5-18-1987

Recent improvements of water quality and biological indicators in the north-eastern Tampa Bay

City of Tampa Bay Department of Sanitary Sewers

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by

City of Tampa
Department of Sanitary Sewers
Bay Study Group
May 18, 1987

Introduction

The Bay Study Group of the Department of Sanitary Sewers, City of Tampa, has, since 1978, conducted a monthly study of water quality parameters in Hillsborough Bay and Middle Tampa Bay. Simple analyses of our data clearly indicate that water quality conditions in north-eastern Tampa Bay has improved during our study period. Further, there are no indications that this improvement has yet climaxed.

The parameter showing the most obvious improvement is water transparency, recorded as Secchi depth. The annual average Secchi depth of upper Hillsborough Bay has nearly doubled between 1979 and 1986 (Fig. 2). There are no indications that this trend has culminated.

Similarily, phytoplankton biomass, measured as chlorophyll a concentration per unit area, has been greatly reduced, in the upper Hillsborough Bay since 1981 and 1982 (Fig. 3). The dominating bloom of the filamentous blue-green algae Schizothrix calcicola, which occurred each fall from 1979 through 1983, drastically increased chlorophyll concentrations. The blue-green has since been present in the bay during the fall but in much reduced concentrations, never reaching the dominance of earlier years.

Thirdly, drastic increases in seagrass presence has been documented for the shallow areas between Little Manatee River and the Apollo Beach - Big Bend area, during the last few years. Areas that were virtually barren of submergent

vegetation in 1984 are now rapidly being colonized by mostly Halodule wrightii. (shoal grass) (see Figs. 4 and 5). Several shallow areas of Hillsborough Bay proper are also being vegetated by Halodule and Ruppia maritima (widgeon grass). Figure 6 shows a simplified description how three major contributors of improved water quality in the north-eastern Tampa Bay are related to the discussed improved ecological factors.

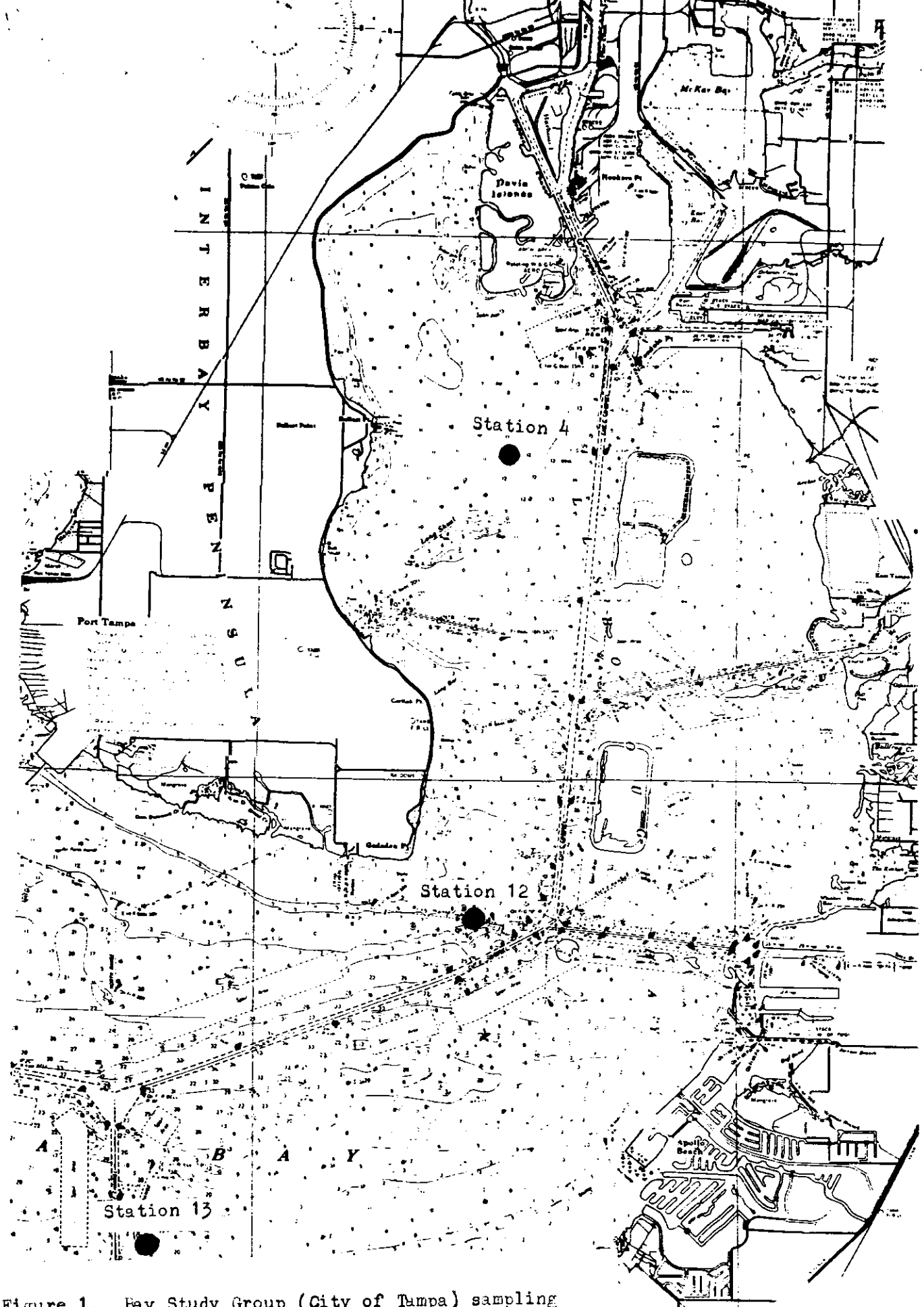


Figure 1. Bay Study Group (City of Tampa) sampling locations in Hillsborough Bay and Middle Tampa Bay.

Figure 2.

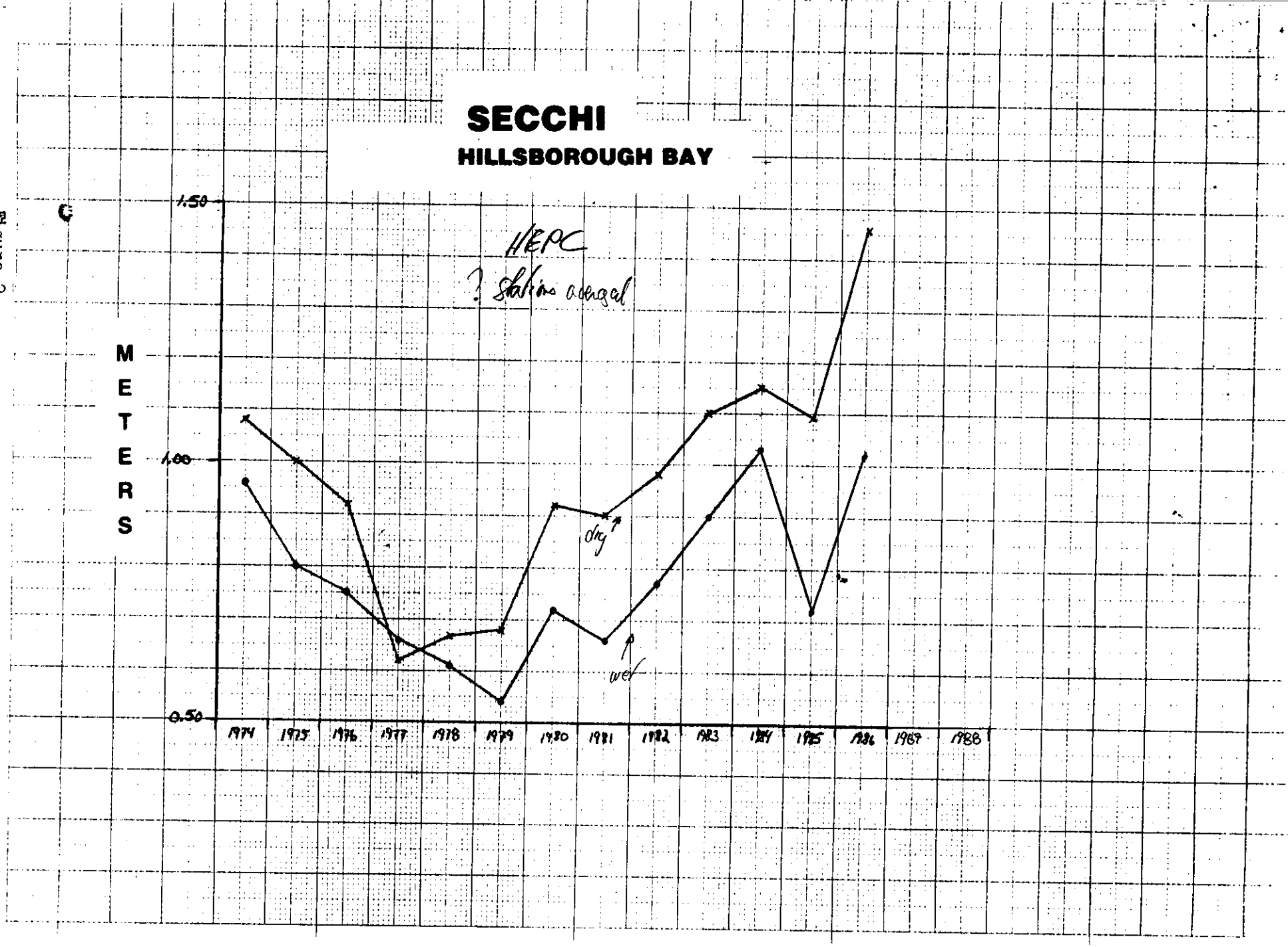
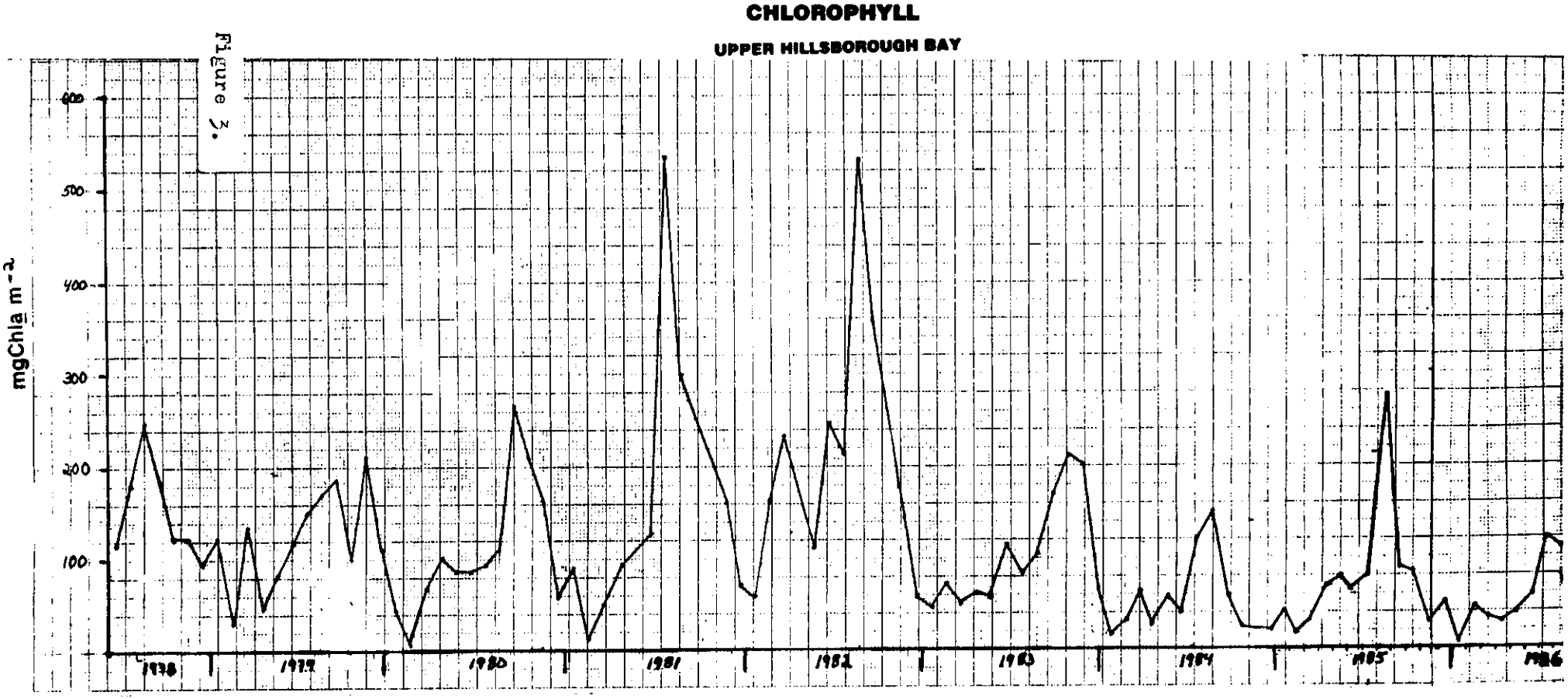

SECCHI
HILLSBOROUGH BAY
METERS
1.50
1.00
0.50
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
HEPC
? Stations averaged
dry
wet

Figure 2.


CHLOROPHYLL
UPPER HILLSBOROUGH BAY
mgChla m⁻³
600
500
400
300
200
100
1978
1979
1980
1981
1982
1983
1984
1985
1986

CITY OF TAMPA – BAY STUDY PROGRAM

SEAGRASS MAPPING
MIDDLE TAMPA BAY
SEAGRASS RECOLONIZATION

N

250 0 500 1000 2000 FEET

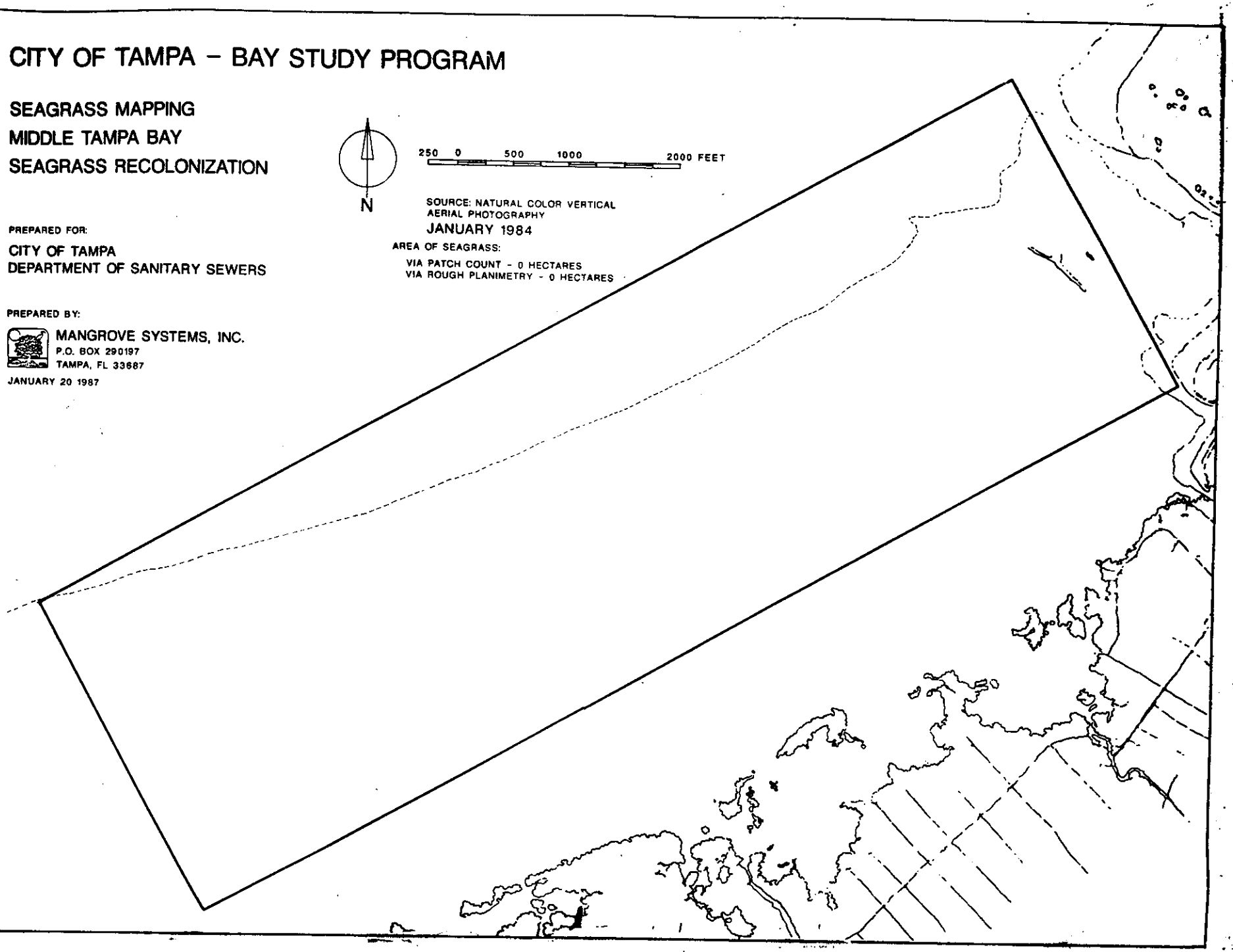
SOURCE: NATURAL COLOR VERTICAL AERIAL PHOTOGRAPHY
JANUARY 1984

AREA OF SEAGRASS:
VIA PATCH COUNT - 0 HECTARES
VIA ROUGH PLANIMETRY - 0 HECTARES

PREPARED FOR:
CITY OF TAMPA
DEPARTMENT OF SANITARY SEWERS

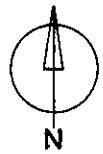
PREPARED BY:
MANGROVE SYSTEMS, INC.
P.O. BOX 290197
TAMPA, FL 33687

JANUARY 20 1987



CITY OF TAMPA – BAY STUDY PROGRAM

SEAGRASS MAPPING
MIDDLE TAMPA BAY
SEAGRASS RECOLONIZATION



250 0 500 1000 2000 FEET

SOURCE: NATURAL COLOR VERTICAL AERIAL PHOTOGRAPHY
APRIL 1986

AREA OF SEAGRASS:
VIA PATCH COUNT - 13.04 HECTARES
VIA ROUGH PLANIMETRY 48.28 HECTARES

PREPARED FOR:
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Simplified diagram of three major contributors of improved water quality in the north-eastern Tampa Bay and their relationship to measured ecological improvements.

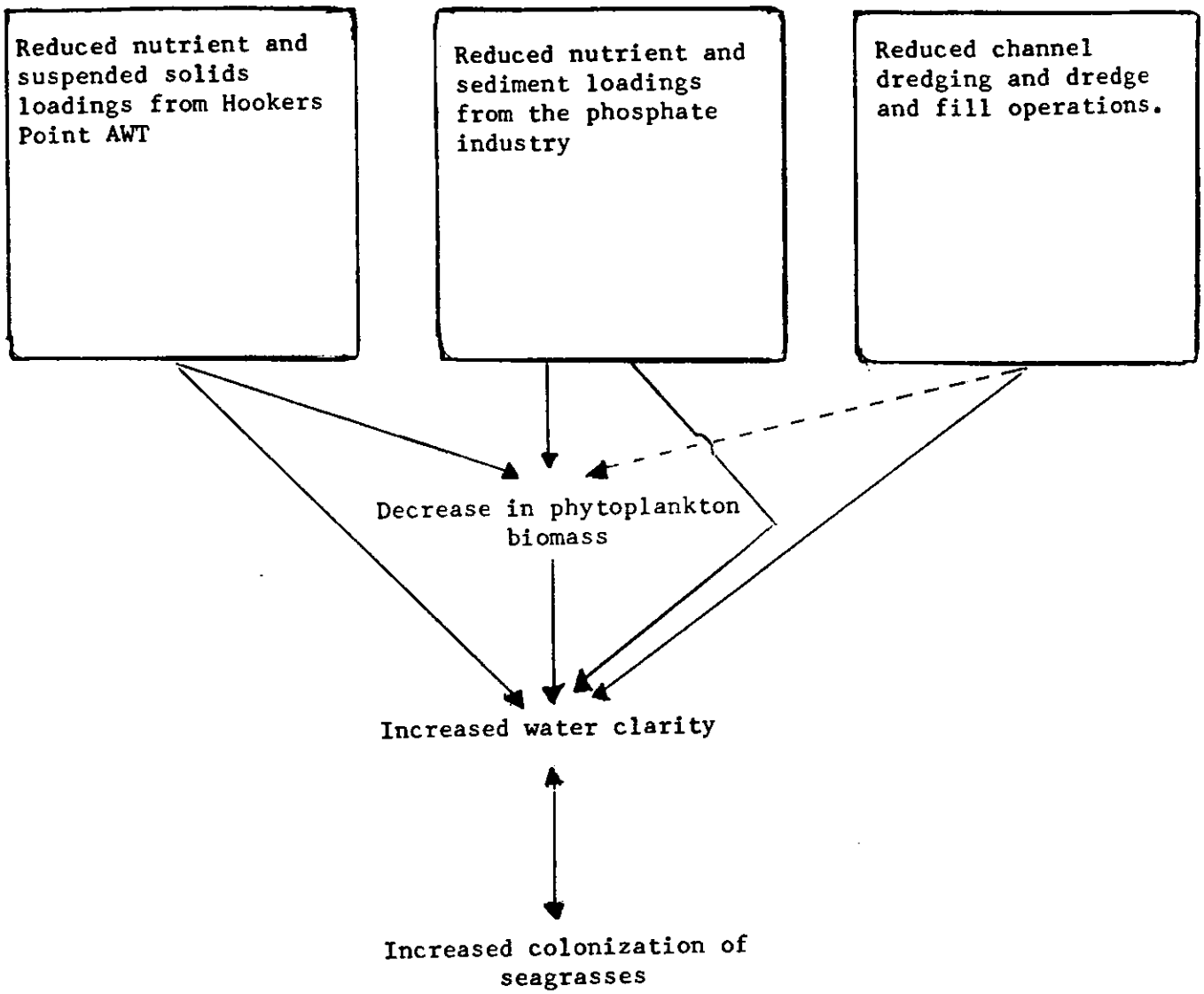

Figure 6.