



# CHARTING *the* COURSE

THE COMPREHENSIVE CONSERVATION  
AND MANAGEMENT PLAN FOR TAMPA BAY

MAY 2006

TAMPA BAY ESTUARY PROGRAM

---

**RICHARD ECKENROD**

DIRECTOR

**HOLLY GREENING**

SENIOR PROGRAM SCIENTIST

**NANETTE HOLLAND**

PUBLIC OUTREACH COORDINATOR

**MISTY CLADAS**

PROJECT MANAGER

**RON HOSLER**

OFFICE ADMINISTRATOR

**LINDSAY CROSS**

ENVIRONMENTAL ASSOCIATE

**COLLEEN GRAY**

OUTREACH ASSISTANT

---

WRITERS:

**NANETTE HOLLAND**

**MARY KELLEY HOPPE**

**LINDSAY CROSS**

---

THE PROGRAM OFFICE IS LOCATED AT:

100 8TH AVE. S.E.

ST. PETERSBURG, FL 33701

TELEPHONE (727) 893-2765

FAX (727) 893-2767

TO EXPLORE TAMPA BAY ONLINE, VISIT US AT [WWW.TBEP.ORG](http://WWW.TBEP.ORG)

# Charting the Course for Tampa Bay

---

**May 2006**

---

THE MISSION OF THE TAMPA BAY ESTUARY PROGRAM IS TO BUILD PARTNERSHIPS TO RESTORE AND PROTECT TAMPA BAY THROUGH IMPLEMENTATION OF A SCIENTIFICALLY SOUND, COMMUNITY-BASED MANAGEMENT PLAN.

*In memory of our friend and colleague, Roy G. Harrell, Jr.,  
Tampa Bay Estuary Program Policy Board member (1992-1996), champion and  
author of the landmark Interlocal Agreement for bay restoration  
adopted in 1997.*

## PREFACE

This first revision of *Charting the Course* encompasses the 2003-2008 timeframe. It provides a look back at progress made in implementing the original goals and priorities of the Comprehensive Conservation and Management Plan for Tampa Bay, and a look ahead at updated bay restoration and protection strategies. *Charting the Course* is intended to provide a flexible, evolving framework that can be adapted to the changing needs of both the bay and the bay management community.

The Tampa Bay Estuary Program (TBEP) was established by Congress in 1991 to assist the region in developing and implementing a comprehensive plan for bay improvement. The Program is a partnership of the U.S. Environmental Protection Agency; Florida Department of Environmental Protection; Southwest Florida Water Management District; Hillsborough, Pinellas and Manatee counties; and the cities of Tampa, St. Petersburg and Clearwater.

The revised Action Plans for bay improvement presented in this document reflect input from bay managers, advocates, key industries and citizens from throughout the region. The actions within this Plan were reviewed and refined by outside experts as well as members of TBEP's Technical Advisory Committee and Community Advisory Committee. Final Action Plans were approved by TBEP's Management and Policy Boards over a 2-year period. We thank all the individuals who participated for their substantial insights and contributions.

The Tampa Bay Estuary Program invites your comments and participation as we continue to assist the region in charting the course for the future well-being of Tampa Bay.



# TABLE OF CONTENTS

About the Tampa Bay Estuary Program .....	VIII
About <i>Charting the Course</i> .....	IX
Partners of the Tampa Bay Estuary Program .....	XI
State of the Bay .....	1
Goals and Priorities for Tampa Bay .....	18
Introduction to Action Plans (See complete index of Action Plans, page IV) .....	20
Water & Sediment Quality Action Plan .....	22
Bay Habitats Action Plan .....	75
Bay Fish & Wildlife Action Plan .....	96
Dredging & Dredged Material Management Action Plan .....	111
Spill Prevention & Response Action Plan .....	115
Invasive Species Action Plan (New) .....	120
Public Education & Involvement Action Plan .....	124
Public Access Action Plan (New) .....	129
Implementation & Financing .....	132
Research and Monitoring Priorities .....	138
General References .....	144
Glossary .....	148
List of Acronyms .....	150

See Index of Action Plans, page IV.

---

**INDEX OF ACTION PLANS AND ACTIONS FOR TAMPA BAY**

---

**WATER & SEDIMENT QUALITY**

*Actions to improve overall water quality:*

- WQ-1** Implement the Tampa Bay nitrogen management strategy . . .23
- WQ-2** Reduce pollution from recreational boaters . . . . .28  
*New Action – Includes Steps from TX-3, PH-3 & SP-3*

*Actions to reduce pollution from stormwater runoff:*

- SW-1** Continue support for Florida Yards & Neighborhoods Program and similar pollution prevention initiatives . . . . .30
- SW-2** Assist businesses in implementing best management practices to reduce stormwater pollution, and develop model landscaping guidelines for commercial use . . . . .32
- SW-3** Encourage local governments to adopt integrated pest management policies and implement environmentally beneficial landscaping practices . . . . .34
- SW-4** Reduce impervious paved surfaces  
*Action Retired- Incorporated into SW-10*
- SW-5** Require older properties being redeveloped to meet current stormwater treatment standards for that portion of the site being redeveloped  
*Action Retired- Incorporated into SW-10*
- SW-6** Promote compact urban development and redevelopment  
*Action Retired – Incorporated into SW-10*
- SW-7** Enforce and require the timely completion of the consent order for the cleanup of fertilizer facilities in the East Bay sector . . . . .36
- SW-8** Encourage best management practices on farms . . . . .38
- SW-9** Improve compliance with agricultural ground and surface water management plans  
*Action Retired*
- SW-10** Design and implement a Low Impact Development strategy . . . . .41  
*New Action – Includes Steps from SW-4, SW-5 & SW-6*
- SW-11** Expand the Adopt-A-Pond program to additional communities . . . . .44  
*New Action*

*Actions to reduce the effects of air pollution on the bay:*

- AD-1** Continue atmospheric deposition studies to better understand the relationship between air and water quality . . . . .46

<b>AD-2</b>	Promote public and business energy conservation . . . . .	49
<b><i>Actions to reduce pollution from wastewater discharged to the bay:</i></b>		
<b>WW-1</b>	Expand the use of reclaimed water where reuse benefits the bay . . . . .	52
<b>WW-2</b>	Extend central sewer service to priority areas now served by septic systems . . . . .	56
<b>WW-3</b>	Require standardized monitoring of wastewater discharges . . . . .	60
<del><b>WW-4</b></del>	Revise HRS rules to incorporate environmental performance or design standards for septic systems <i>Action Retired – Incorporated into WW-2</i>	
<b><i>Actions to reduce toxic contaminants in the bay:</i></b>		
<b>TX-1</b>	Address hot spots of toxic contamination . . . . .	62
<b>TX-2</b>	Improve opportunities for proper hazardous waste disposal . . . . .	68
<del><b>TX-3</b></del>	Reduce toxic contaminants from ports and marinas <i>Action Retired – Incorporated into WQ-2</i>	
<b><i>Actions to reduce pathogens:</i></b>		
<b>PH-1</b>	Reduce the occurrence of municipal sewer overflows . . . . .	70
<b>PH-2</b>	Continue source and risk assessments of human and ecosystem health indicators suitable for subtropical marine beaches and waters . . . . .	72
<del><b>PH-3</b></del>	Install additional sewage pump-out facilities for recreational boaters and live-aboard vessels <i>Action Retired – Incorporated into WQ-2</i>	

---

## **BAY HABITATS**

### ***Actions to increase and preserve the number and diversity of healthy bay habitats:***

<b>BH-1</b>	Implement the Tampa Bay master plan for habitat restoration and protection . . . . .	76
<b>BH-2</b>	Implement mitigation criteria for Tampa Bay, and identify priority sites for mitigation . . . . .	80
<b>BH-3</b>	Reduce propeller scarring of seagrass and pursue seagrass restoration opportunities at select sites . . . . .	83
<b>BH-4</b>	Restrict impacts to hard-bottom communities . . . . .	86
<del><b>BH-5</b></del>	Improve management of parking and vehicle access along causeways and coastal areas <i>Action Retired – Incorporated into PA-1</i>	

**BH-6** Encourage waterfront residents to enhance shorelines and limit runoff from yards . . . . .89

**BH-7** Improve compliance with and enforcement of wetland permits  
*Action Retired – Incorporated into BH-2*

**BH-8** Expand habitat mapping and monitoring programs . . . . .91

*Actions to establish and preserve adequate freshwater inflows to Tampa Bay and its tributaries:*

**FI-1** Maintain minimum seasonal freshwater flows downstream of dams . . . . .93

**FISH & WILDLIFE**

*Actions to protect and enhance fisheries and wildlife:*

**FW-1** Increase on-water enforcement of environmental regulations . . . . .97

**FW-2** Establish and enforce manatee protection zones . . . . .100

**FW-3** Support bay scallop restoration . . . . .102

**FW-4** Assess the need to investigate the cumulative impacts of power plant entrainment on fisheries . . . . .104

**FW-5** Continue and expand the Critical Fisheries Monitoring Program . . . . .106

**FW-6** Preserve the diversity and abundance of bay wildlife . . .108  
*New Action*

**DREDGING & DREDGED MATERIAL MANAGEMENT**

*Actions to reduce the impact of dredging and improve dredged material management:*

**DR-1** Manage dredging and dredged material in Tampa Bay . . .112

**SPILL PREVENTION & RESPONSE**

*Actions to improve spill prevention and response:*

**SP-1** Establish an integrated vessel traffic system for Tampa Bay and permanently fund the PORTS system . . .116

**SP-2** Evaluate and update spill response plans for priority areas . . . . .118

**SP-3** Improve fueling and bilge-pumping practices among pleasure boaters  
*Action Retired – Incorporated into WQ-2*



---

**INVASIVE SPECIES** (*New Action Plan*)

*Actions to reduce the occurrence of invasive species in the bay:*

- IS-1** Assess the extent of existing marine bio-invasions in Tampa Bay .....121  
*New Action*
- IS-2** Implement a public education program to enlist citizen help in preventing marine bio-invasions .....122  
*New Action*

---

**PUBLIC EDUCATION & INVOLVEMENT**

*Actions to increase public education and involvement:*

- PE-1** Promote public involvement in bay restoration and protection .....125

---

**PUBLIC ACCESS** (*New Action Plan*)

*Actions to promote responsible public use of the bay:*

- PA-1** Reduce human and pet waste in traditional bay recreation areas .....130  
*New Action*

# ABOUT THE TAMPA BAY ESTUARY PROGRAM

The Tampa Bay National Estuary Program (TBNEP) was established in 1991 to assist the region in developing and implementing a comprehensive plan to restore and protect Tampa Bay. The Program is part of a national network of 28 estuary programs established under the Clean Water Act and administered by the U.S. Environmental Protection Agency (EPA).

The landmark agreement establishing the Tampa Bay NEP brought together Hillsborough, Pinellas and Manatee counties; the cities of Tampa, St. Petersburg and Clearwater; the Southwest Florida Water Management District; the Florida Department of Environmental Protection; and EPA in a partnership committed to action.

In 1998, these and six other partners signed a formal Interlocal Agreement, and ancillary agreements, pledging to achieve the goals of the newly completed Comprehensive Conservation and Management Plan (CCMP) for Tampa Bay, called *Charting the Course*. The Plan culminated nearly six years of scientific research into the bay's most pressing problems, and reflected broad-based input from citizens, groups and communities with a common interest in a healthy bay as the cornerstone of a prosperous economy.

Upon adoption of the Interlocal Agreement, the Tampa Bay National Estuary Program became simply the **Tampa Bay Estuary Program**, in recognition of its reorganization as a truly regional alliance.

TBEP continues to coordinate the overall protection and restoration of the bay with assistance and support from its many formal and informal partners. TBEP monitors progress in achieving the goals of the CCMP by regularly summarizing and evaluating information provided by program participants. Under the terms of the Interlocal Agreement governing the Program, TBEP is required to review and update the major goals for bay restoration every five years to assess progress, revise strategies as needed and address emerging issues affecting the bay.

TBEP leverages the resources of program partners by financing cutting-edge research into key problems impacting the bay; sponsoring demonstration projects to test innovative solutions to these problems; providing "Mini-Grants" to community groups to engage the public in bay restoration; and developing educational programs targeting key segments of the bay community – including teachers, boaters and homeowners.

# ABOUT CHARTING THE COURSE

This document represents the first revision of *Charting the Course*, the Comprehensive Conservation and Management Plan for Tampa Bay, encompassing the years 2003-2008.

The original *Charting the Course*, formally adopted in 1997, set forth specific, measurable goals for bay improvement in five areas: Water & Sediment Quality, Bay Habitats, Fish & Wildlife, Dredging & Dredged Material Management, and Spill Prevention & Response. A sixth Action Plan highlighted Public Involvement and Education strategies to foster a bay stewardship ethic among the region's residents.

Within these action plans were 41 individual actions which identified a range of strategies that allow local communities to maximize return on their investment in bay restoration and protection.

In this first update, two Action Plan areas have been added to the initial list: Invasive Species and Public Access. These additions reflect new or emerging issues for the bay management community. Several individual actions in the original Plan have been merged, modified or eliminated as well, while new actions have been added based on revised information and newly identified priorities. New actions are underlined in the Index of Actions at the beginning of *Charting the Course*; merged, modified or retired actions also are noted in the Index. This update encompasses 38 actions – eight of them appearing in the Plan for the first time.

Following are descriptions of the document's major components.

## STATE OF THE BAY

This chapter summarizes progress made in bay protection and restoration since the adoption of the original management plan, noting ongoing or new challenges. Important trends in the key issue areas identified by TBEP and its partners are presented here.

## GOALS & PRIORITIES

Goals and priorities for Tampa Bay are summarized in a chart immediately preceding bay action plans. These specific and attainable targets are the foundation for strategies and themes advanced in *Charting the Course*. They relay overall priorities for bay restoration and protection, to better evaluate the benefits of measures to protect this vital environmental and economic resource.

## ACTION PLANS FOR BAY IMPROVEMENT

*Charting the Course* presents a comprehensive slate of approved actions to assist community partners in selecting cost-effective and environmentally beneficial improvements in the eight key areas identified above. Action plans for Tampa Bay

identify a range of strategies that allow local communities to maximize return on their investment in bay recovery and protection. Many actions also achieve multiple environmental objectives, such as pollution prevention and water conservation.

Each action contains a background section summarizing the issue; the current status of the action; and the “next steps” necessary to implement the action, identifying a projected schedule for completion as well as responsible parties.

References in action plans to local governments under the heading “Responsible parties” refer to Hillsborough, Pinellas and Manatee counties and the cities of Tampa, St. Petersburg and Clearwater, unless otherwise noted, although all local communities in the region are urged to participate.

New actions are underlined in the Index of Action Plans at the beginning of this document. Old actions with a line through them (strikethrough) have been retired or incorporated into other actions as noted in the Index.

## **IMPLEMENTING THE PLAN**

TBEP partners signed a formal Interlocal Agreement in 1997 pledging to achieve the goals of the bay management plan and committing to specific actions and timetables. The Implementation & Financing chapter describes the agreement and TBEP’s role in overseeing implementation, as well as mechanisms for financing bay restoration and protection strategies.

## **MONITORING BAY IMPROVEMENT**

Long-term monitoring of Tampa Bay’s health is central to the success of bay restoration efforts, enabling communities to measure return on investment and helping bay managers redirect their efforts when necessary. The bay monitoring program devised by TBEP in cooperation with local governments and agencies is presented in the Research and Monitoring chapter, along with key research priorities that have been revised to reflect new issues and associated gaps in scientific knowledge.

# PARTNERS OF THE TAMPA BAY ESTUARY PROGRAM



HILLSBOROUGH COUNTY

MANATEE COUNTY

PINELLAS COUNTY

CITY OF CLEARWATER

CITY OF ST. PETERSBURG

CITY OF TAMPA

ENVIRONMENTAL PROTECTION COMMISSION OF HILLSBOROUGH COUNTY

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

TAMPA BAY REGIONAL PLANNING COUNCIL

TAMPA PORT AUTHORITY

U.S. ARMY CORPS OF ENGINEERS

U.S. ENVIRONMENTAL PROTECTION AGENCY



## Members of the Tampa Bay Management Conference

The work of the Tampa Bay National Estuary Program is guided by a Tampa Bay Management Conference, which was convened at the program's outset to provide direction and input into bay problems and solutions from diverse community sectors. The Conference is comprised of key policy leaders representing local, state and federal government; members of the region's scientific and technical communities; business, agricultural and special interest groups; and citizens from throughout the region. Conference participants are recognized here for their considerable contributions in charting the course for Tampa Bay.

### POLICY BOARD

Deborah Getzoff  
Florida Department of  
Environmental Protection  
Chair

Tom Welborn  
U.S. Environmental Protection  
Agency Region IV  
Vice-Chair

Councilman James S. Bennett  
City of St. Petersburg

Commissioner Ronnie Duncan  
Pinellas County

Vice Mayor Bill Jonson  
City of Clearwater

Janet Kovach  
Governing Board  
Southwest Florida Water  
Management District

Commissioner Joe McClash  
Manatee County

Councilwoman Linda Saul-Sena  
City of Tampa

Commissioner Mark Sharpe  
Hillsborough County

### MANAGEMENT BOARD

Deborah Getzoff  
Florida Department of  
Environmental Protection  
Chair

Tom Welborn  
U.S. Environmental Protection  
Agency, Region IV  
Vice-Chair

Mahshid Arasteh  
City of Clearwater

Jim Beever  
Florida Fish and Wildlife  
Conservation Commission

Rob Brown  
Co-Chair

Technical Advisory Committee

Karen Collins-Fleming  
Manatee County

Michael Connors  
City of St. Petersburg

Paula Dye  
Tampa Bay Water

Lizanne Garcia  
Southwest Florida Water  
Management District

Richard Garrity  
Environmental Protection  
Commission of Hillsborough  
County

Eric K. Gasch  
U.S. Army Corps of Engineers

David Glicksberg  
Hillsborough County

George Henderson  
Fish and Wildlife Research  
Institute  
Florida Fish and Wildlife  
Conservation Commission

Craig Kovach  
Co-Chair  
Nitrogen Management  
Consortium

Ralph Metcalf  
City of Tampa

Bob Minthorn  
Co-Chair  
Community Advisory  
Committee

Dave Parsche  
Tampa Port Authority

Manny Pumariega  
Tampa Bay Regional Planning  
Council

Dorothy Rainey  
 Co-Chair  
 Community Advisory  
 Committee

Andy Squires  
 Co-Chair  
 Technical Advisory Committee

Jake Stowers  
 Pinellas County

**COMMUNITY ADVISORY  
 COMMITTEE**

Robert Minthorn, Gibsonton  
 Retired Educator  
 Co-Chair

Dorothy Rainey, Ruskin  
 Environmental Specialist  
 Co-Chair

Pauline Archard, Tampa  
 Medicare Health Sales

Dale Armstrong, St. Petersburg  
 Horticulturist (Florida Yards &  
 Neighborhoods Program)

Emerson Atkinson, Tampa  
 Real Estate Developer

Sheri Bazany, St. Petersburg  
 Graphic Designer/Artist

Susan Brandon, Oldsmar  
 Eco-Tour Operator

Patrick Cannizzaro,  
 St. Petersburg  
 Environmental Educator

Jeanette Doyle, Apollo Beach  
 Retired Educator

Mary Ewers, Clearwater  
 Retired Business Executive

Mike Herdegen, St. Petersburg  
 Business Owner

Cheryl Johnson, Brandon  
 SWFWMD/Alafia River Basin  
 Board

Marjorie Karvonen,  
 St. Petersburg  
 Gerontological Consultant

Mike McKinney, Wesley Chapel  
 League of Women Voters of  
 Hillsborough County

Blake Meinecke, Plant City  
 Environmental Scientist

Sharon Meininger, Clearwater  
 Retired Educator

Tom Patka, Tampa  
 Attorney

Mandy Peterson, St. Petersburg  
 Management Consultant

Catherine Quindiagan,  
 St. Petersburg  
 Retired Educator

Sandra Ripberger, Bradenton  
 Retired Non-Profit Executive

John Samaha, Tampa  
 Business Owner

Cynthia Scaglione, Tampa  
 Consultant

Summer Solomon,  
 Temple Terrace  
 Environmental Educator

Gwen Tillotson, Odessa  
 Community Water Activist

Terrie Weeks, St. Petersburg  
 Naturalist

Ray Wunderlich, St. Petersburg  
 Business Owner

**TECHNICAL ADVISORY  
 COMMITTEE**

Rob Brown  
 Co-Chair  
 Manatee County Environmental  
 Management Department

Andy Squires  
 Co-Chair  
 Pinellas County Department of  
 Environmental Management

Chris Anastasiou  
 Florida Department of  
 Environmental Protection

Jim Anderson  
 Seagrass Recovery, Inc

Damann Anderson  
 Hazen and Sawyer

Bill Arnold  
 Fish and Wildlife Research  
 Institute  
 Florida Fish and Wildlife  
 Conservation Commission

Walt Avery  
 City of Tampa Bay Study Group

Susan Bell  
 University of South Florida  
 Biology Department

Peter Betzer  
 University of South Florida  
 College of Marine Science

Bart Bibler  
 Florida Department of Health

Beverly Birkitt  
 Birkitt Environmental Services

Norm Blake  
University of South Florida  
Marine Science Department

Greg Blanchard  
Manatee County Environmental  
Management Department

Hamid Bojd  
Ayres Associates

Richard Boler  
Environmental Protection  
Commission of Hillsborough  
County

Bob Brinkmann  
University of South Florida  
Geography Department

John Brock  
United States Geological Survey

Otto Bundy  
Ecogroup International  
Corporation

David Camp  
Scientist

Paul Carlson  
Fish and Wildlife Research  
Institute  
Florida Fish and Wildlife  
Conservation Commission

Shelly Castro  
Tampa Electric Company

Xinjian Chen  
Southwest Florida Water  
Management District

Peter Clark  
Tampa BayWatch, Inc.

Shawn College  
Hillsborough County Planning  
Commission

Gary Comp  
Environmental Affairs  
Consultants, Inc.

Suzanne Cooper  
Tampa Bay Regional Planning  
Council  
Agency on Bay Management

Randy Cooper  
Florida Department of  
Environmental Protection  
Roger Copp  
DHI, Inc.

Catherine Corbett  
Charlotte Harbor National  
Estuary Program

Frank Courtney  
Fish and Wildlife Research  
Institute  
Florida Fish and Wildlife  
Conservation Commission

Alfredo Crafa  
City of St. Petersburg

Norton "Mac" Craig  
City of Largo, Environmental  
Services

Jack Creighton  
United States Department of  
Agriculture  
Natural Resources Conservation  
Service

Laura Crouch  
Tampa Electric Company

Tom Cuba  
Delta Seven, Inc.

Jim Culter  
Mote Marine Laboratory

David Dale  
National Marine Fisheries  
Services

Will Davis  
Pinellas County Department of  
Environmental Management

Tom Davis  
Eastern Associated Terminals

Clinton Dawes  
University of South Florida  
Biology Department

Bruce De Grove  
Mosaic Fertilizer, LLC

Robert De Mott  
Geo Syntec Consultants

Tommy Denton  
Hillsborough County  
Engineering Services

Kellie Dixon  
Mote Marine Laboratory

Donald Duke  
University of South Florida  
Environmental Science & Policy  
Department

Craig Dye  
Pinellas County Department of  
Environmental Management

Wayne Echelberger  
University of South Florida  
Civil & Environmental  
Engineering Department

Nick Ehringer  
Tampa Bay Education and  
Research Foundation

John Emery  
Southwest Florida Water  
Management District

Ernie Estevez  
Mote Marine Laboratory

Kent Fanning  
 University of South Florida  
 Marine Science Department

Eric Fehrman  
 Pinellas County Department of  
 Environmental Management

Mario Fernandez, Jr.  
 United States Geological Survey

Terry Finch  
 City of Clearwater

Mike Flanery  
 Pinellas County Health  
 Department

Sid Flannery  
 Southwest Florida Water  
 Management District

Melody Foley  
 Mosaic Fertilizer, LLC

William Fonferek  
 U.S. Army Corps of Engineers

Peter Fowler  
 Hillsborough County  
 Parks & Recreation Department

Lynn French  
 Florida Power & Light  
 Company

Chris Friel  
 Photo Science, Inc.

Boris Galperin  
 University of South Florida  
 Marine Science Department

Lynda Garvin  
 Florida Department of  
 Agriculture and Consumer  
 Services

Carl Gerhardstein  
 CSX Transportation

Ron Giovanelli  
 URS Corporation

Steve Grabe  
 Janicki Environmental, Inc.

Jim Greenfield  
 U.S. Environmental Protection  
 Agency, Region IV

Jim Griffin  
 Florida Center for Community  
 Design & Research

Keith Hackett  
 Janicki Environmental, Inc.

Penny Hall  
 Fish and Wildlife Research  
 Institute  
 Florida Fish and Wildlife  
 Conservation Commission

Pamela Hallock Muller  
 University of South Florida  
 Marine Science Department

Mark Hansen  
 United States Geological Survey

Clifford Hearn  
 United States Geological Survey

Kent Hedrick  
 Florida Power Corporation

Dr. Brandt Henningsen  
 Southwest Florida Water  
 Management District

Mike Heyl  
 Southwest Florida Water  
 Management District

Ann B. Hodgson  
 Audubon of Florida

Allen Hubbard  
 Florida Department of  
 Environmental Protection  
 Industrial Wastewater Section

Gail Huff  
 United States Department of  
 Agriculture  
 Natural Resources Conservation  
 Service

Charlie Hunsicker  
 Manatee County

Charles Jacoby  
 Florida Sea Grant

Tony Janicki  
 Janicki Environmental, Inc.

Roger Johansson  
 City of Tampa Bay Study Group

Daryll Joyner  
 Florida Department of  
 Environmental Protection

Woo-Jun Kang  
 Southwest Florida Water  
 Management District

Marty Kelly  
 Southwest Florida Water  
 Management District

Steven Kent  
 Tree of Life Nursery, Inc.

Charles Kovach  
 Florida Department of  
 Environmental Protection

Raymond Kurz  
 PBS&J

Joseph LeGath  
 Environmental Integration

Diana Lee  
 Environmental Protection  
 Commission of Hillsborough  
 County

Tracy Leeser  
 U.S. Army Corps of Engineers

Eric Lesnett  
Environmental Protection  
Commission of Hillsborough  
County

Jay Leverone  
Mote Marine Laboratory

Roy (Robin) Lewis III  
Lewis Environmental Services,  
Inc.

Steven Lienhart  
URS Corporation

Eric Livingston  
Florida Department of  
Environmental Protection

Ed Long  
ERL Environmental

Sheri Lovely  
Pinellas County Utilities

Heidi Lovett  
MRAG Americas, Inc.

Mark Luther  
University of South Florida  
Marine Science Department

Michael Marshall  
Coastal Seas Consortium, Inc

Bob McConnell  
Tampa Bay Water

CeCe McKiernan  
Florida Department of  
Environmental Protection

Bob McMichael  
Fish and Wildlife Research  
Institute  
Florida Fish and Wildlife  
Conservation Commission

Dr. Ben McPherson  
United States Geological Survey

Gil McRae  
Fish and Wildlife Research  
Institute  
Florida Fish and Wildlife  
Conservation Commission

Ron Miller  
United States Geological Survey

Kristina Miller  
Berryman & Henigar

Jessica Minnick  
King Engineering Associates,  
Inc.

Don Moores  
Applied Sciences Consulting,  
Inc.

E.O. Morris  
Mosaic, LLC

Gerold Morrison  
Environmental Protection  
Commission of Hillsborough  
County

Gus Muench  
South Shore Diamond Habitat  
Award Program

Robert Musser, Jr.  
Tampa Port Authority

Dr. John Ogden  
University of South Florida  
Florida Institute of  
Oceanography

Joe O'Hop  
Fish and Wildlife Research  
Institute  
Florida Fish and Wildlife  
Conservation Commission

Paul O'Neill  
Southwest Florida Water  
Management District

Ann Paul  
Audubon of Florida

Kevin Petrus  
Florida Department of  
Environmental Protection

Richard Pierce  
Mote Marine Laboratory

Joe Plocek  
City of Tampa Parks  
Department

Amy Poe  
Janicki Environmental, Inc.

Noreen Poor  
University of South Florida  
College of Public Health

Ray Pribble  
Janicki Environmental, Inc.

Bryan Pridgeon  
U.S. Fish & Wildlife Service

Mark Rains  
University of South Florida  
Geology Department

Gary Raulerson  
Sarasota Bay Estuary Program

Thomas Reese  
Attorney

Walt Reigner  
BCI Engineers & Scientists, Inc.

Amy Remley  
Southwest Florida Water  
Management District

Stan Rice  
University of South Florida  
Biology Department

Carl Riddlemoser  
ATC Associates, Inc.



Tom Ries  
 Scheda Ecological Associates

Kevin Riskowitz  
 City of St. Petersburg  
 Public Utilities

Brad Robbins  
 Mote Marine Laboratory

Doug Robison  
 PBS&J

Mark Ross  
 University of South Florida  
 Civil & Environmental  
 Engineering Department

Mike Rowicki  
 Hillsborough County  
 Metropolitan Planning  
 Organization

Randy Runnels  
 Florida Department of  
 Environmental Protection  
 Tampa Bay Aquatic Preserves

Steven Schropp  
 Taylor Engineering

Gary Serviss  
 V.H.B

Peter Sheng  
 University of Florida  
 Civil & Coastal Engineering  
 Department

Gilbert C. Sigua  
 U.S. Department of Agriculture

Daniel Smith  
 University of South Florida  
 Civil & Environmental  
 Engineering Department

Kathryn Smith  
 United States Geological Survey

Robert Soich  
 Florida Department of  
 Environmental Protection

Mark Sramek  
 National Oceanic &  
 Atmospheric Administration

Tom St. Clair  
 Parsons Engineering Science,  
 Inc.

Paul Stanek  
 Pinellas County Health  
 Department

Bob Stetler  
 Environmental Protection  
 Commission of Hillsborough  
 County

John Stevely  
 Florida Sea Grant

Scott Stevens  
 Kisinger Campo and Associates

Peter Swarzenski  
 United States Geological Survey

Dave Tackney  
 Tackney & Associates, Inc.

Chris Tolbert  
 Kinder Morgan Bulk  
 Terminals, Inc.

Mercily Toledo  
 Florida Department of  
 Environmental Protection

David Tomasko  
 Southwest Florida Water  
 Management District

Sally Treat  
 TEXT

Gabriel Vargo  
 University of South Florida  
 Marine Science Department

Sandra Vargo  
 University of South Florida  
 Florida Institute of  
 Oceanography

David Wade  
 Janicki Environmental, Inc.

Mike Walters  
 Ayres Associates

Fred Webb  
 Hillsborough Community  
 College

Robert Weisberg  
 University of South Florida  
 Marine Science Department

Bob Whitman  
 Peninsula Design &  
 Engineering, Inc.

Mark Wolff  
 U.S. Army Corps of Engineers

Michael Wood  
 Manatee County Planning  
 Department

Dave Worley  
 Florida Department of  
 Environmental Protection

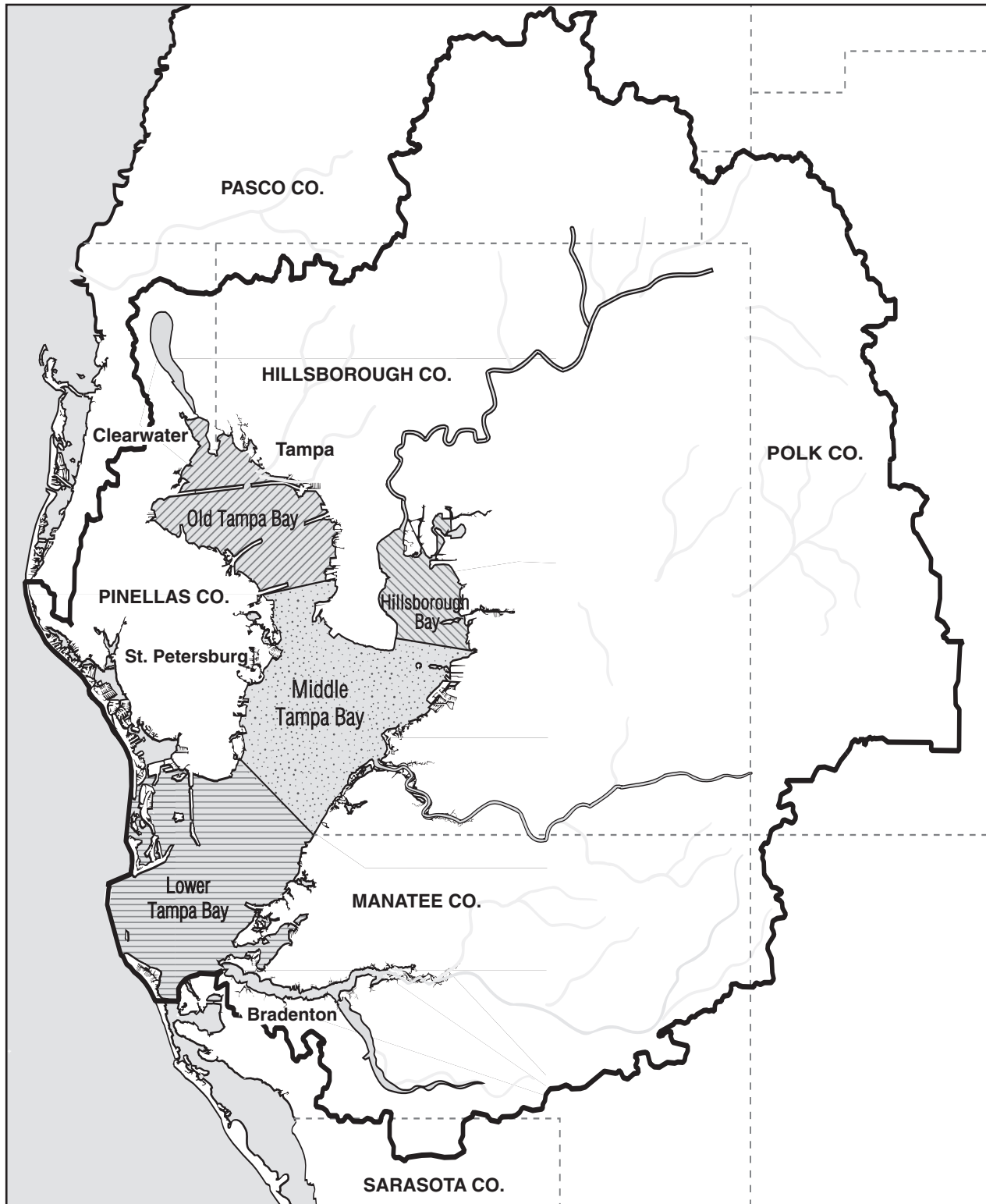
Kim Yates  
 United States Geological Survey

Jay Yingling  
 Southwest Florida Water  
 Management District

Hans Zarbock  
 Berryman & Henigar, Inc.

John Zimmerman  
 Manatee County Public Works  
 Department

**Tampa Bay Watershed Boundaries and Major Bay Segments**



More than two million people reside in the 2,200-square-mile Tampa Bay watershed, which reaches into Sarasota, Pasco and Polk counties. Tampa Bay is Florida's largest open-water estuary, covering almost 400 square miles.