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**ABSTRACT OF PRINCIPAL POINTS IN SPECIAL
MASTER'S REPORT IN CHICAGO
DIVERSION CASE.**

(This abstract is merely intended to aid as a convenient summary, and is not to be taken as adding to or modifying in any way the text of the Special Master's Report.)

The Supreme Court of the United States, by order of January 14, 1929, referred certain questions to Charles Evans Hughes as Special Master to take testimony and report his conclusions and recommendations for a decree. Under the permit of the Secretary of War of March 3, 1925, a diversion of 8,500 cubic feet per second of water from Lake Michigan through the Chicago Drainage Canal was authorized. This permit expires on December 31, 1929. The Supreme Court in its opinion of January 14, 1929 sustained this permit, which was temporary and conditional, in view of the existing exigency. The Court said that it might be "that some flow from the Lake is necessary to keep up navigation in the Chicago River, which really is part of the Port of Chicago, but that amount is negligible as compared with 8,500 second feet now being diverted;" and that beyond that negligible quantity the validity of the Secretary's permit derived its support from a situation produced by the Sanitary District in violation of the rights of the complainant States. The Court considered it to be its duty by an appropriate decree to compel the reduction of the diversion to a point where it would rest on a legal basis. The Court said: "The Sanitary District authorities, relying on the argument with reference to the health of its people, have much too long delayed the needed substitution of suitable sewage plants as a means of avoiding the diversion in the future. Therefore they can not now complain if an immediately heavy burden is placed upon the District because of their attitude and course. The situation requires the District to devise proper methods for providing sufficient money and to construct and put in operation with all reasonable expedition adequate plants for the disposition of the sewage through other means than the Lake diversion."

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The Special Master states that the questions referred to him are deemed to be (1) the practical measures necessary for the disposition of the sewage of the Sanitary District; (2) the time within which these sewage disposal works can be completed and put into operation; (3) the reductions in the diversion that will be practicable immediately and from time to time pending the completion of the sewage disposal works; and (4) the diversion, if any, of water from Lake Michigan which will be necessary for the purpose of maintaining navigation in the Chicago River as a part of the Port of Chicago after these sewage disposal works are in full operation.

The Special Master took voluminous testimony and the case was finally submitted to him, after oral argument and upon briefs, on October 18, 1929.

The Sanitary District presented before the Master a comprehensive program for treatment of the sewage and wastes, within the area of the District, in four main treatment units, the North Side, Calumet, West Side and Southwest Side treatment plants. This program, which was substantially approved by the complainant States so far as sewage treatment is concerned, is found by the Master to afford practical measures from the standpoint of present sanitary engineering knowledge for the complete treatment of the dry weather flow of sewage and wastes of all the area within the District, and also, in times of storm, of approximately 150% of the ordinary dry weather flow of sewage and wastes. The Master also finds that what is described as "complete treatment" of the sewage taken to the treatment works does not amount to 100% purification; that with efficient operation the proposed treatment plants should attain not less than an annual average of 85% purification of the sewage treated and that it is probable that the degree of purification will be 90% or more. The Master finds that the remainder of the storm flow, in excess of the volume treated in the sewage treatment plants, will pass into the Chicago River and its branches and into the canals of the

Sanitary District, and that any storm flow so passed will contain sewage and wastes which have not been treated by the sewage treatment works.

There was serious controversy as to the time within which the sewage treatment program could be completed. The Sanitary District estimated that twelve to fifteen years would be needed to complete the program in its entirety. The complainant States insisted that five to six years would be sufficient. The North Side plant would have been completed by December 31, 1929, but for the delay in construction during the current year on account of lack of funds. It is expected to be completed by April or May, 1930. The Sanitary District asked that July 1, 1930, be taken as the effective date.

The proposed Southwest Side treatment plant will take the longest to construct and thus is the controlling factor. The site has not yet been acquired. This plant will take care of the Stockyards' wastes in addition to domestic sewage, and the Sanitary District claims that further investigations are necessary in order properly to design the plant.

The Master reports that after consideration of all the evidence, the following times should be allowed for completion of the respective works: The North Side plant, July 1, 1930; the Calumet plant, December 31, 1933; the West Side plant, December 31, 1935; the Southwest Side plant, and with it the completion of the entire sewage treatment program, in nine calendar years, that is, by December 31, 1938.

With respect to the reduction of the diversion, the defendants point to the recent rise in the levels of Lake Michigan and of the other Great Lakes and urge that the necessity for immediate reduction in the diversion no longer exists. The Master has reported this evidence to the Court showing that in 1928 the mean level of Lake Michigan was approximately twenty-one inches higher than that for the year 1926, and that in 1929, there was a further decided rise so that in July the mean level of Lake Michigan was ap-

proximately three feet and nine inches higher than at the corresponding time in 1926. The Master states, however, that this change in lake levels which he reports for the information of the Court cannot be taken to modify the decision of the Court, under which he is acting, with respect to the legal rights of the complainants in relation to the diversion or as to the nature of the ultimate relief to be awarded.

The complainant States proposed a reduction of the diversion on December 31, 1929 (on the expectation of the completion by that time of the North Side plant) from 8,500 cubic feet per second to 6,500 cubic feet per second. These figures refer to the annual average direct diversion of lake water by the Sanitary District and are exclusive of the water pumped by Chicago for its domestic purposes. The Master reports that the annual average direct diversion by the Sanitary District of water from Lake Michigan should be reduced to 6,500 cubic feet per second on July 1, 1930. This is exclusive of pumpage.

It was not disputed that the practicability of a further reduction of the direct diversion during the construction of the sewage treatment program depends upon whether controlling works are installed in the Chicago River, or at or near the head of the Chicago Drainage Canal, in order to prevent the reversal of the Chicago River in times of storm, or whether the hydraulics of the Chicago River and Drainage Canal would permit the prevention of reversal of the River with the present controlling works at Lockport. That is, it was not disputed that there could be no further progressive reductions in the diversion pending the completion of the sewage treatment program beyond the point where substantial reversals of the Chicago River are prevented.

The Master finds that the evidence is not sufficient to warrant a conclusion that the present controlling works at Lockport would be adequate for this purpose.

The Sanitary District included in its program the construction of controlling works either in the Chicago River or at or near the head of the Drainage Canal. The com-

plainant States stated that they did not regard such works as essential and that their construction should be left to the discretion of the defendants. In the exhibit of the complainants' program submitted by their sanitary expert, provision was made for a reduction of the direct diversion (that is, exclusive of pumpage) pending the completion of the sewage treatment works, and with control works built by December 31, 1932, to 5,000 cubic feet per second on that date, and to 3,000 cubic feet per second on December 31, 1933. No further reduction was proposed before the sewage treatment works were completed. The installation of new controlling works in the Chicago River, or in the Drainage Canal, these being navigable waterways, would necessarily be subject under the applicable act of Congress to the approval of the Secretary of War on the recommendation of the Chief of Engineers. The Master finds that, subject to the approval of the Secretary of War, controlling works should be constructed by the Sanitary District for the purpose of preventing reversals of the Chicago River at times of storm; that for this purpose the Sanitary District should immediately submit plans for such works to the Chief of Engineers and that such controlling works should be constructed by the Sanitary District within two years after receiving the authorization of the Secretary of War. The Master finds that when such controlling works have been constructed the diversion by the Sanitary District of water from Lake Michigan should not exceed the annual average of 5,000 cubic feet per second in addition to domestic pumpage. The Master finds that there is not sufficient evidence to warrant a present requirement for the further reduction to 3,000 cubic feet per second at the particular time stated by complainants, but recommends in his report that there should be a provision in the decree for an appropriate examination of results from time to time as the work of sewage treatment progresses. In this way there may be a reduction to 3,000 cubic feet per second or

to such other amount as the Court may find to be feasible in the light of the situation then existing.

The complainant States asked that on the completion of the sewage treatment works all flow at Lockport should be enjoined, which would mean not only the entire cessation of the direct diversion by the Sanitary District, but also the termination of the discharge at Lockport of the pumpage, that is, of the water taken by the City of Chicago for domestic purposes and entering the Chicago River and the Drainage Canal as sewage. The Master finds that the question of pumpage is incidental to that relating to the direct diversion by the Sanitary District. These suits were brought to restrain the abstraction of water from Lake Michigan by the Sanitary District and not to challenge the right of the City of Chicago to take water from the Lake for its water supply. The Supreme Court in its opinion described these suits as brought "for an injunction against the State of Illinois and the Sanitary District of Chicago from continuing to withdraw 8,500 cubic feet of water a second from Lake Michigan at Chicago," and this amount of 8,500 cubic feet per second is the diversion by the Sanitary District allowed by the permit of March 3, 1925, exclusive of pumpage. The Master does not regard it as open to serious question that the City of Chicago under authority of the State has the riparian right to take water from Lake Michigan for the ordinary uses of its inhabitants and, if it were sought to prevent an abuse of that right through the taking of an unreasonable amount, it would be necessary to present that issue in an appropriate manner. The Master further expresses the opinion that if Chicago is entitled to take its water supply from Lake Michigan for the ordinary and reasonable uses of its inhabitants, it cannot be said that the State or the City is subject to any established rule of law which requires it to turn into the Lake what is no longer water but is sewage or the effluent of sewage treatment plants. If there were

a way of destroying the sewage or sewage effluent altogether, or evaporating it, it does not appear that the State or the City would violate any right of the complainants in doing so. But as there is no means known at present of otherwise disposing of the effluent from the sewage treatment plants, it is assumed that it must either be turned into the Canal and River, thence to be discharged at Lockport, or be carried into Lake Michigan. The question of the disposition of the effluent from the sewage treatment plants thus requires consideration in connection with the award of relief as to the direct diversion by the Sanitary District.

The Master further points out that under the opinion of the Supreme Court in the present suits the question of the allowance of the diversion of water from Lake Michigan in the interest of a waterway to the Mississippi is not deemed to be open to consideration as the Court has found that Congress had not acted directly so as to authorize the diversion in question, and in the Rivers and Harbors Act of January 21, 1927, Congress had declared that nothing therein contained should be construed as authorizing any diversion of water from Lake Michigan.

The Master, therefore, in dealing with the question of what diversion, if any, would be necessary for navigation after the sewage treatment program had been full carried out, has considered the conditions in the Chicago River as a part of the Port of Chicago, as indicated in the opinion of the Supreme Court.

The characteristics and effect of the effluent from the sewage treatment plants when in full operation were estimated variously by the expert witnesses. The witnesses for the complainant States say that the effluent would be stable, odorless and clear; that conditions in the River would be greatly superior to those now obtaining and would not be detrimental to navigation. This was contested by the witnesses for the Sanitary District. The difficulties of prediction inhere in the attempt to estimate results on such a vast and unprecedented scale of sewage treatment as

