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AN ATTEMPT TO NOURISH AN ERODED BEACH BY THE DUMPING OF  
DREDGED MATERIALS AND ITS EFFECT UPON MARINE LIFE

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By

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INTRODUCTION

Beach erosion along the coast of northern New Jersey is a serious problem. Drastic and widespread beach erosion has occurred over a long period of time. The last one hundred years have brought remarkable changes to the shore line and beaches. Within this period, several residents of Long Branch<sup>77</sup>, New Jersey remember when corn fields were once tilled where now trap nets are fished a half mile or more offshore. Others remember, more recently, when Ocean Avenue -- the street bordering the beach -- had to be moved inland one block due to encroachment of the sea. Even now the sea is beating against bulkhead walls which protect the seaward side of Ocean Avenue at several points along its length in Long Branch<sup>BRANCH</sup>. Through the years, millions of dollars have been spent by the city, state, and federal governments and private individuals for building jetties and bulkhead walls to retain the beach and adjoining lands. The City Clerk of Long Branch reports that over 35 million dollars have been spent on Long Branch beaches alone in the last 20 years without success. The beaches are still eroding at an alarming rate.

2

The eroded beach materials are carried away by prevailing ~~southerly~~ tides. Some southerly drift occurs off the northern New Jersey coast, but the Corps of Engineers reports that "Over a long period of time, the algebraic sum of littoral drift is north". As an example of this, they cite the fact that Sandy Hook has extended itself northward 700 feet in the last 10 years, during which time it was necessary to relocate and redredge the Sandy Hook Channel entrance to Elizabeth and Newark, New Jersey. The constant northerly drift of eroded beach materials has once more filled the Sandy Hook and Ambrose Channel entrances to a point where they once more must be redredged. Relocating Sandy Hook Channel is out of the question since it is now bordered on the north by Flynn's Knoll, a rocky ledge. It is proposed to dump the dredged materials from these channels off Long Branch, New Jersey.

Mr. Frank Holmes, Director and Secretary of the Navigation Division of the New Jersey State Conservation Department, reports that his bureau has for the last eight years tried to interest the Corps of Engineers in returning dredged materials from the channel to entrances to New York Harbor/the New Jersey beaches from whence it came, instead of dumping them miles out to sea as has been the custom in the past. Until recently, the Corps of Engineers was in no position to undertake the job. The creation of a Beach Erosion Control Board, a branch of the Corps of Engineers, now permits the Corps to actively engage in beach erosion control work. A cooperative arrangement whereby the State of New Jersey will furnish one-third of the cost of the operation and the Corps of Engineers two-thirds now makes the work possible. The actual dumping off Long Branch will begin in the spring.

## DESCRIPTION OF THE OPERATION

The Corps of Engineers has three seagoing hopper dredges, one or all of which may be used in this work. These are the Goethals, Atlantic, and Marshall. The first of these dredges is the largest. It has a loaded capacity of 5,500 cubic yards or 15,125 tons of wet sand. The latter two hopper dredges are smaller, having a loaded capacity of 2,300 cubic yards or 6,325 tons of wet sand each. Dredging and dumping operations will not begin until favorable sea and weather conditions exist. When these occur, dredging will begin in the channel entrances to New York Harbor and only the loads of pure sand or nearly so will be dumped off Long Branch. The plan is to dump in 35 to 40 feet of water approximately half a mile offshore just north of the Deal-Long Branch town line and south of the Long Branch Coast Guard Station. The materials will be dumped on a line with the beach over a distance of 4,500 feet until 600,000 cubic yards or approximately 1,650,000 tons have been deposited.

Mr. Groenendyke, Chief of the River Basins and Harbors Division of the Corps of Engineers, estimates the operation will take at least five months and perhaps as much as seven to complete the job. Plans now call for daylight operations until masters of the dredges become familiar with the dumping area, at which time they may operate around the clock if weather and sea conditions permit. He estimates it will take at least 120 dredge loads of material to furnish the necessary 600,000 cubic yards.

4

Once dumping has begun, the Corps of Engineers and the Beach Erosion Control Board will send technicians to the area to ascertain whether the dumped materials are deposited on the beaches of Long Branch. They will conduct a physical survey, employing microscopic techniques, to positively identify whether any sand deposited on the beaches was that which is to be dumped about half a mile offshore.

This dumping of dredged materials offshore to nourish an eroded beach is an experimental operation for the Corps of Engineers. If it proves to be successful, the work will be continued off other badly eroded beaches whenever nearby dredging is undertaken.

Similar dumping of dredged materials offshore to build up a sandy beach has been tried before however. Mr. Holmes reports that private contractors have been dumping dredged materials off the beaches of Atlantic City since 1926. He reports this dumping has been successful to a point where the water has shoaled to such an extent that the dredging concerns have been requested to dump south of Atlantic City.

#### PUBLIC AND STATE REACTION TO THE PROPOSED DUMPING

Considerable effort has been expended to contact and obtain opinions from all interests which may be effected favorably or unfavorably by the dumping of sand off Long Branch. Those who may be concerned are fishermen, both sports and commercial, and property owners along the shore adjacent to the badly eroded beaches.

5

The only commercial fishing pursued along the northern New Jersey coast is the operation of trap or pound nets and purse seining for menhaden. Trap net sites occur off Deal, Long Branch, and Monmouth Beach. None, however, are fished in the vicinity of the proposed dumping area. Mr. Alex Carlson and Mr. Sam Sirianni, shore captains for the Shore Fishery Company of Deal and the Atlantic Fish Company of Long Branch respectively, operators of trap nets off Deal, Long Branch, and Monmouth Beach do not believe the dumping will hamper their fishing operations. Mr. Carlson thinks the proposed dumping may even be beneficial. The average production of trap nets operated by these two companies approximates 50 barrels per day of herring, mackerel, whiting, etc. depending upon the season.

Purse seining for menhaden will not be effected since these fishermen restrict themselves to <sup>outside</sup> the three mile limit most of the time.

A bed of sea clams occurs off Long Branch between Shrewsbury Rocks and Tackanassee Rocks which are dredged by an Allenhurst, New Jersey dragger for bait. Commercial fishermen do not feel this bed will be visibly effected by the dumping, inasmuch as dumping will occur at least one mile south of the bed.

6

Shrewsbury and Tackanassee Rocks are great sports fishing spots for party boats. Party boats come from as far away as Sheepshead Bay, Long Island and Atlantic City to fish these areas at different seasons of the year. The dumping will take place south of Tackanassee Rocks so the Shrewsbury Rocks will not be effected. Mr. Crammer and son, sports fishing tackle dealers of Long Branch, are afraid the Tackanassee Rocks may sand over, due to the strong ~~southward~~ tides if the sand is dumped near them. Even though they do not sand over, they feel the condition would not be long-lasting for the sand would in time be carried away by the tides. As an example, they recall the sanding over and eventual uncovering of the Shrewsbury Rocks in the past. They do agree that the proposed dumping area is the correct point for such an experimental operation for there are no beaches in the area.

Some fishing for striped bass takes place from the public beaches of Long Branch. No public beaches occur inshore from the proposed dumping area however. Shore fishing will not be visibly effected by the dumping.

7

Several public bathing beaches occur along the shore at Long Branch. None, however, are adjacent to the proposed dumping area. Property along this section is privately owned. A cursory survey shows a paucity of private bathing beaches. Each property owner south of the Long Branch Coast Guard Station has spent considerable money for the installation and maintenance of bulkhead walls and jetties in an effort to combat beach erosion and to build up a sandy beach. At the present time, two large stone jetties are being constructed by property owners inshore from the proposed dumping area. Mr. Holmes reports that these jetties will mark the southern limits of the dumping area. Property owners in this area greet the dumping with enthusiasm and are anticipating sandy bathing beaches as a result of the dumping.

Mr. Paul Kiernan, Mayor of Long Branch, and a member of the Beach Erosion Control Board of Municipalities, favors the proposed dumping. He feels a great deal of good will come from it and, if not, what harm can it cause? He substantiated the great sums of money spent by interested parties in an effort to combat the excessive beach erosion along Long Branch beaches.

Mr. Bob West, former jetty and bulkhead wall contractor, favors the proposed dumping but thinks the dumping should be in a southeasterly direction instead of parallel with the beach and the strong ~~southerly~~ tides. He feels sand dumped parallel with the beach will drift some distance north before beaching, thereby building up beaches north of the area instead of those for which it is intended. His experience in jetty building leads him to believe a jetty or sand bar, such as he believes will be created by the proposed dumping, which has a southeasterly hook or is at an angle to the prevailing tides builds up a beach much more readily than one which is at right angles to the prevailing tides or, in this instance, running along the long axis of the tide.

Mr. Harry C. Stille of Long Branch, President of the New Jersey State Federation of Sportsmen's Clubs, believes no harm will come from the dumping. This is his personal opinion, however, and does not necessarily represent the position of his organization.

At a regular meeting of the Monmouth County Federation of Sportsmen's Clubs January 9, 1948 in Long Branch, Mr. Stille broached the subject for an opinion. He reports that after several minutes of discussion, the question was raised as to the position of the New Jersey Fish and Game Division. When it was reported that the Fish and Game Division opposed the dumping, a motion was made, seconded, and passed that the organization go on record as opposing the dumping also.

9

Commissioner Morgan F. Larson of the New Jersey State Conservation Department reports that the Fish and Game Division no longer opposes the proposed dumping. He attests that the Fish and Game Division issued a press release early in December opposing the dumping without conducting a preliminary investigation. After Dr. Thurlow Nelson of Rutgers University had been consulted and reported he did not believe the proposed dumping would be injurious to marine life, the Fish and Game Division reversed its decision. Commissioner Larson feels that once the Monmouth County Federation of Sportsmen's Clubs learns of this new decision, they too will favor the dumping.

Commissioner Larson personally feels the dumping will be beneficial to the beaches and perhaps to the fishing industry as well. The State of New Jersey, he reports, reserves the right to reject any dredge load of materials which contains mud or oily ooze and will accept only those which are pure sand or nearly so.

EFFECT UPON MARINE LIFE

The effect of the proposed dumping of dredged materials off Long Branch, New Jersey upon <sup>the fishery and</sup> marine life is uncertain. Unquestionably, considerable turbidity will be created by detritus and mud particles immediately after each dumping. It is felt, however, that this turbidity will be dissipated within one or two tides. The dumping operation will be so slow that it is doubtful whether the sand itself will pile up to any ~~appreciable~~ <sup>great</sup> height. If the entire 600,000 cubic yards were to be dumped within a week's time or so, undoubtedly ~~marine~~ <sup>fish</sup> life in the area would suffer deleterious effects. Under the present plan of operation (the Corps of Engineers are tentatively planning on eight working days a month), this could not possibly occur. *Marine life (plankton, sea worms, and other bottom*

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The question in this case seems to be which is the most important -- the fishery, both commercial and sports, or the property adjacent to the proposed dumping area. No commercial fishing is pursued within the proposed dumping area and no public beaches occur in the area from which shore fishing may take place. If the dumping were to take place north of the Tackanassee Rocks and off the public beaches, some adverse effects may be brought about. If the Corps of Engineers adhere to their present plans of dumping south of the Long Branch Coast Guard Station and north of the Deal-Long Branch town line, it is very doubtful if marine life in the area will suffer undue deleterious effects.

*living organisms) inhabiting the proposed dumping area will suffer some adverse effects, the degree of which can not be ascertained until quantitative studies <sup>are</sup> immediately before and during the actual dumping. ~~Some~~ <sup>Some</sup> of these organisms are sure to be smothered by the dumped materials, even at the rate of one or two loads a day. None these organisms within the proposed dumping area are of commercial importance and the area in question is not*

Commissioner Larson reports that Dr. Nelson in his report raised the question as to whether or not the dumping of dredged materials offshore, as has been the custom in the past, may not be more detrimental to marine life than the proposed dumping approximately half a mile offshore. This, in itself, seems like a worthwhile project to be investigated.

NOTE:--At the conclusion of my conference with Mr. Groenendyke, he informed me that regardless of the findings of the Fish and Wildlife Service they were going ahead with the project anyway. At that time, he reports, the Corps of Engineers were drawing up legal documents, to be signed by the State of New Jersey, for waivers from liability claims which may be enjoined by the Corps brought about by the proposed dumping off Long Branch, New Jersey.