12-7-1962

U.S. Army Corps of Engineers, Jacksonville District. Report on November-December 1962 Storm, Duval County, Florida

U.S. Army Corps of Engineers

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REFER TO FILE NO. SAKWR

7 December 1962

SUBJECT: Report on November-December 1962 Storm, Duval County, Fla.

TO: Regional Director
Office of Emergency Planning
Thomasville, Georgia

1. This report is in response to a verbal request 4 December 1962 by Mr. Ronald Van Dane, of your office, for a survey of the damage resulting in Duval County from the subject storm, and for recommendations as to remedial action required.

2. A severe coastal storm with winds of 60 to 70 miles per hour within 100 miles of the center remained within 300 to 500 miles of the Duval County beaches for several days. The storm moved from a location about 175 miles southeast of Cape Hatteras at 1 p.m. on 26 November, to about 350 miles east of Cape Canaveral about 1 a.m. on 28 November, then returned to the vicinity of Cape Hatteras by the afternoon of 1 December. During that time the pressure at the storm center varied between about 1004 millibars and 988 millibars, with the lowest when the center was about 300 miles east-northeast of the beaches on 26-27 November, on its southern passage.

3. Reports to the U. S. Weather Bureau from the fire station at Jacksonville Beach showed the lowest pressure, 1011 millibars on 30 November, when the storm was moving northward. Winds were mostly from the north-northeast from 26 November through 3 December. On 30 November continuous velocities of 20 miles per hour, with gusts of 25 to 40 miles per hour, were reported.

4. The sustained winds of about 50 miles an hour over a fetch of several hundred miles generated waves over 20 feet high with periods of about 11 seconds in the ocean. When those waves broke in the shallow water near shore, they caused water levels to rise about 7-1/2 feet above mean low water. Where water was 4 or 5 feet deep at the toe of the seawall during periods of high tide, 3- to 4-foot waves broke against the walls and some water surged over the top of the walls which are 12 to 13 feet above mean low water.

5. Damage estimates are based on aerial reconnaissance of the entire county shore, and on ground inspections in the most severely damaged areas. From the aerial reconnaissance it was determined that little or no damage was experienced north of St. Johns River or south of Jacksonville Beach. The beaches north of St. Johns River appeared to have

accumulated sand rather than have lost it; those south of Jacksonville Beach experienced some general lowering, but not excessively so, and no damage to structures was observed. The most severe damages were experienced in the reach from St. Johns River to the south city limit of Jacksonville Beach.

6. At the Mayport Naval Air Station, just south of St. Johns River, damage was limited to lowering of the beach and to loss of material from the dune. It is estimated that the face of the dune receded 20-40 feet landward during the storm. The volume of material estimated to have been lost from that dune reach alone is on the order of 50,000 cubic yards. Although survey data needed to estimate the volume lost through lowering of the beach profile are not available, it is probable that the volume compares with that lost from the dune. A rough estimate of the value of the material considered permanently lost is $50,000. In addition, Navy labor and equipment used to bring in fill and sandbags during the height of the storm probably cost about $5,000.

7. It was difficult to make a determination of damages caused in Atlantic Beach by the subject storm because of the fact that damages from previous storms were never repaired. It appears that no new breaks were made in the seawall. Some separation of joints was experienced. The joint separation permitted leakage of water from the saturated backfill, and some backfill was lost through the open joints. About 6,000 feet of wall require spot repairs, and 300 feet require replacement. The estimated total damage to the walls is $100,000. In addition, a general lowering of the beach profile occurred.

8. Neptune Beach experienced quite severe damage. The beach profile was generally lowered 5 to 10 feet. High tides combined with the lowered beach permitted waves to impinge directly against the seawall. Field inspections indicate that 2,500 linear feet of seawall were completely destroyed, 2,500 linear feet were so severely damaged that immediate replacement is required, and the remaining 1,800 linear feet require spot repairs in varying degrees. In addition, about 120,000 cubic yards of backfill were lost, primarily through the breaks in the walls. The three existing access ramps to the beach were severely damaged. Total damages from all causes are evaluated at $1,300,000.

9. Jacksonville Beach experienced damages of the same kind as Neptune Beach. The length of seawalls completely destroyed totaled 3,300 linear feet; 700 linear feet of wall were so badly damaged as to require immediate replacement; and the remaining 12,500 linear feet of wall require spot repairs in varying degrees. About 45,000 cubic yards of backfill were lost, primarily through the breaks in the walls. One residence located near a breach in the wall suffered structural damage. Four access ramps to the beach were severely damaged. Total damages from all causes are evaluated at $1,100,000.

10. Evaluated damages in all areas total $2,580,000, including about $30,000 for emergency labor and equipment rental. Inclosure 1 consists of photographs of some of the worst damage areas. Inclosure 2 is a map showing the location and type of damages.

11. Remedial measures considered fall in two categories. The first category consists of measures which would be strictly temporary, and which would not adequately provide protection to the area if a storm of comparable magnitude were to occur. They would be such, however, that another similar storm would start with conditions about as they were prior to the subject storm, and would cause comparable damages. The other category consists of measures required to provide protection during storms of greater severity than that of November 1962. Because of the limited time available for preparation of this report, all considerations involving permanent protection must be highly qualified. The considerations are based on hasty field inspections and measurements, engineering experience on such matters, and on limited analysis of available data. Considerable additional time would be required to appreciably refine the plan for permanent protection, and the estimated costs thereof.

12. Temporary emergency measures considered are limited to the Neptune-Jacksonville Beach area. They consist of:

a. Replacing 9,000 linear feet of missing or badly damaged wall.

b. Making spot repairs in varying degree to the remaining 14,300 linear feet of wall.

c. Backfilling where required by placement of 67,000 cubic yards of sand.

d. Uniformly distributing 400,000 cubic yards of sand along the beach to provide a degree of protection for the wall.

The estimated cost of providing these temporary measures is $1,740,000.

13. Permanent measures considered consist of:

a. Replacing 9,300 linear feet of destroyed or severely damaged seawall, including 300 feet in Atlantic Beach.

b. Spot repairing the remaining 20,300 linear feet of less severely damaged seawall, including 6,000 feet in Atlantic Beach.

c. Backfilling where required by placement of 168,000 cubic yards of sand, including 3,000 cubic yards in Atlantic Beach.

d. Uniformly distributing 2,000,000 cubic yards of sand from the northern limit of the seawall in Atlantic Beach to the south city limits of Jacksonville Beach. That volume of sand would provide a recreational area and would protect seawalls from direct wave attack.

The estimated cost of providing these permanent measures is $5,200,000.

14. The average elevation of the beach in front of the seawall was lowered at least 2 to 6 feet during the recent storm. With the beach at this low elevation even a moderate storm with easterly winds of 20 miles an hour could generate 4-foot waves which could destroy several miles of seawalls and undermine many houses. If a relatively moderate storm should occur before the sand on the beach has been replenished it could cause over several million dollars damages to existing seawalls and oceanfront property. Providing sand fill on the beach would restore the recreational capacity of the beach, and would greatly reduce the vulnerability of the seawalls to further damage from wave attack. The energy of the waves would be dissipated, or largely so, on the sand fill before reaching the walls.

15. It is emphasized that the permanency of the measures described in the preceding paragraph is relative. The structures would require future maintenance, and the protective beach would require future replenishment if it is to be maintained to effective dimensions. The scope of this report and the time available for its preparation do not permit determination of what future replenishment requirements would be. Such determinations are usually a major item of a beach erosion study and require extensive field surveys and analysis.

16. In summary, if the Office of Emergency Planning decides to implement the temporary measures discussed above, the Corps of Engineers will, on receipt of appropriate directive and funds, undertake to carry out those measures. Should your decision be in favor of the more nearly permanent measures discussed, the Corps can provide assistance along those lines. In that regard, it is considered desirable to point out the capabilities of the Corps. Recent amendments to the law governing Federal participation in beach erosion matters provide that beach erosion control studies be made wholly at Federal expense. Such studies are authorized by resolution of the Public Works Committee of either the Senate or the House of Representatives. Based on the findings of the study, Federal participation toward the cost of protecting non-Federal publicly owned shores can range between 50 and 70 percent. For privately owned lands where there would be some public benefits, Federal participation is adjusted between 0 and 50 percent on the basis of the ratio of public benefits to total benefits in the reach. In the Atlantic-Neptune-Jacksonville Beach area, it is expected that Federal participation toward the cost of permanent protective works would be 50 percent, provided that all lands seaward of the landward extremity of seawall construction were transferred to city, state, or county governments, either by permanent easement for public purposes or in fee simple.

Of course, Federal participation would be contingent on development of an economically feasible project.

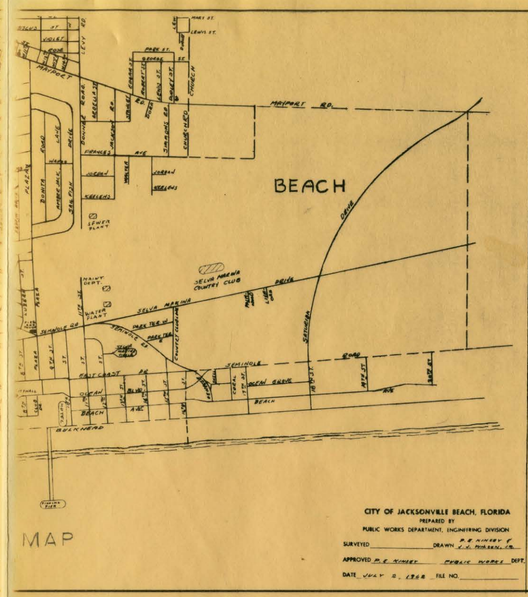
17. It is trusted that this report will meet your needs. If further information is needed it will be furnished on request. The Corps of Engineers is ready to provide any assistance possible.

2 Incl
1. Damage photographs
2. Damage map

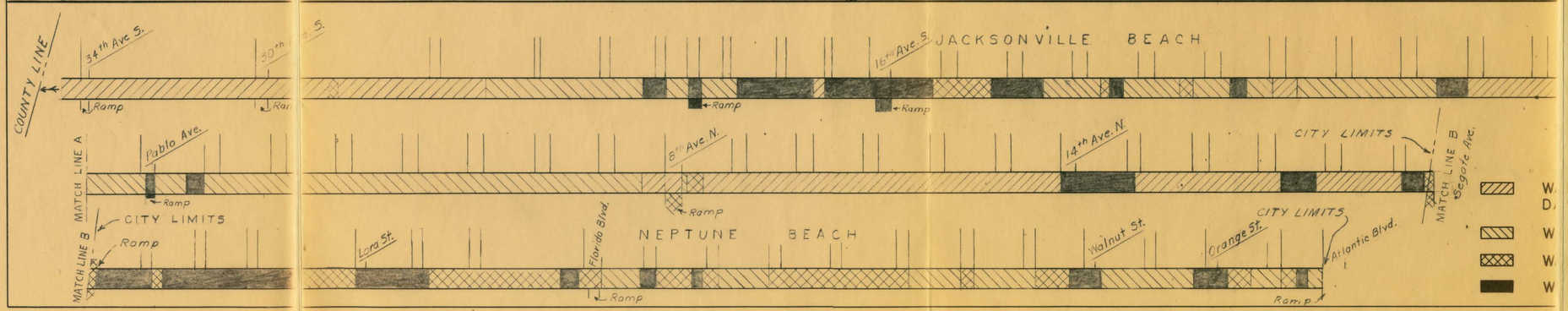
J. V. SOLLOHUB
Colonel, Corps of Engineers
District Engineer

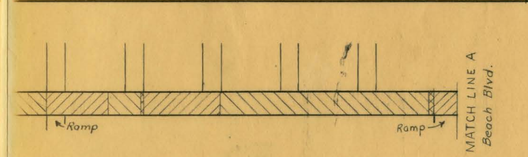
ISSUED BY
JACKSONVILLE BEACH CHAMBER OF COMMERCE
"WORLD'S FINEST BEACHES"

VICINITY MAP
SCALE: 1" = 2,0



CITY OF JACKSONVILLE BEACH, FLORIDA
PREPARED BY
PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION
SURVEYED _____ DRAWN J.C. HOWARD, JR.
APPROVED P.E. KINSEY _____ PUBLIC WORKS DEPT.
DATE JULY 8, 1963 FILE NO. _____





LEGEND

- WALL APPARENTLY NOT DAMAGED
- WALL WITH LEAKING JOINTS
- WALL BADLY DAMAGED
- WALL DESTROYED

SCALE: 1" = 400'

JACKSONVILLE BEACH-NEPTUNE BEACH
DAMAGE LOCATIONS
NOVEMBER-DECEMBER 1962 STORM


FREE SHOWERS


REE SHOWERS
ENTRANCE