be ballasted with gravel and sand, and be provided  
11 with means for drainage; and the water drained off should be  
12 conducted to points at least 50 feet from the river bank on  
13 each side, and discharged over appropriate areas or into  
14 gravel pits.

15 During construction the entire area affected should be  
16 under the unhampered supervision and control of a competent  
17 sanitary engineer appointed by the City of Seattle and approved  
18 by the State Board of Health. He should be empowered to em-  
19 ploy, with the approval of the state Board of Health, as many  
20 inspectors to act as sanitary police as the said Board may  
21 deem to be reasonable, and he and they should be given all  
22 of the powers of special police. He should be required to  
23 employ one or more registered physicians as medical inspectors,  
24 who should examine and report to the Board of Health of the  
25 city of Seattle upon all cases of illness and cause the immediate  
26 removal from the watershed of all persons found to be sick of  
27 infective disease.

28 We recommend, therefore, the amendment of paragraphs 3 and  
29 5 of Section 2 of the ordinance granting the right of way, so  
30 as to provide for these measures of sanitary protection.

IT IS DUE TO THE QUALITY OF THE DOCUMENT.

6

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

After construction and during operation, so long as water shall be taken from any point below the present power house, the roadbed should be under constant supervision and control of a competent sanitary inspector, appointed by the City of Seattle, with the approval of the State Board of Health, and the section hands should be required to remove and properly to dispose of such obvious polluting material as may be discovered.

We feel that we should be remiss in our duty as sanitarians, although the matter is one beyond the scope of our employment, were we to neglect to call attention to the necessity of protecting the water supply of the city from possible dangerous pollution of far greater importance than any likely to be caused by the operation of a properly constructed and efficiently guarded railway. The selection of the Cedar River watershed as a source of water supply was an eminently discriminating and wise act, inasmuch as Cedar Lake and the entire watershed are capable of yielding an abundant supply of pure, soft water. Especially commendable are the steps which have been taken to secure ownership by the city, of the banks of Cedar River and Taylor Creek. But the city is apparently unaware of the fact that in using the water of an only partially protected running stream without storage, it is exposing itself to the danger of a possible outbreak of typhoid fever or other water-borne infective disease. Contrary to common belief, founded on a mistake made by a commission who studied the subject of pollution of streams before the present methods of scientific examination were devised, the water of a rapidly moving stream does not lose its dangerous properties in a run of a few miles after it has received a specific contamination, and it is especially dangerous when this specific pollution has been dis-

NOTICE: IF THE DOCUMENT IN THIS FRAME IS LESS CLEAR THAN THIS NOTICE IT IS DUE TO THE QUALITY OF THE DOCUMENT.





7 1 charged directly into it or has been washed into it before the  
2 action of sunlight and other agencies has destroyed the con-  
3 tained disease germs. In the course of our examination  
4 fishermen were observed here and there along the banks of the  
5 river, and in the woods near the stream were occasional evi-  
6 dences of occupation by camping parties. The danger of whole-  
7 sale infection from the chance discharges of a single one of  
8 such trespassers is, indeed, slight; but it is a real danger,  
9 nevertheless, and when unrestricted access to the river is  
10 permitted, it becomes multiplied. We are informed that the  
11 city is taking steps looking to the abatement of local nuisances  
12 within the watershed, but we feel that it is not doing enough  
13 and will not do enough until fishermen and all others who have  
14 no real business along the City's water supply or who are not  
15 under sanitary supervision and control are warned off and dealt  
16 with as trespassers. Better yet would be the construction  
17 of a large impounding reservoir, between cedar Lake and the  
18 power house, as proposed by the City Engineer, and the bringing  
19 down of the water in mains from that neighborhood, thus gaining  
20 the advantage of a stored water.

21  
22 Respectfully submitted,

23  
24 *A. C. Atch*  
25 *Charles Warrington*  
26 *William J. Sedgwick*  
27  
28  
29  
30

NOTICE: IF THE DOCUMENT IN THIS FRAME IS LESS CLEAR THAN THIS NOTICE  
IT IS DUE TO THE QUALITY OF THE DOCUMENT.