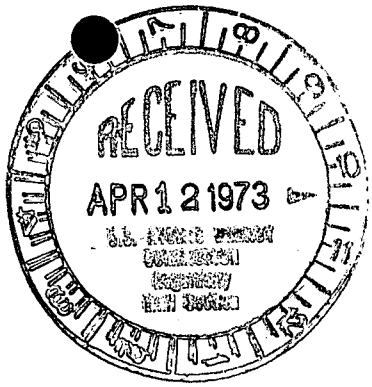
Harry G. Woodbury
Executive Vice President

Regulatory File Cy.



Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003
Telephone (212) 460-6001

March 23, 1973

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Dr. Mary Jane Oestmann
Project Manager for Indian Point
Environmental Reports
Directorate of Safety and Licensing
Atomic Energy Commission
Washington, D. C.

Dear Dr. Oestmann:

Enclosed please find the scope of work for the Cornwall biological studies on Hudson River populations. This scope is in partial fulfillment of Federal Power Commission license requirements and does not include hatchery and flume studies which are in process of being planned.

If you have further questions about our ecological studies, please do not hesitate to contact us.

Very truly yours,

Harry G. Woodbury

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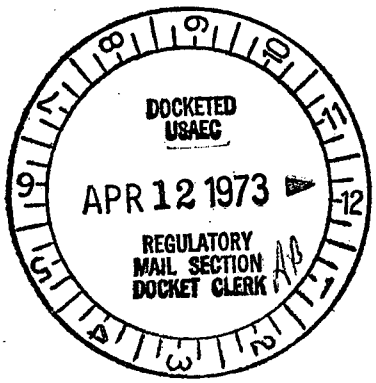

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SCOPE OF WORK

GOAL: Determine the Impact of the Cornwall Project on the Hudson River Fishery.

OBJECTIVE 1. Determine degree of size selectivity and efficiency of gear for fish eggs and larvae used in 1965-1968 Hudson River Policy Committee (HRPC) survey and estimate population densities of fish eggs and larvae.

Determine movement patterns of fish eggs and larvae near the Cornwall intake and estimate the numbers of eggs and larvae entrained as a percentage of the total Hudson River population.

Tasks:

1. Literature search on gear efficiency.
2. Sample the planktonic community at Cornwall at the 5 sites and 12 stations along transect A-A indicated in figure 1 using the gear listed on Attachment A and the most efficient gear determined from task 1. Proposal will recommend frequency of sampling required for a statistically acceptable variation and standard deviation. Show sample calculations.
3. Compare statistically the data from the gear used in the 1965-1968 HRPC survey with the gear regarded as most efficient. Discuss in the proposal the gear you propose for the comparison and make specific comments on the efficiency of epibenthic sled and opening and closing nets.
4. Using an epibenthic sled, an opening and closing Tucker trawl with 1000 u mesh, and a vertical plankton net with 1000 u mesh, sample at the transects and stations on fig. 2 April 16 - July 16. Weekly by day and biweekly by night.
5. Beach-sein from river mile 10 to river mile 150 at approximately 10 mile intervals, depending on the availability of sheltering shoals, for 12 months.
6. Estimate population density of fish eggs, larvae, and young juveniles in the Hudson.

Estimate of entrainment of eggs and larvae and its effect schedule:

Start: Sept. 4, 1973
End: Nov. 1, 1973

Tasks: 1. Estimate the percentage of eggs and larvae subject to withdrawal by the plant.

2. Evaluate effect of entrainment on the populations of eggs, and larvae, and on fish.

3. Prepare report.

OBJECTIVE 2. Determine populations of resident and anadromous fish. Follow (monitor) their movements and distribution.

Tasks: 1. Fathometry at 6 transects (1-1' to 5-5' and A-A) as indicated on Figure 1 - weekly runs in April and October to monitor for migrations. Bi-weekly in all other months to determine fish distribution, weather-permitting.

2. Determine sample size for capture-mark-recapture method needed to obtain an estimate of population size at Cornwall for striped bass, white perch, tomcod, and American shad.

3. Use numbers derived from Task 2 and statically tag fish caught in samples in the vicinity of the plant. Continuous weekly trawl & sein sampling in the vicinity of the plant, and recording of recaptured marked fish, weather-permitting by day; every other week by night. The contractor shall weigh, measure, and age a representative subsample of fish according to the scale length: width method. Transects are indicated on fig. 1 for trawling and for capturing fish to be marked.

4. Determine population sizes at Cornwall from data from tasks 4 & 5 and input from other Con Ed Studies.

5. Prepare report.

OBJECTIVE 3. Estimate abundance, size distribution and species diversity of fish expected to be impinged at Cornwall for all seasons. Contractor shall perform the work of this objective continuously as data become available. Estimate total entrainment if plant is operated without screens.

Tasks:

1. Compare population characteristics at Indian Point with those at Cornwall. Estimate February populations at both locations.

2. Extrapolate Indian Point, Lovett, Danskammer, and Bowline impingement data as appropriate to predict impingement at Cornwall.

3. Estimate total entrainment if plant is operated without screens.

4. Prepare report.

OBJECTIVE 4. Determine effects of pressure and pressure changes and mechanical impact on eggs, larvae, juvenile and adult fish passing through the plant.

Task: Testing Hudson fish in a pump storage plant and recording mortality rates and types of injuries. This will include obtaining the sample size required for a statistically valid conclusion.

OBJECTIVE 5. Determine effects of pressure, pressure fluctuations and mechanical impact on eggs, larvae, and juvenile and adult fish passing through the plant.

Tasks:

1. Literature survey on effects of pressure, pressure changes, and passage of organisms through hydroelectric plants.

2. Testing of static pressure effects including sublethal effects on eggs, larvae, fish, and zooplankters.

3. Testing of effects of pressure changes expected in the licensed design of the plant on eggs, larvae, juveniles, and adults.

OBJECTIVE 6. Apply a Life Stage Mathematical Model (L.S.M.) to dynamically predict: the effects of entrainment and impingement; long-term impact of plant on fish populations; population of fish in upper reservoir. The Life Stage Model has been developed by QLM and has only to be applied to Cornwall. The contractor shall sub-contract application of the model to QLM and evaluate the results.

Tasks:

1. Apply Cornwall biological and hydraulic data to L.S.M. program.

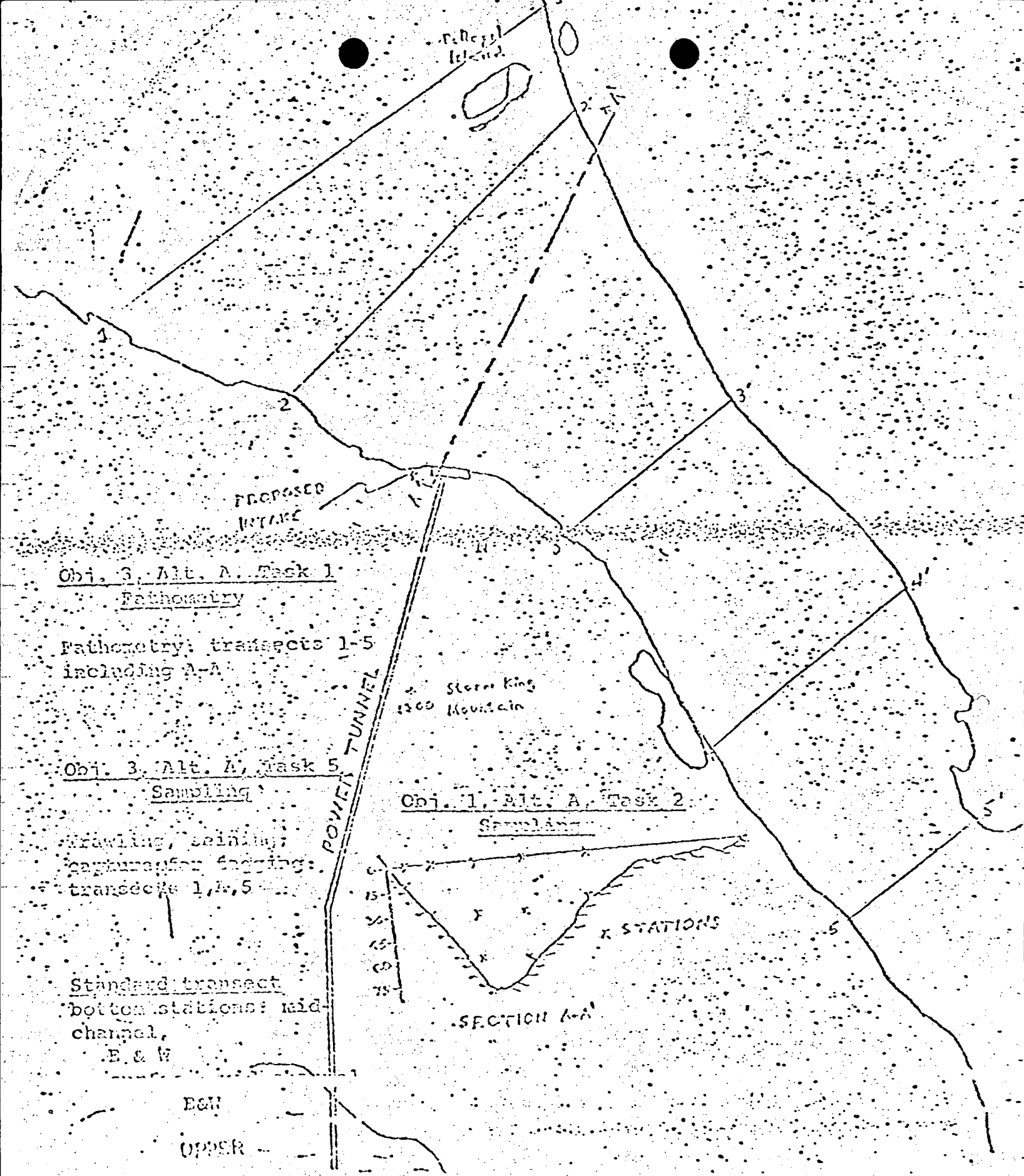
2. Predict effects of entrainment and impingement.

3. Predict population of fish in reservoir.

4. Predict long term effects on populations.

SUMMARY REPORT:

Prepare comprehensive report summarizing the findings and recommendations of reports submitted under each objective. Prepare a summary statement on the long range effect of the project on the Hudson River fishery with particular attention to: (1) populations of fish inhabiting the vicinity of or migrating past the project site, (2) the need, if any, for artificial propagation facilities and operations to offset any losses to fish populations.



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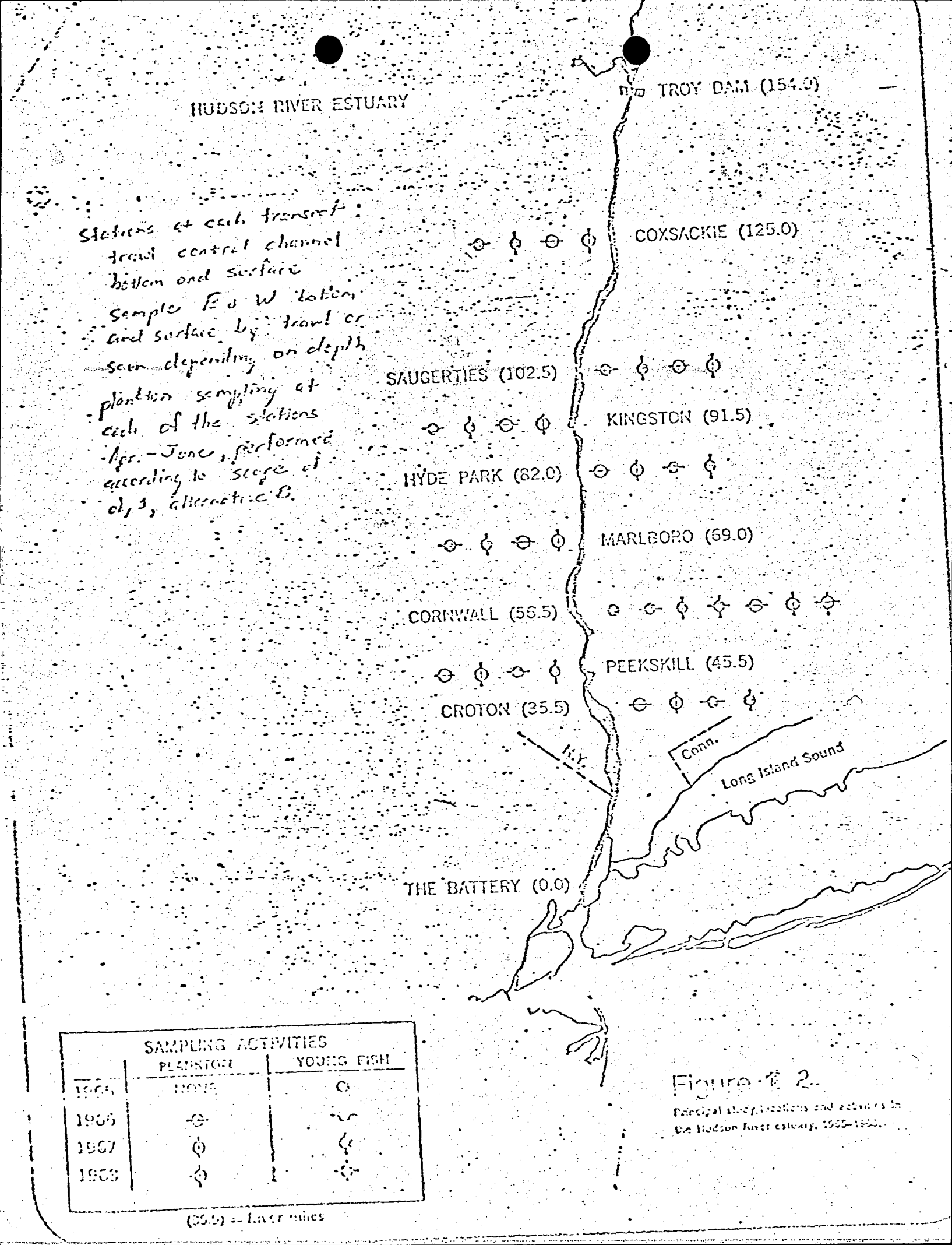

Figure 2.

Principal sampling locations and activities in the Hudson River estuary, 1965–1968.

ATTACHMENT A

1) 0.5 meter diameter plankton net with #2 mesh

2) 0.5 meter diameter plankton net with #2 mesh and collar

3) 0.5 meter diameter plankton net with #0 mesh

4) 0.5 meter diameter plankton net with #0 mesh and collar

5) 0.5 meter diameter plankton net with #0 mesh and long bag

6) 0.5 meter diameter plankton net with #0 mesh, long bag and collar

7) 1.0 meter diameter plankton net with #0 mesh

8) 1.0 meter diameter plankton net with 1 mm mesh

9) 1.5 foot diameter plankton net with collar and 4 meshes given in 1965-1968 HRPC report

10) Square frame (3' x 3') with plankton net and 4 meshes given in 1965-1968 HRPC report