

10812 ADMIRALS WAY
POTOMAC, MARYLAND 20854

MAILING ADDRESS
P. O. BOX 1246
ROCKVILLE, MARYLAND 20850

RICHARD O. EATON, P. E.
CONSULTING ENGINEER

TELEPHONE 289-5603
AREA CODE 301

June 22, 1970

Re: Oyster Creek Nuclear Station Unit 1
Forked River Nuclear Station Unit 1
Circulating Water System
Environmental Considerations

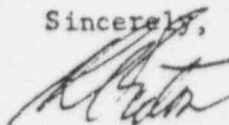
Mr. R. T. Richards, Project Engineer
Burns and Roe, Inc.
700 Kinderkamack Road
Oradell, New Jersey 07649

Dear Mr. Richards:

Pursuant to your letter June 5, 1970, we have reviewed the tidal flooding characteristics at the new Forked River Site. The enclosed report by my Associate, in which I concur, presents our conclusions in this regard.

Please inform me if any additional information is desired.

Sincerely,



Richard O. Eaton

ROE:w
Encl. TEH Report 6/18/70

cc Richard W. Haward, Jr.
Project Manager
Jersey Central Power & Light Co.

T. E. Haeussner

REFER TO: 2700-02		
RPE-425		

90000134

7912190

671

AMENDMENT 1
(July 15, 1970)

ADDENDUM

GENERAL

This Addendum is supplemental to the report "Determination of Probable Maximum Hurricane Flood Height-Forked River Unit 1 Nuclear Power Plant", dated April 25, 1970. The purpose of this addendum is to provide an evaluation of the tidal flood potential at a plant site located approximately 7,000 feet westward of that shown on Exhibit 17 of the above referenced report. The exact location of the relocated site can be seen on the enclosed Attachment, a reproduced portion of U.S.G.S. Quadrangle Sheet - Forked River, N.J. 1953. The evaluation postulates an occurrence of a Probable Maximum Hurricane identical in all aspects to and occurring under the same stipulated conditions as those described in the reference report.

TOPOGRAPHIC FEATURES

The relocated plant site is to be situated on a plateau within a 30 ft. MSL ground contour, as can be seen on the Attachment. The site is some $2\frac{1}{2}$ to 3 statute miles inland from the west shore of Barnegat Bay. It is flanked north and south by the South Branch Forked River and Oyster Creek, respectively.

P.M.H. TIDAL FLOOD POTENTIAL

The peak Probable Maximum Hurricane tidal flood level that would

90000135

be attained along the western shore of Barnegat Bay, as determined in the above referenced report, is 19.5 ft. MSL occurring at time T+1 hours, or 1 hour after storm landfall. Because of the close proximity of the proposed site area to the bay shore little or no reduction in that flood level can be expected to occur in its movement up the Oyster Creek and South Branch Forked River channels to the site area. Wave action, including wave runup, is not expected to be a problem in the plant site area. Waves generated in Barnegat Bay were previously calculated to reach a maximum of 8 to 8.5 feet in height during the P.M.H. occurrence. The higher waves would break in moving inland when reaching State Road No. 9, the railroad, and other secondary roads which range in grade from 10 ft. up to 19 ft. MSL. The lesser waves would break progressively with distance westward as natural ground and river bank elevations north and south of the plant site gradually rise to the 20 ft. MSL contour (see Attachment for topography). Ground slope between the 20 and 30 ft. MSL contours in the site area ranges from 1 on 20 to 1 on 50. For those flat slopes wave runup resulting from wave heights on the order of 3 to 4 feet would be limited to values of approximately 1 to 2 feet above the peak tidal flood level of 19.5 ft. MSL. The maximum flood level including wave runup would therefore be on the order of 21.5 ft. MSL in the site area.

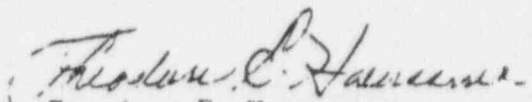
CONCLUSIONS

Based on the above evaluation the undersigned has drawn the following conclusions.

90000136

1. That the peak tidal flood level, including wave runup, that would result from the postulated Probable Maximum Hurricane occurrence would be on the order of 21.5 ft. MSL in the vicinity of the relocated Forked River Unit 1 nuclear power plant site.
2. That since the plant site is to be located on natural ground at elevation 30+ ft. MSL the resultant plant grade would be approximately 9 feet above the maximum probable flood level and therefore the plant site would not be subject to any flooding effects during a Probable Maximum Hurricane occurrence.

Submitted by


Theodore E. Haeussner
Hydraulic Engineer Consultant
Jacksonville, Florida
June 18, 1970

Attachment - Site Map

90000137

POOR ORIGINAL

90000138

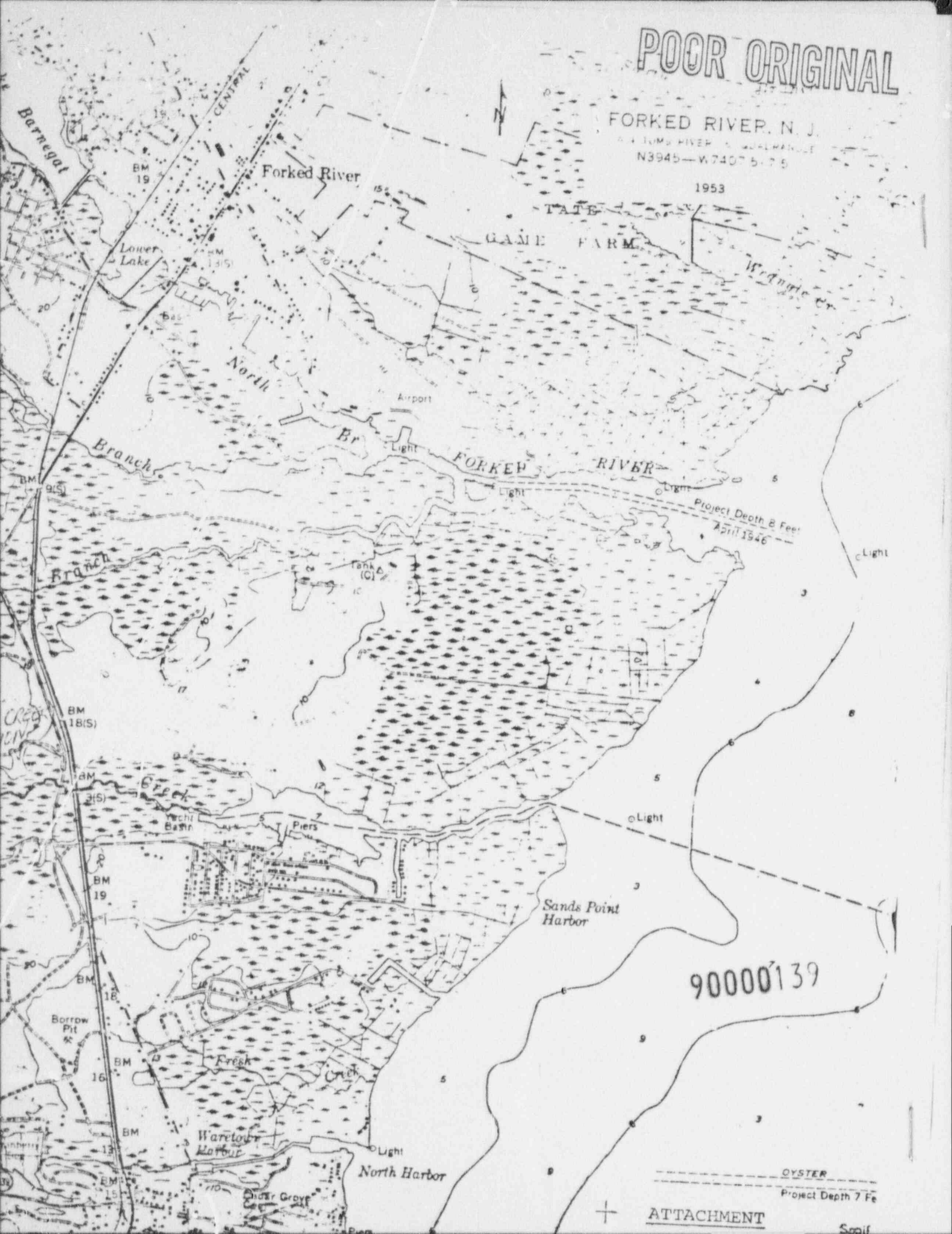


POOR ORIGINAL

FORKED RIVER, N. J.

4.4 LUMS RIVER 1.5 MILE MANHOLE
N3945-W7407 5.75

1953



90000139

ATTACHMENT

OYSTER
Project Depth 7 Fe

REPORT

PROBABLE MAXIMUM HURRICANE FLOOD ANALYSIS
OYSTER CREEK NUCLEAR UNIT NO.1

OYSTER CREEK, NEW JERSEY
FOR JERSEY CENTRAL POWER & LIGHT COMPANY.

March 2, 1972

90000140

RICHARD O. EATON, P. E.
CONSULTING ENGINEER

March 10, 1972

Mr. Philip Sherlock
Dames & Moore
14 Commerce Drive
Cranford, N. J. 07016

Dear Mr. Sherlock:

I have reviewed the report transmitted with your letter March 2, 1972, addressed to GPU Service Corporation re "Probable Maximum Flood Analysis, Oyster Creek Nuclear Unit No. 1". My comments follow:

- a. Maximum Storm Surge Still Water Level. I am in accord with the analysis of maximum still water of +22' MSL at the western shore of Barnegat Bay as derived by AEC Consultants with the exception that I know of no justification for the factor of 1.1' ascribed as "initial tidal rise". Otherwise the analysis meets current AEC criteria for maximizing all of the variables, assuming simultaneous occurrence which is truly a fantastically remote occurrence. The addition of 1.1' to values thus derived ascribed to "initial rise" is, in my opinion, completely unsupported by any technical evaluation of which I am aware. In my judgment, the maximum still water level on the west side of Barnegat Bay cannot exceed +21' MSL by the most extreme logical reasoning.
- b. Effect of Waves at the Plant Site. With respect to wave runup it is quite obvious that this will be governed primarily by topography between the western shore of Barnegat Bay and the plant site. A prime factor in this respect is the stabilized "Highway 9", at elevation 18' to 19' MSL, which traverses the land between the bay and the plant site. While detailed topography has not been presented it is apparent by inspection that the highway grade is only slightly higher than the adjacent terrain. Along the gently sloping gradient between Highway 9 and the plant site, while somewhat inadequately portrayed on Plate 10 but obvious from personal inspection, the wave heights of 3' to 4' passing over the highway embankment will progressively break and reform as the plant is approached. Runup of 1' above maximum SWL is considered to be a conservative estimate as expressed in relation to maximum SWL. This would result in no overtopping at plant grade of +23' MSL and free-board of 1' for my preferred elevation of 21' for maximum SWL.

90000141

Mr. Philip Sherlock
Dames & Moore

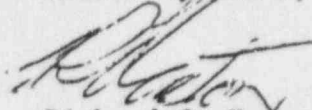
-2-

March 10, 1972

Excavated areas for intake and discharge canals will present no hazard insofar as runup is concerned because of their alignment.

Summarizing, I believe that the report maximizes each parameter relating to total flooding and adds an unsupported factor of 1.1' described as "initial rise". The result, in my judgment, represents a maximum possible condition plus a factor of safety of at least 1'. Probability of occurrence is so remote as to be almost inconceivable. Wave runup, when governed by topography as in this case, is quite accurately determinable. Effects of wave stresses, either impact or uplift, become nominal in a site of this character. I therefore regard the results of our study to be ultra-conservative.

Sincerely yours,



Richard O. Eaton
Consulting Engineer

ROE:w

90000142