

**Board of  
Commissioners Meeting  
November 16, 2013**

# **PRELIMINARY AGENDA**

## **FLORIDA INLAND NAVIGATION DISTRICT Board of Commissioners Meeting**

**9:00 a.m., Saturday November 16, 2013**

**Hutchinson Island Marriott Beach Resort & Marina  
555 NE Ocean Boulevard  
Stuart, (Martin County) FL, 34996**

### **Item 1.      Call to Order.**

Chair Kavanagh will call the meeting to order.

---

### **Item 2.      Pledge of Allegiance.**

Commissioner Cuozzo will lead the Pledge of Allegiance to the United States of America.

---

### **Item 3.      Roll Call.**

Secretary Cuozzo will call the roll.

---

### **Item 4.      Consent Agenda.**

The consent agenda items are presented for Board approval. Commissioners may remove any items from this agenda for additional discussion. Any removed items would then be included in the regular agenda in an order assigned by the Chair.

(Please see the pages following the color divider page)

RECOMMEND Approval of the Consent Agenda.

- A) Miami-Dade County Baynanza Waterway Cleanup Request, Miami-Dade County
  - B) Keep Brevard Beautiful Waterways Cleanup Request, Brevard County.
- 

### **Item 5.      Additions or Deletions.**

Any additions or deletions to the meeting agenda will be announced.

RECOMMEND: Approval of a final agenda.

---

**Item 6.      Public Comments.**

The public is invited to provide comments on issues that are NOT on today's agenda. All comments regarding a specific agenda item will be considered following Board discussion of that agenda item. *Please note: Individuals who have comments concerning a specific agenda item should make an effort to fill out a speaker card or communicate with staff prior to that agenda item.*

---

**Item 7.      Board Meeting Minutes.**

Staff Assistant Susan Smith was on vacation for two weeks so the October Board meeting minutes will be provided at the December meeting.

---

**Item 8.      Comments from the U.S. Army Corps of Engineers.**

U.S. Army Corps of Engineers (USACE) Intracoastal Waterway Project Manager, Ms. Shelly Trulock is scheduled to present an update on projects and activities.

(Please see back up pages 6 - 10 )

---

**Item 9.      Staff Report on Martin County Area Projects.**

Staff will present a report on the District's Martin County area projects.

(Please see back up pages 11 - 35)

---

**Item 10.      Approval of a Scope of Work and a Fee Quote for Hydrographic Survey Services for the Atlantic Intracoastal Waterway and the Intracoastal Waterway North.**

Approximately every ten years, the District updates the survey data for the Intracoastal Waterway. This information is utilized by staff and the District Engineer to determine dredging priorities over the next decade, and to calculate volume requirements and construction schedules for our Long-Range, Dredge Material Management Areas. In 2011, consistent with the Consultant's Competitive Negotiation Act (CCNA), the Board formed a selection committee and short-listed and pre-approved hydrographic survey contractors for work within the District. This action was necessitated by the uncertainty of available federal funding and also allowed the District the flexibility to move forward with required hydrographic surveys for our own projects.

**Item 10 (continued).**

The District was divided into two parts, with the north section including the Atlantic Intracoastal Waterway (AIWW) and the Intracoastal Waterway (IWW) south through Brevard County. The survey consultants who responded to the request for qualifications for each area were evaluated and ranked by the selection committee. At the May 2011 meeting, the Board approved the hydrographic surveyor consultant rankings in each of the two areas. Consistent with this process, staff received a scope of services and fee quote from the top ranked firm in each of the two waterways areas. The Board can then approve the scope and fees, or elect to solicit a scope and fee quote from the next ranked firm.

The current agenda item was originally presented to the Board at our last meeting. The Board generated several questions and requested staff investigate the possibility of adding additional survey work to identify sediments in the Indian River Lagoon portion of the IWW. The item was tabled until the following (November) Board meeting.

Staff requested a scope of work and fee quotes for a traditional hydrographic survey, as well as the utilization of a more detailed multi-beam survey. In addition, the consultant was requested to provide an alternate scope and fee quote for proposed sediment identification study within the Intracoastal Waterway channel from Haulover Canal in north Brevard County, south to the Brevard County line (approximately 60 nautical miles).

Sea Diversified provided fee quotes to the District for both types of hydrographic survey work, as well as an optional sediment thickness study. Due to the additional detail and level of information provided for minimal additional costs, staff is recommending that the Board approve the multi-beam survey and the sediment thickness study. The proposals have been reviewed by the District Engineer and all fees appear reasonable and are within the cost estimate for this work.

(Please see back up pages 36 - 43)

- RECOMMEND:
- 1) Approval of a scope of work and fee quote from Sea Diversified, Inc. in the amount of \$345,100.00 for a multi-beam survey of the Atlantic Intracoastal Waterway and the Intracoastal Waterway North.
  - 2) Approval of the optional fee quote of \$32,140.00 for a concurrent sediment thickness study from Haulover Inlet south to the Brevard County line.
- 

**Item 11.**      **Approval of a Scope of Work and a Fee Quote for Hydrographic Survey Services for the Intracoastal Waterway South.**

As noted in detail in Agenda Item #10 above, the District is also in need of survey work for the Intracoastal Waterway south, from the Brevard County/Indian River County line south through Miami-Dade County. This information is utilized by staff and the District Engineer to determine dredging priorities over the next decade, and to calculate volume requirements and construction schedules for our Long-Range, Dredge Material Management Areas.



**Item 11 (contined).**

Staff has requested a scope of services and a fee quote from our top-ranked consultant in the southern portion of the IWW. Staff requested quotes for both a traditional hydrographic survey, as well as the utilization of a more detailed multi-beam survey. The original agenda item was also tabled at the previous Board meeting until the following (November) Board meeting.

As previously requested by the Board at the October meeting, the surveyor has also provided an optional scope of work and fee quote for a sediment thickness study from the Brevard County line south through Hobe Sound in Martin County, roughly the same distance (60 nautical miles) as the north reach sediment study.

Morgan & Ecklund provided fee quotes to the District for both types of hydrographic survey work, as well as an optional sediment thickness study. Due to the additional detail and level of information provided, staff is recommending that the Board approve the multi-beam survey and the sediment thickness study. The proposals have been reviewed by the Distirct Engineer and all fees appear reasonable and are within the cost estimate for this work.

(Please see back up pages 44 - 51)

RECOMMEND:      1) Approval of a scope of work and fee quote from Morgan & Ecklund, Inc. in the amount of \$289,640.00 for a multi-beam survey of the Intracoastal Waterway South.

                         2) Approval of the optional fee quote of \$34,800.00 for a concurrent sediment thickness study.

---

**Item 12.**      **Review of the Florida Fish & Wildlife Conservation Commission (FWC) Pilot Anchoring Ordinance Program and Survey Results.**

In 2009, the Florida Legislature established Florida Statute 327.4105 to direct the FWCC to coordinate with the Florida Department of Environmental Protection (FDEP) to establish a pilot program for the anchoring and mooring of non-live aboard vessels.

The program has reached an evaluation point in its existence, whereby it could be sunset, utilized to establish a model ordinance for all Florida communities, or it could continue for an additional 2 to 4 years to gather more information and data for further evaluation. In consultation with our Commissioner who is the point of contact for this issue, staff recommends we send a letter from our Chair to the FWC Executive Director Nick Wiley supporting the continuation of this program.

(Please see back up pages 51A - 115 )

RECOMMEND:      Approval of a letter from the Chair to the FWC Executive Director supporting the continuation of the Pilot Anchoring Ordinance Program.

**Item 13.      Finance and Budget Committee Report.**

The District's Finance and Budget Committee met prior to the Board meeting and will provide their recommendations concerning items on their agenda.

(Please see Finance and Budget Committee Agenda Package)

RECOMMEND:      Approval of the recommendations of the District's Finance and Budget Committee.

---

**Item 14.      Washington Report.**

The District's Washington DC government relations firm has submitted a status report on their activities on the District's federal issues.

(Please see back up pages 116 - 117)

---

**Item 15.      Additional Staff Comments and Additional Agenda Items.**

---

**Item 16.      Additional Commissioners Comments.**

---

**Item 17.      Adjournment.**

If a person decides to appeal any decision made by the board, agency, or commission with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.



**US Army Corps  
of Engineers**®  
Jacksonville District

**IWW STATUS UPDATE  
FIND Board of Commissioners Meeting  
November 16, 2013**

---



**WORK ACTIVITIES IN FY 14:**

1. IWW: Sawpit (Nassau County)
2. IWW: Indian River Reach 1 (Indian River County)
3. IWW: Bakers Haulover / Jupiter (O&M Supplemental project)
4. New IWW Inspection Tour timeline



**US Army Corps  
of Engineers®**  
Jacksonville District

## IWW STATUS UPDATE FIND Board of Commissioners Meeting November 16, 2013



AIWW = Atlantic Intracoastal Waterway Norfolk to St. Johns  
IWW = Intracoastal Waterway Jacksonville to Miami (12' and 10' projects)  
DMMA = Dredge Material Management Area

### 1. WORK ACTIVITY: AIWW Sawpit Reach 3(Nassau County)

CONTRACT AMOUNT: \$4,288,670.00

**DESCRIPTION OF WORK:** The AIWW Sawpit Reach 3 project consists of maintenance dredging of approximately 591,000 cubic yards (cy) of material from the AIWW channel and settling basins in Cuts 24-26A, 27, 27A, 27C; and adjoining advance maintenance areas in the waters of Sawpit Creek, the Amelia River, and Nassau Sound. The majority of the excavated material, 578,000 cy, will be placed in the Amelia Island State Park beach disposal site. The pumping distance between dredging areas and beach placement ranges from 4.0 miles to 1.5 miles. The material from Cut-27, totaling 13,000 cy is not beach compatible and will be placed upland in DMMA DU-2. DMMA DU-2 lies adjacent to Cut-26A and Cut-27.

#### SCHEDULE:

|                                       |   |
|---------------------------------------|---|
| Submit WQC permit application to DEP: | 29 June 2011A                                       |
| Pre Application Meeting               | 2 Aug 2011A   |
| Date we expect DEP permit:            | 20 July 2012A                                       |
| Contract Advertisement Initiated:     | 8 March 2013A                                       |
| Bid Opening:                          | 8 April 2013A                                       |
| Contract Award:                       | 10 May 2013A  |
| NTP Issued:                           | 7 June 2013A  |
| Preconstruction Conference:           | 19 June 2013A                                       |
| Mobilization Complete:                | 14 July 2013A                                       |
| Begin Dredging:                       | 15 July 2013A                                       |
| Dredging Complete:                    | 7 Nov 2013 <i>*current required completion date</i> |

**FIND WORK ORDER:** Work order for dredging of AIWW Sawpit Reach 3 was approved by the FIND Board in December 2012.

**NAME OF CONTRACTOR:** Contract was awarded to Cottrell Contracting Corporation on 10 May 2013 in the amount of \$4,288,670.00.

**STATUS:** This effort is being funded 100% with FIND funding. The Contractor is 14 days behind schedule with a required contract completion date of 7 Nov 2013. Dredging is ongoing. 500,000 CYs of material has been placed on the beach within Amelia Island State Park. DMMA DU-2 disposal operations are scheduled to commence within the next 10-14 days for the 3,000 cy of non beach quality material located in Cut-27.





**US Army Corps  
of Engineers**®  
Jacksonville District

**IWW STATUS UPDATE  
FIND Board of Commissioners Meeting  
November 16, 2013**




---

**2. WORK ACTIVITY: IWW Indian River Reach 1 (Indian River County)**

**CONTRACT AMOUNT: TBD**

**DESCRIPTION OF WORK:** Development of plans and specifications for the IWW Indian River Reach 1. Material from this reach is non beach quality and will be placed upland in the newly constructed DMMA IR-2. Preliminary estimates for shoaling quantities include 100,000 cy of material within Reach 1.

**SCHEDULE (Tentative):**

|  |               |
|--|---------------|
| Submit Exemption Letters to FDEP:  | 15 Nov 2013   |
| Complete Plans & Specification (including all reviews and certifications): | 28 April 2014 |
| Contract Advertisement Initiated:  | 6 May 2014    |
| Bid Opening:   | 4 June 2014   |
| Contract Award:  | 2 July 2014   |
| NTP Issued:  | 31 July 2014  |
| Mobilization Complete:   | 28 Aug 2014   |
| Begin Dredging:  | 29 Aug 2014   |
| Dredging Complete:   | 25 Nov 2014   |

**FIND WORK ORDER:** Work order for developing plans and specifications for Indian River Reach 1 was approved at the May 2013 FIND Board Meeting. Wire transfer of funds was completed 25 June 2013. A separate work order will be developed and presented to the FIND Board prior to initiating dredging.

**NAME OF CONTRACTOR: TBD**

**STATUS:** Work is underway to send an exemption letter to FDEP regarding the presense of seagrass within the pipeline route. A meeting was held on site and FDEP staff agreed that there is minimal impact and that it should be an exempted action. In addition, the dredging is also exempt since the material will be placed upland into DMMA IR-2. By 15 November 2013 both exemption letters will be forwarded to FDEP. The next order of business will be development of detailed plans and specifications for the dredging. The current schedule shows dredging starting in August 2014.



**US Army Corps  
of Engineers** ®  
Jacksonville District

## IWW STATUS UPDATE FIND Board of Commissioners Meeting November 16, 2013



### 3. WORK ACTIVITY: IWW Bakers Haulover / Jupiter – O&M Supplemental Project

**DESCRIPTION OF WORK:** Based on shoaling incurred within these two reaches with the passage of Hurricane Sandy in the Fall of 2012, Emergency Supplemental funding was received by the Corps to proceed with O&M dredging for these two reaches. Approximately 50,000 cy of material will be removed from within the Bakers Haulover reach of the IWW and 125,000 cy of material will be removed from within the Jupiter reach of the IWW. All material is beach quality. There is approximately 3,000 cy of material that is advanced maintenance within cut 4.

#### SCHEDULE:

|                                   |               |
|-----------------------------------|---------------|
| Contract Advertisement Initiated: | 15 Aug 2013A  |
| Bid Opening:                      | 5 Sept 2013   |
| Contract Award:                   | 19 Sept 2013A |
| NTP Issued:                       | 4 Dec 2013    |
| Preconstruction Conference:       | 4 Dec 2013    |
| Mobilization Complete:            | 21 Dec 2013   |
| Begin Dredging:                   | 22 Dec 2013   |
| Dredging Complete:                | 17 Apr 2014   |

**FIND WORK ORDER:** N/A: 100% of the plans and specifications and dredging contract is being funded with Hurricane Sandy Supplemental funding.

**NAME OF CONTRACTOR:** Contract was awarded to Southwind Construction Corporation on 19 Sept 2013 in the amount of \$2,601,206.58.

**STATUS:** Contract was awarded on 19 Sept 2013. FWS provided a letter to the Corps for the Hurricane Sandy emergency projects that changed the dates that work could begin on beaches on the east coast of Florida. The Jupiter reach of this project was impacted in that work on the beach cannot begin until 22 Dec, pushed back from 1 Nov. The order of work is the Jupiter reach first then the contractor will move south to the Bakers Haulover reach of the IWW. The preconstruction conference has been scheduled for 4 Dec 2013. It is anticipated that the NTP will occur on the same day, with the contractor beginning mobilization immediately following. It is anticipated that dredging will be complete by the end of March 2014.



**US Army Corps  
of Engineers**®  
Jacksonville District

**IWW STATUS UPDATE  
FIND Board of Commissioners Meeting  
November 16, 2013**



---

**4. IWW: WORK ACTIVITY: Miscellaneous**

**a. New IWW Inspection Tour timeline**

**Issue:** Deputy for Project Management is not available during the December timeframe.  
Limited availability during the holidays.  
Project Manager may be out of the country 10 days in January.  
February Congressional visits.  
Re-establish our Spring Inspection Tour.  
Corps PM will coordinate with FIND Assistant Executive Director on dates.



## MARTIN COUNTY PROJECT STATUS UPDATE

November 2013

---

### **Dredged Material Management Plan.**

#### **Intracoastal Waterway Project**

Phase I of the Dredged Material Management Plan for the 21 miles of Intracoastal Waterway in Martin County was completed in 1993. Phase II of the DMMP was also completed in 1993 and all major land acquisition was completed in 2001. Please see the attached maps.

The 50-year dredging projection for the IWW is 1.4 million cyds. and the storage projection is 2.7 million cyds. Maintenance Dredging in Reach II in the Crossroads area is 85% of the dredging volume and occurs approximately every 3 years, including this year.

#### **Okeechobee Waterway Project**

The District is also the local sponsor for navigation of the 97 miles of Okeechobee Waterway in Martin County. Phase I of the Dredged Material Management Plan for the Okeechobee Waterway from the Crossroads to the St. Lucie Lock was completed in 1998 and from the St. Lucie Lock to the western Martin County line was completed in 2007. Phase II of the DMMP from the Crossroads to the St. Lucie Lock was completed in 2001 and the Phase II Plan, from the Lock to the Western County Line, was completed in 2009. Please see the attached maps.

The 50-year dredging projection for the OWW is 1.5 million cu/yds. and the storage projection is 3 million cyds.

Acquisition of 4 Dredged Material Management Areas to serve the section of the OWW from the Crossroads to the St. Lucie Lock was completed in 2006. Acquisition of 2 sites to serve the section of the OWW from the St. Lucie Lock to the western Martin County line is ongoing; LT-4A is purchased and appraisals have been completed for LT-13. (Please see attached maps).

---

#### **Dredged Material Management Area Development**

To date, 1 of the 7 upland Dredged Material Management Areas in the county has been fully constructed. Sites MSA 524B and MSA 504 were cleared in 2010. Site O-7 has been permitted for construction and a final design was completed by Taylor Engineering. Development of the site in 2013 will likely be undertaken with the assistance of the USACE. A letter requesting a Contributed Funds Agreement (CFA) was sent to the Jacksonville District Colonel on October 1, 2013.

**FIND**





## MARTIN COUNTY PROJECT STATUS UPDATE

November 2013

---

The other sites in Martin County are in various phases of pre-construction environmental permitting, engineering, or design. The offloading of M-5 by Lucas Marine in association with the Ft. Pierce Waterfront Protection Project has been completed. Approximately 110,000 cu/yds of material was offloaded at no expense to the District to assist with the construction of barrier islands offshore of the Fort Pierce Marina. Some minimal damage to the existing gabion mats at M-5 that occurred during the offloading was repaired by the contractor. A full replacement of these mats will be forthcoming in the next few years.

---

### **Waterway Dredging**

Dredging of a portion of Routes 1 & 2 of the Okeechobee Waterway within the Lake was recently completed, removing some small but critical shoals totaling about 6,700 cu/yds. Dredging of the Crossroads Area of the ICW and OWW was completed in 2010 and was again recently completed in the summer of 2013. Reach IV of the OWW will be dredged in 2014 following the construction of DMMA 0-7.

---

### **Waterways Economic Study**

The Martin County Waterways Economic Study was completed in 2000 and updated in 2011. The update found that since the recession the economic output of waterway related businesses in the county has decreased by \$443.1 million, employment decrease by 2,601 jobs, and \$18.8 million in waterway related tax revenue was lost. The current economic output of waterway related businesses is \$639.9 million, with 3,750 jobs, wages of \$156.5 million and \$28 million in tax revenues. Property values were determined to be increased by \$588 by the presence of the ICW channel. The study shows that these economic benefits would be reduced by over half if maintenance dredging of the waterways in the county ceased. See attached study excerpt and business location map.

---

### **Waterways Assistance Program**

Since 1986, the District has provided \$8.2 million in Waterways Assistance Program funding to 69 projects in the County having a total constructed value of \$54.6 million. The County, the County Sheriff's Office, the City of Stuart and the Town of Jupiter Island have participated in the program. (Please see attached listing).

**FIND**



## MARTIN COUNTY PROJECT STATUS UPDATE

November 2013

---

Notable projects funded include: Manatee Pocket Dredging, Sandsprit Park, Twin Rivers Park, the Stuart Riverwalk, the Southpoint Anchorage, MC-2 Bird Island Restoration, and the South County Boat Ramp.

---

### **Cooperative Assistance Program**

The District's Cooperative Assistance Program has providing funding assistance for 26 state and regional agency projects with elements in Martin County: the Indian River Lagoon Spoil Island Management Program; Florida Clean Marina Program; Florida Clean Vessel Act Program; Florida Marine Patrol Officer Funding; Manatee Pocket Dredging and Jonathan Dickinson Park Boardwalk and Canoe Launch Improvements. The District's funding assistance for the Martin County portion of these projects was approximately \$4 million.

---

### **Interlocal Agreement Program**

The District's Interlocal Agreement Program has provided funding assistance to 4 projects in Martin County. These include Clean Marina and Clean Vessel Act projects as well as environmental improvements at Peck's Lake Park. The District's funding assistance for these projects was approximately \$175,000 and the projects had a constructed value of \$918,000.

---

### **Waterway Clean Up Program**

The District has partnered with both Keep Martin Beautiful and the Marine Industries Association of the Treasure Coast for several years to assist them with their programs to remove trash and debris from Martin County's waterways. The District provides up to \$10,000 per year for this program.

---

### **Public Information Program**

The District currently prints and distributes the following brochures with specific information about Martin County Waterways: the Economic Impact of Martin County Waterways; Spoil Island of the Indian River Lagoon; Boating Safety and Manatee Protection Zones; ICW Channel Conditions; and the ICW Moveable Bridge Guide.

---

**FIND**



## MARTIN COUNTY PROJECT STATUS UPDATE

November 2013

---

### **Small Scale Derelict Vessel Removal Program**

Martin County has participated in this program with the removal of a vessel.

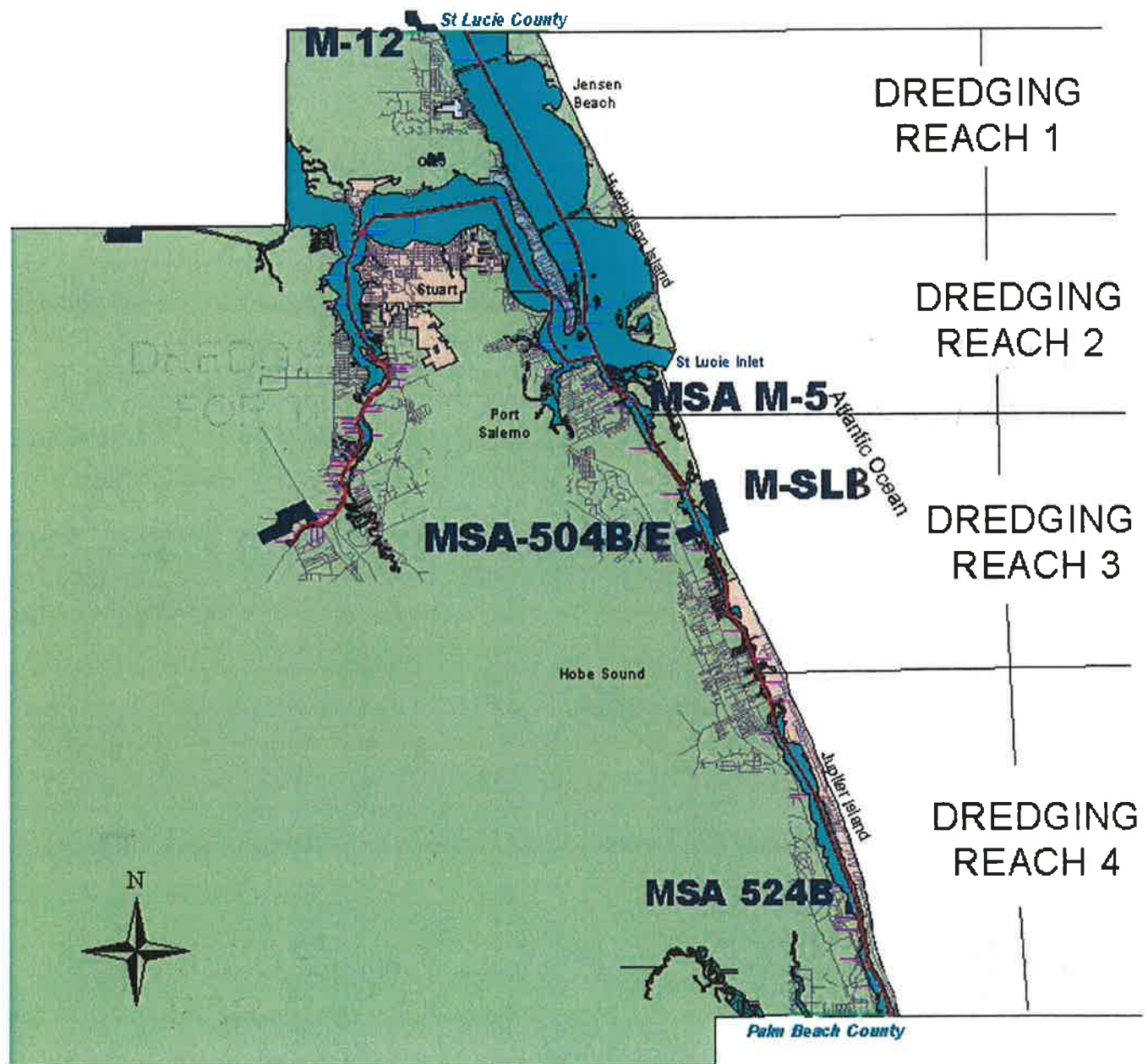
---

### **Small Scale Spoil Island Enhancement and Restoration Program**

No projects have been funded yet in Martin County, although restoration to MC-2 (Bird Island) was completed through the WAP program.

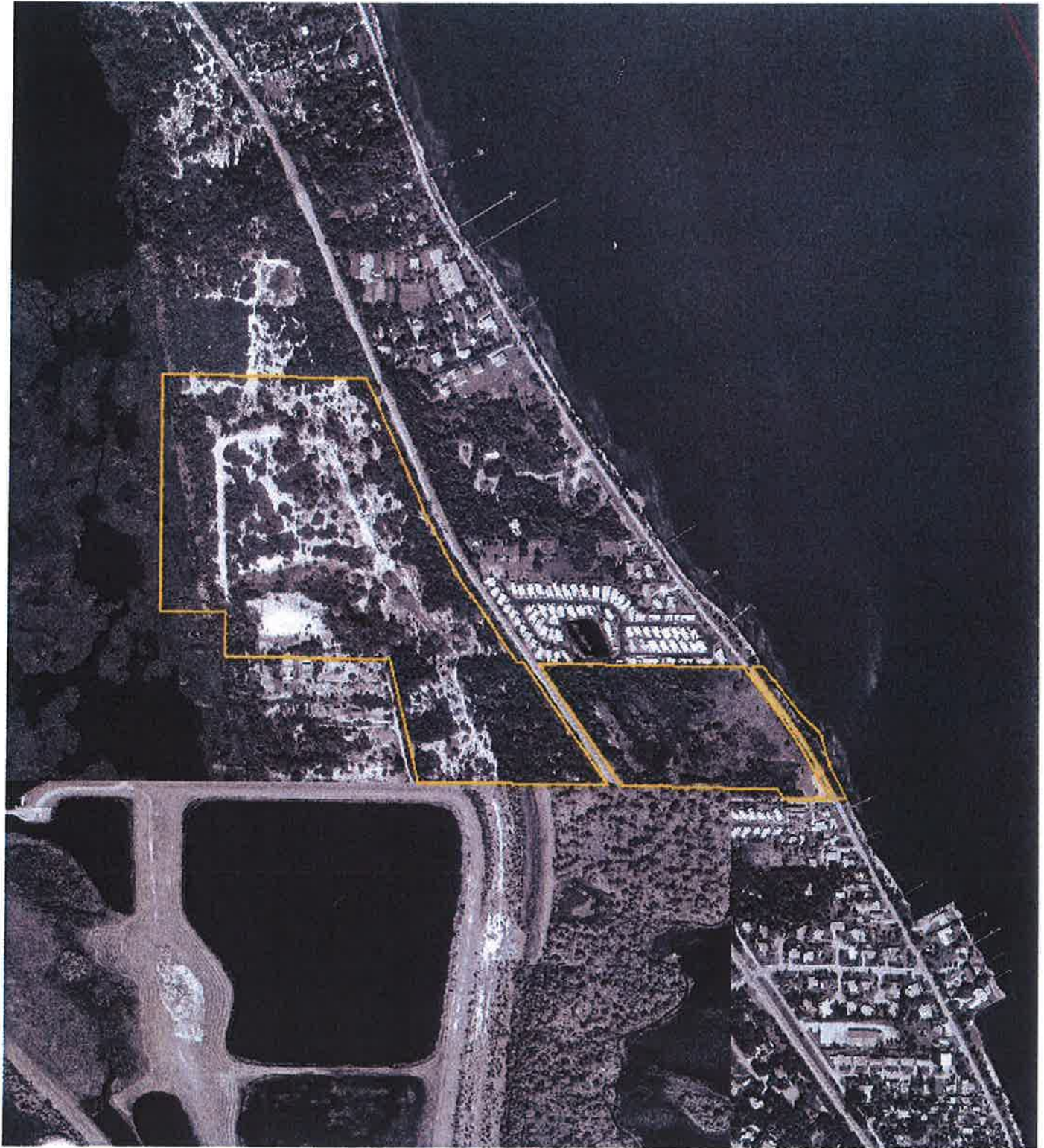
**FIND**





# DREDGED MATERIAL MANAGEMENT PLAN FOR THE INTRACOASTAL WATERWAY IN MARTIN COUNTY





# DMMA M-12



-  FIND Easement
-  FIND Owned
-  Channel
-  ICW Right-of-Way







Google earth

12 ft eye alt 3932 ft

© 2013 Google

Imagery Date: 4/23/2012 27°15'54.07"N 80°14'17.77"W elev

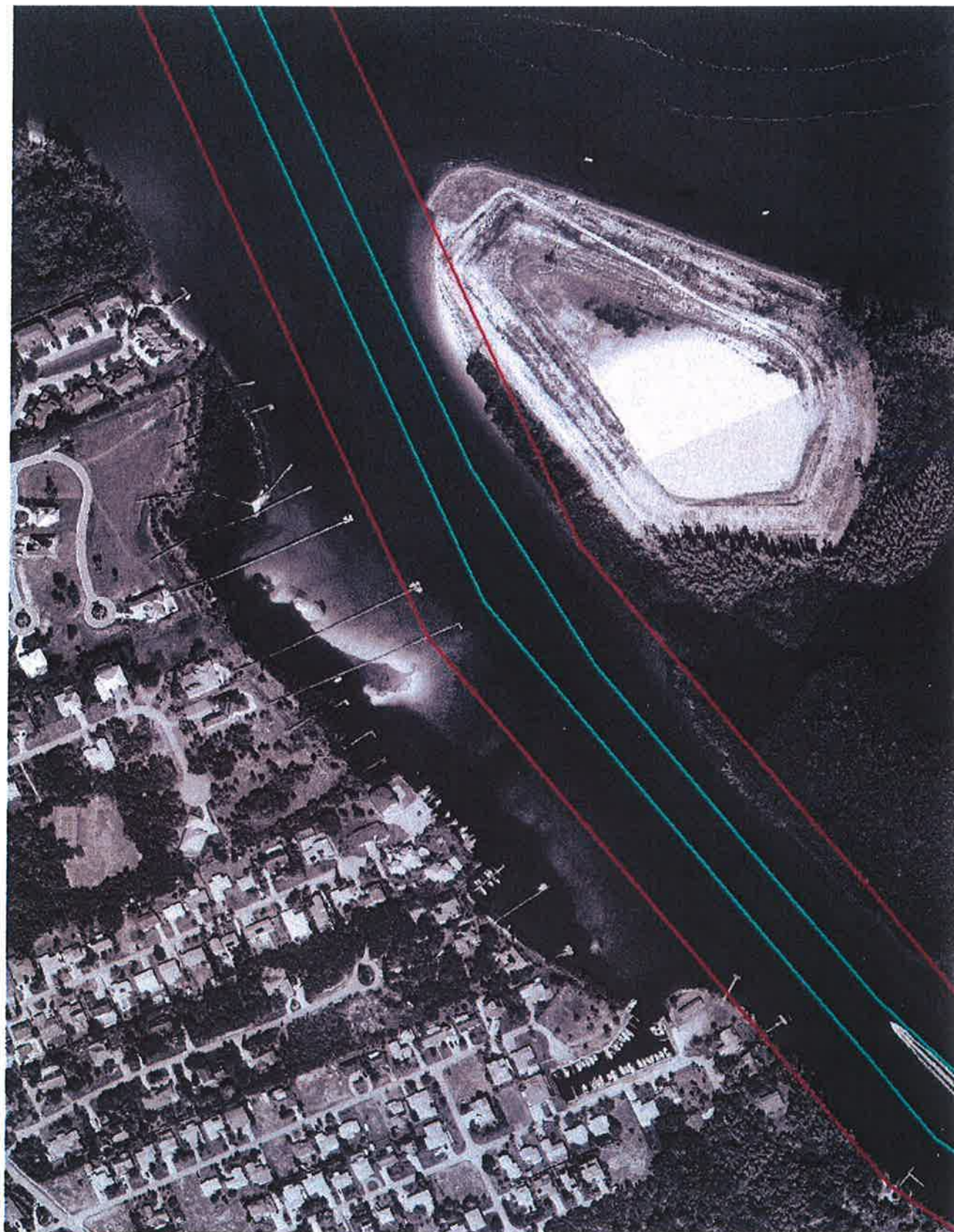
861 ft

1995





# DMMA M-5







0

Google earth

© 2013 Google

Imagery Date: 4/23/2012 27°09'44.92" N 80°10'23.35" W elev 0 ft eye alt 2648 ft

613 ft




1995





# M-SLB






 FIND Owned  
 Channel  
 ICW Right-of-Way





# SITE MSA 504B/E



 FIND Owned  
 Channel  
 ICW Right-of-Way







27°06'37.72" N 80°08'46.14" W elev 1 ft

1995

Imagery Date 4/23/2012

1293 ft

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr

SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

SE Gomez Ave

SE Little Harbor Dr





SE Dixie Hwy

SE Skylark Ave

SE Golfhouse Rd

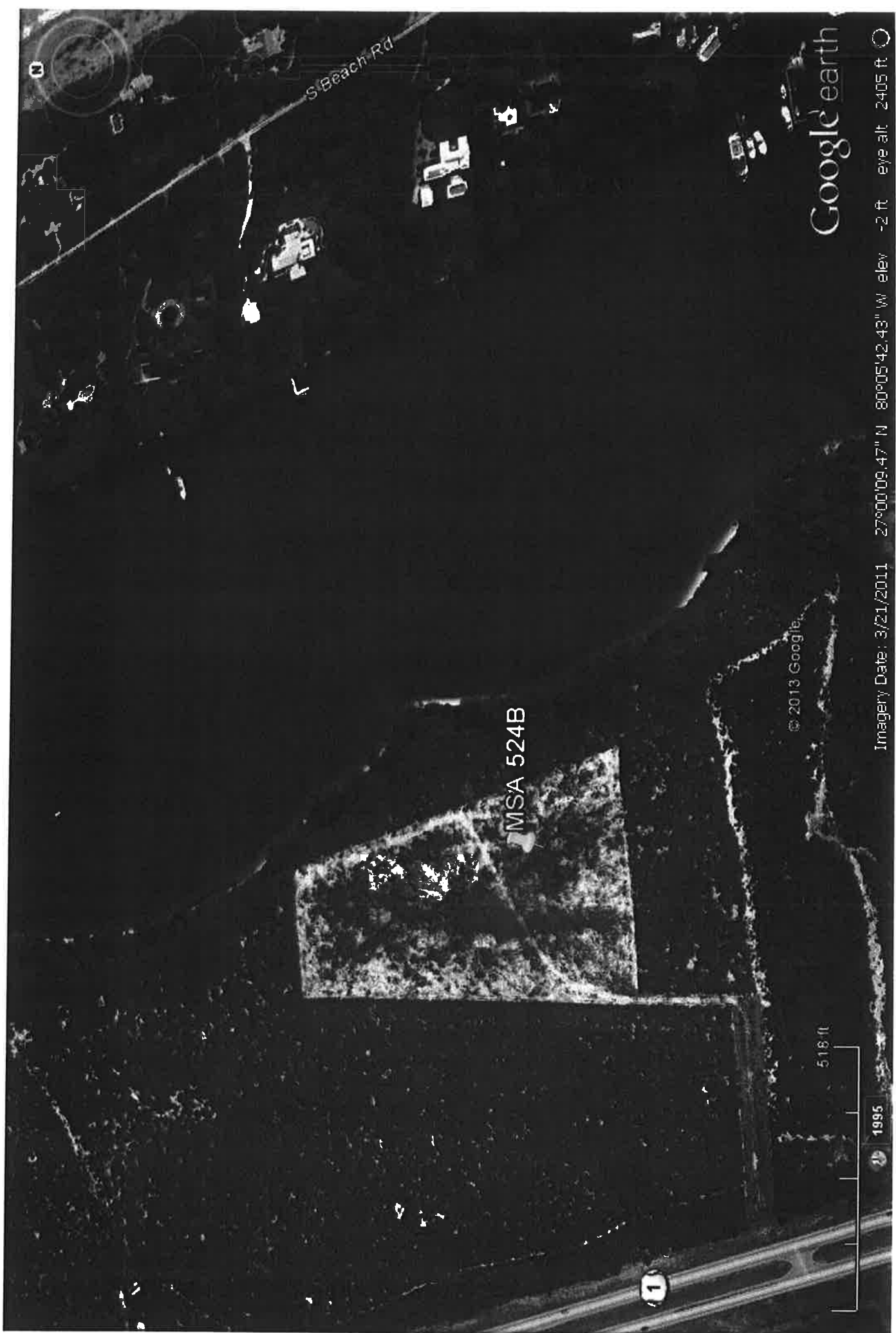
# MSA-524B



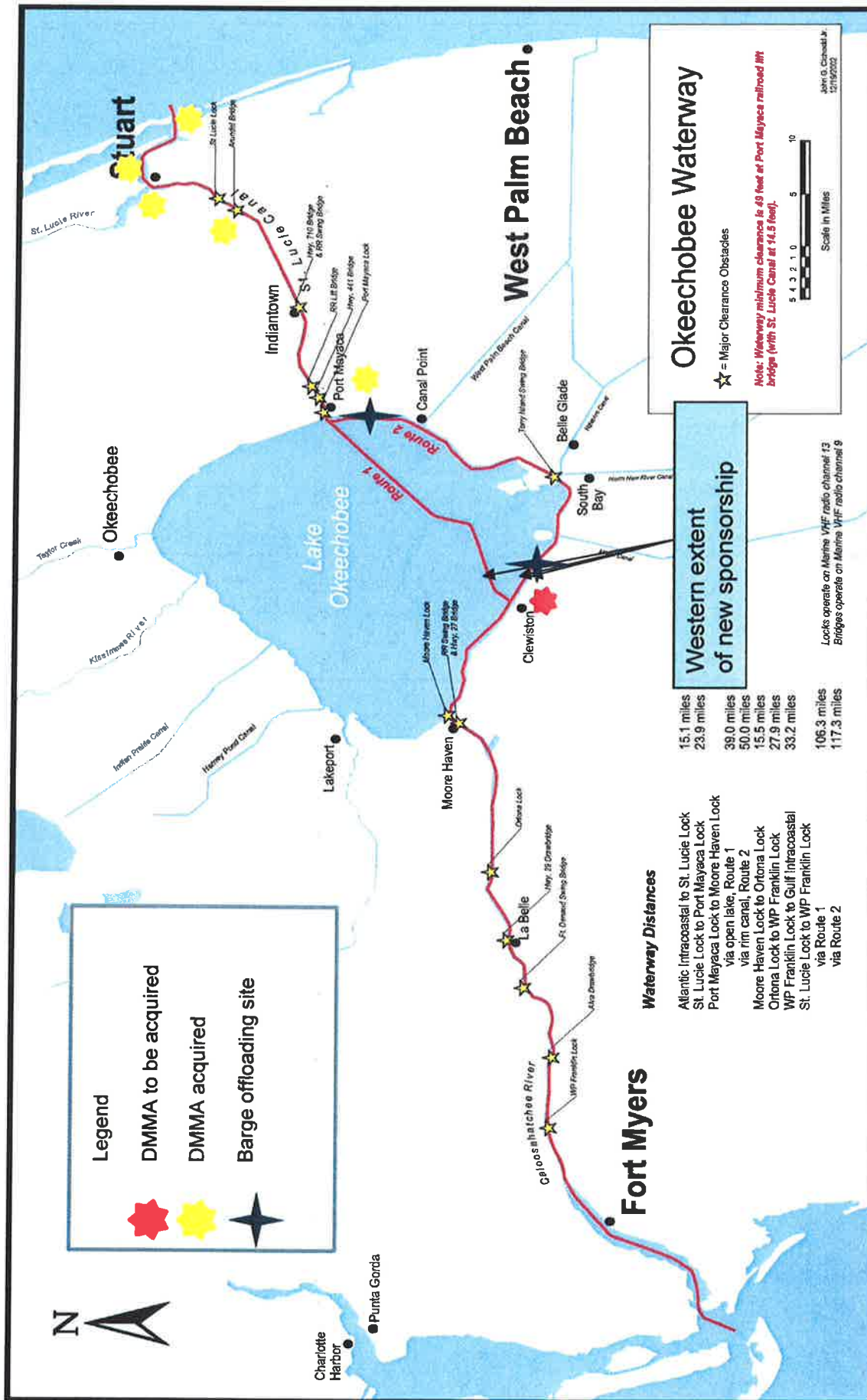
-  Pipeline Easement
-  FIND Owned
-  Channel
-  ICW Right-of-Way



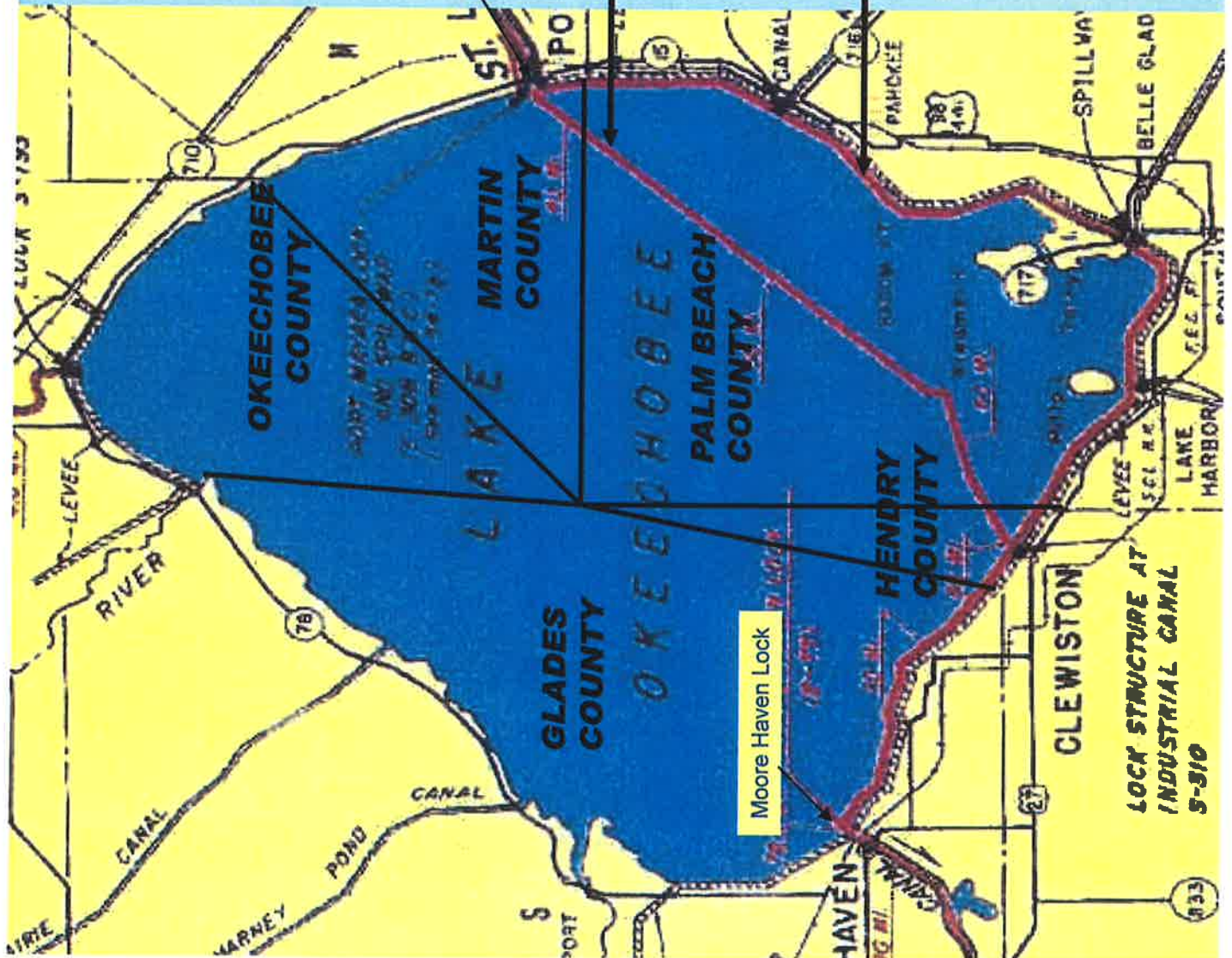




Imagery Date: 3/21/2011 27°00'09.47" N 80°05'42.43" W elev -2 ft eye alt 2405 ft



# OKEECHOBEE WATERWAY ROUTES & DEPTHS



Port Mayaca Lock

**OWW Route 1**  
Primary route  
8' deep



**OWW Route 2**  
Rim Canal  
6' deep to intersection  
with Route 1

NOTE: OWW depths  
Based upon a lake level  
of 12.56'



## SITE O-7



 FIND Owned  
 Okeechobee Waterway







## DMMA O-7 CONSTRUCTION AND OWW REACH IV DREDGING

### STATUS UPDATE

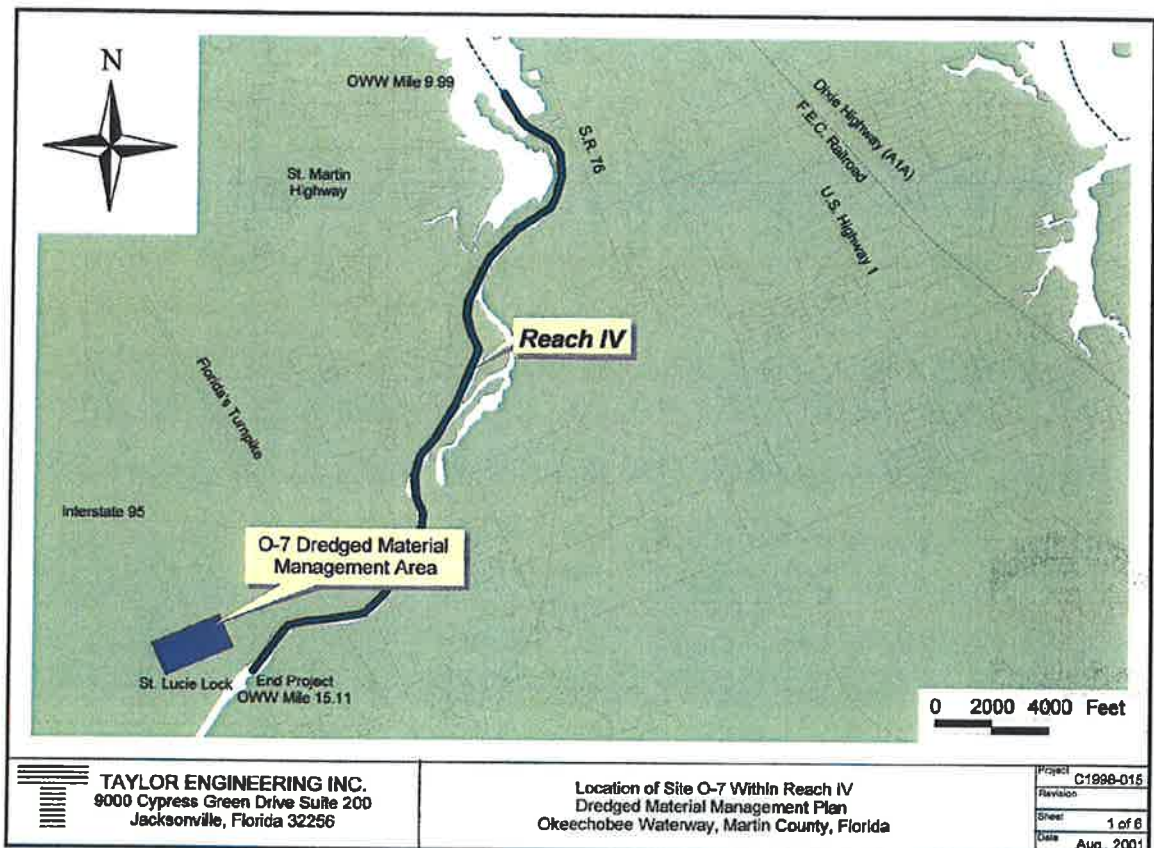
**November 2013**

**DESCRIPTION OF WORK:** Work includes construction of Dredged Material Management Area O-7 and maintenance dredging of shoals in Reach IV of the Okeechobee Waterway from just north of the Palm City Bridge to the St. Lucie Lock.

**PRELIMINARY SCHEDULE:**

|                           |   |
|---------------------------|---|
| DMMA O-7 Plans and Specs: | Complete – to be transferred to the USACE |
| Bid O-7 Construction:     | 2014                                      |
| O-7 Bid Opening:          | TBD                                       |
| O-7 Construction:         | 9 month construction period               |
| Dredging Initiated:       | Following O-7 construction                |

**STATUS:** Regulatory approvals pending.









# ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS



## Purpose

To update economic benefits in Martin County of marine-related activities on the District Waterways, as previously estimated in *An Economic Analysis of the District's Waterways in Martin County*, June 2001, and to provide the general public and Federal, State, and local officials with a clear understanding of the importance of maintaining the waterways.

## Scenarios Evaluated

1. Current Existing Conditions
2. Cessation of Waterways Maintenance
3. Increase in Waterways Maintenance
4. Estimated impact of the 2007-2009 U.S. economic recession



## ECONOMIC IMPACTS

### Current Existing Impacts

- \$639.9 million in business volume
- \$156.5 million in personal income
- 3,750 jobs
- \$28.0 million in tax revenue

### Impacts of Cessation of Waterways Maintenance

- Decrease of \$354.6 million in business volume
- Decrease of \$80.1 million in personal income
- Decrease of 2,014 jobs
- Decrease of \$15.5 million in tax revenue

### Impacts of an Increase in Waterways Maintenance

- Increase of \$160.0 million in business volume
- Increase of \$26.8 million in personal income
- Increase of 664 jobs
- Increase of \$5.2 million in tax revenue

### Impact of the 2007-2009 U.S. Economic Recession

- Decrease of \$443.1 million in business volume
- Decrease of \$108.2 million in personal income
- Decrease of 2,601 jobs
- Decrease of \$18.8 million in tax revenue

## Economic Benefits as of April 2011

MARTIN COUNTY



# ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS

## MARTIN COUNTY

### The Intracoastal Waterway

The Atlantic Intracoastal Waterway (AICW) is a 1,391-mile channel between Trenton, New Jersey, and Miami, Florida. The Waterway along Florida's eastern seaboard is 406 miles long and follows coastal rivers and lagoons past numerous tourism-oriented communities. The channel is authorized to a depth of 12 feet from Nassau County to Fort Pierce, and a 10 foot depth south through Miami-Dade County. Boating activities on the waterways contribute to the existence of numerous marine-related businesses such as marinas and boatyards and have stimulated development of residential properties on the Waterways.

### The Navigation District

The Florida Inland Navigation District, created in 1927, is the local sponsor for the AICW in Florida. In cooperation with the Jacksonville District of the U.S. Army Corps of Engineers, the Navigation District is responsible for maintenance of the AICW in Florida. To maintain navigation, the waterways need to be periodically dredged due to shoaling from currents, upland soil erosion, and the movement of offshore sands through the ocean inlets. Maintenance dredging is projected to cost approximately \$12 to \$16 million annually during the next 50 years, of which 50 percent of the costs are expected to be borne by property owners within the Navigation District's jurisdiction.

The Navigation District also partners with other governments to provide waterway access and improvement facilities for our mutual constituents. These projects include public boat ramps, marinas, side channels, parks, fishing piers, boardwalks, navigation aids, derelict vessel removal, shoreline stabilization, and waterway cleanups.

### Source of Data Used in This Analysis

The economic benefits of the Waterways were estimated in June 2001 in *An Economic Analysis of the District's Waterways in Martin County*.

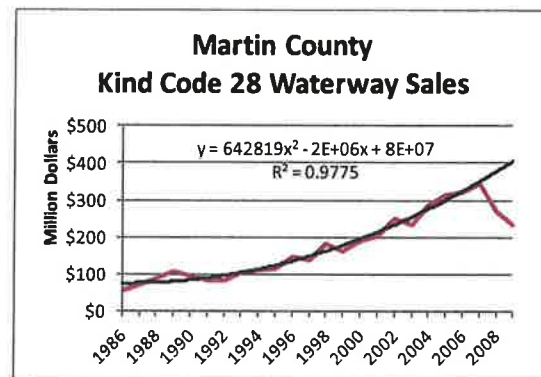
### Updating of Previously Estimated Benefits

The benefits presented in this analysis were estimated by updating the direct marine-business

impacts in the original analysis to current values using the change in gross sales reported by boat dealers to the Florida Department of Revenue (FDOR). The updated direct impacts were used in conjunction with an IMPLAN input/output model to estimate total economic benefits.

### Estimating the Impact of the Recession

The impact of the recession was estimated by determining the trend in gross sales of boat dealers over the 20-year period prior to the onset of the recession. This trend was used to estimate the theoretical gross sales if sales had continued to increase at the rates previously experienced. The red line in the figure below illustrates reported actual gross sales of boat dealers and the black line illustrates the trend of those sales. From 2007 to 2009 gross boat dealer sales in Martin County decreased by 32 percent; if the recession had not occurred, it is estimated that gross sales from 2007 to 2009 would have increased by 16 percent.



### Annual Boater Spending on Gas, Food, and Drinks at Non-Marine-Related Establishments

- Current existing conditions: \$24.9 million
- Cessation of maintenance: \$12.7 million
- Increased maintenance: \$24.9 million
- Assuming no recession: \$25.6 million

### Vessel Draft Restrictions Assumed for Each Scenario

- Current existing conditions: 6.5 feet MLW
- Cessation of maintenance: 3 feet MLW
- Increased maintenance: 10 feet MLW
- Assuming no recession: 6.5 feet MLW

**FLORIDA INLAND NAVIGATION DISTRICT - WATERWAYS ASSISTANCE PROGRAM PROJECTS IN MARTIN COUNTY 1986-2013**

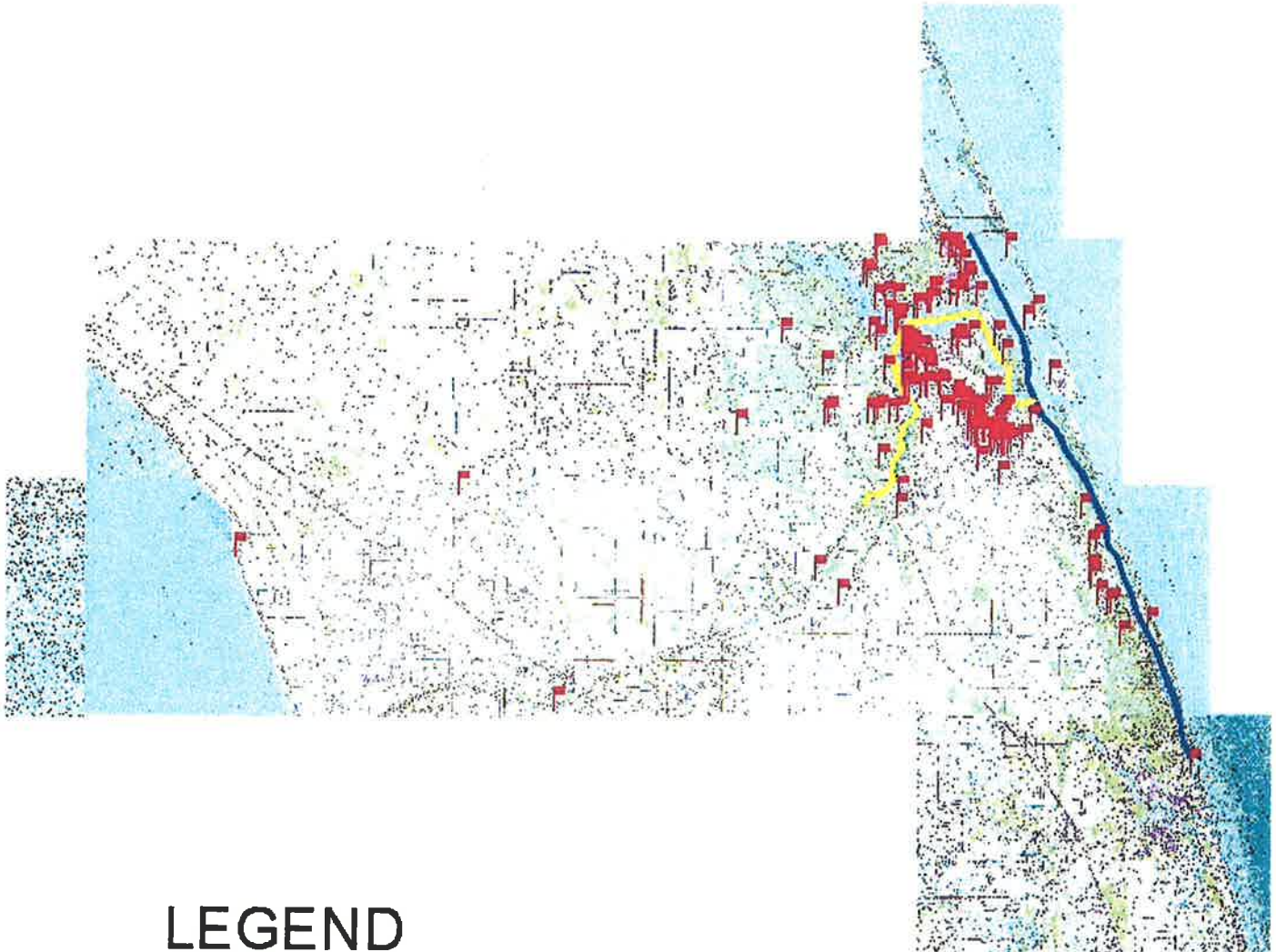
| <b>ProjectName</b>                                      | <b>ProjectNumber</b> | <b>ProjectSponsor</b>          | <b>TotalCost</b> | <b>GrantAmount</b> |
|---|----------------------|--------------------------------|------------------|--------------------|
| Twin Rivers Park Shoreline Stabilization                | MA-00-38             | Martin County                  | \$299,000        | \$626,000          |
| Cross Roads Regional Artificial Reef - Phase I          | MA-01-40             | Martin County                  | \$15,000         | \$30,000           |
| Indian Riverside Park - Day Use Boat Slip Construction  | MA-01-41             | Martin County                  | \$87,500         | \$175,000          |
| Sandsprit Park Addition                                 | MA-02-44             | Martin County                  | \$200,000        | \$492,000          |
| Cross Roads Regional River Reefs Artificial Reef        | MA-03-47             | Martin County                  | \$25,000         | \$50,000           |
| Law Enforcement Marine Unit                             | MA-03-48             | Martin County Sheriff's Office | \$33,050         | \$66,100           |
| Twin Rivers Park Shoreline Stabilization - Phase I      | MA-03-49             | Martin County                  | \$65,000         | \$130,000          |
| Twin Rivers Park Shoreline Stabilization - Phase II     | MA-04-51             | Martin County                  | \$240,575        | \$850,000          |
| Twin Rivers Park Shoreline Stabilization - Phase III    | MA-05-53             | Martin County                  | \$300,000        | \$650,000          |
| Jensen Beach Boat Ramp Park                             | MA-06-54             | Martin County                  | \$325,000        | \$1,500,000        |
| Manatee Pocket Channel Dredging - Phase I               | MA-06-55             | Martin County                  | \$165,000        | \$220,000          |
| Law Enforcement Marine Unit                             | MA-07-56             | Martin County                  | \$30,000         | \$85,000           |
| Leighton Park   | MA-08-57             | Martin County                  | \$95,000         | \$210,000          |
| St. Lucie Inlet North Jetty Improvements                | MA-08-58             | Martin County                  | \$300,000        | \$5,400,000        |
| Mc-2 ( Bird Island) Shoreline Stabilization - Phase I   | MA-09-60             | Martin County                  | \$75,000         | \$150,000          |
| St. Lucie Inlet Maintenance                             | MA-09-61             | Martin County                  | \$339,035        | \$6,339,035        |
| Manatee Pocket Dredging ( Grant Cancelled)              | MA-1                 | Martin County                  | \$70,000         | \$360,000          |
| Manatee Pocket Channel Dredging                         | MA-10-63             | Martin County                  | \$200,000        | \$13,300,000       |
| Manatee Pocket Commercial Dock Replacement - Phase I    | MA-10-64             | Martin County                  | \$12,000         | \$24,000           |
| Mc-2 Bird Island Shoreline Stabilization - Phase II     | MA-11-65             | Martin County                  | \$150,000        | \$500,000          |
| Jensen Beach Managed Mooring Field                      | MA-12-67             | Martin County                  | \$439,695        | \$879,390          |
| St. Lucie Inlet Maintenance                             | MA-13-69             | Martin County                  | \$780,000        | \$386,361          |
| Willoughby Creek Dredging                               | MA-2                 | Martin County                  | \$10,000         | \$498,288          |
| Jensen Beach Causeway Fishing Pier                      | MA-3                 | Martin County                  | \$38,000         | \$76,050           |
| Pecks Lake Park - Phase I                               | MA-4                 | Martin County                  | \$62,000         | \$425,700          |
| Pecks Lake Park - Phase II                              | MA-87-5              | Martin County                  | \$75,000         | \$258,500          |
| Willoughby Creek Dredging - Phase II                    | MA-87-6              | Martin County                  | \$23,500         | \$465,000          |
| Pendarvis Cove Park Improvements                        | MA-88-10             | Martin County                  | \$90,000         | \$227,700          |
| Jensen Causeway Relief Channel Dredging                 | MA-89-11             | Martin County                  | \$5,000          | \$36,300           |
| Sandsprit Park - Phase I                                | MA-91-14             | Martin County                  | \$76,500         | \$1,000,000        |
| Pecks Lake Park - Phase III ( Withdrawn)                | MA-91-15             | Martin County                  | \$135,000        | \$867,000          |
| Sandsprit Park - Phase II                               | MA-92-17             | Martin County                  | \$92,000         | \$1,000,000        |
| Timer Powers Park                                       | MA-92-18             | Martin County                  | \$217,500        | \$435,000          |
| Secondary Channel Marking For Nav. Aid & Res Protection | MA-93-19             | MC Board Of Commissioners      | \$12,555         | \$22,535           |
| Pendarvis Cove Park                                     | MA-93-20             | MC Board Of Commissioners      | \$34,000         | \$68,000           |
| South County Boat Ramp - Phase I                        | MA-93-21             | MC Board Of Commissioners      | \$30,000         | \$60,000           |

FLORIDA INLAND NAVIGATION DISTRICT - WATERWAYS ASSISTANCE PROGRAM PROJECTS IN MARTIN COUNTY 1986-2013

|   |             |                                |             |              |
|---|-------------|--------------------------------|-------------|--------------|
| South County Boat Ramp Park - Phase I (Cancelled)     | MA-94-22    | MC Board Of Commissioners      | \$220,000   | \$660,033    |
| St. Lucie Inlet Interior Shoal Dredging               | MA-95-23    | Martin County                  | \$75,000    | \$160,000    |
| Maritime Hammock Educational Boardwalk                | MA-95-24    | County & Florida Oceanographic | \$107,000   | \$150,547    |
| Law Enforcement Patrol And Rescue Vessel              | MA-95-25    | Martin County Sheriff's Office | \$34,000    | \$54,919     |
| Jensen Beach Causeway Park                            | MA-95-26    | Martin County                  | \$77,000    | \$197,900    |
| Leighton Park Improvements - Phase I                  | MA-96-27    | MC Board Of Commissioners      | \$198,575   | \$479,150    |
| Peck Lake Park Environmental Education Signage        | MA-96-28    | MC Board Of Commissioners      | \$33,000    | \$33,000     |
| Cove Road Boat Dock (Project Expired)                 | MA-97-31    | Martin County                  | \$37,000    | \$74,000     |
| St. Lucie Inlet Flood Shoal Dredging                  | MA-97-32    | MC Board Of Commissioners      | \$250,000   | \$4,897,500  |
| Mangrove Marsh Educ. Nature Trail & Observation Tower | MA-97-33    | MC Board Of Commissioners      | \$90,450    | \$118,600    |
| St. Lucie Inlet Mgmt. Plan - Flood Shoal Dredging     | MA-98-34    | MC Board Of Commissioners      | \$79,336    | \$4,897,500  |
| South County Boat Ramp Park - Phase I                 | MA-98-35    | MC Board Of Commissioners      | \$220,000   | \$940,000    |
| Safe Waterways  | MA-JI-01-39 | Town Of Jupiter Island         | \$12,500    | \$25,000     |
| Jupiter Island Marine Patrol Waterway Safety          | MA-JI-13-70 | Town Of Jupiter Island         | \$60,000    | \$30,000     |
| Floating Courtesy Dock At City Hall Pier              | MA-ST-01-42 | City Of Stuart                 | \$137,500   | \$275,000    |
| Rehabilitation Of Anchorage T-dock                    | MA-ST-01-43 | City Of Stuart                 | \$12,500    | \$50,000     |
| Southpoint Anchorage & Marina Seawall Restoration     | MA-ST-02-45 | City Of Stuart                 | \$75,000    | \$150,000    |
| South Municipal Marina - Phase I (Expired)            | MA-ST-02-46 | City Of Stuart                 | \$27,000    | \$55,000     |
| Day Markers For Channel At Southpoint (Withdrawn)     | MA-ST-03-50 | City Of Stuart                 | \$6,000     | \$12,000     |
| Floating Courtesy Dock At City Hall Pier - Phase I    | MA-ST-04-52 | City Of Stuart                 | \$150,000   | \$300,000    |
| Courtesy Dock Impr.&riverwalk Enhancements-Phase III  | MA-ST-08-59 | City Of Stuart                 | \$107,973   | \$295,945    |
| Shepard Park Boat Ramp Reconstruction & Dredging      | MA-ST-09-62 | City Of Stuart                 | \$80,000    | \$160,000    |
| Floating Docks Fire Protection                        | MA-ST-11-66 | City Of Stuart                 | \$25,000    | \$50,000     |
| Riverwalk & Pier                                      | MA-ST-87-7  | City Of Stuart                 | \$50,000    | \$191,400    |
| Shepard Park Fishwalk                                 | MA-ST-87-8  | City Of Stuart                 | \$20,000    | \$40,000     |
| Stuart Riverwalk                                      | MA-ST-88-9  | City Of Stuart                 | \$50,000    | \$329,400    |
| Riverwalk   | MA-ST-89-12 | City Of Stuart                 | \$200,000   | \$917,270    |
| Stuart Riverwalk                                      | MA-ST-90-13 | City Of Stuart                 | \$175,000   | \$350,000    |
| River Boardwalk - Phase VI                            | MA-ST-91-16 | City Of Stuart                 | \$67,500    | \$150,000    |
| Courtesy Dock At City Hall Pier (Withdrawn)           | MA-ST-96-29 | City Of Stuart                 | \$11,000    | \$22,000     |
| Construction Of Stuart Anchorage - Phase I            | MA-ST-98-36 | City Of Stuart                 | \$25,000    | \$50,000     |
| Stuart Southpoint Anchorage - Phase II                | MA-ST-99-37 | City Of Stuart                 | \$312,750   | \$625,500    |
| City of Stuart Riverwalk Expansion Ph I               | MA-ST-13-68 | City Of Stuart                 | \$80,000    | \$40,000     |
|   |             |                                | \$8,252,994 | \$54,644,623 |

## LOCATION MAP

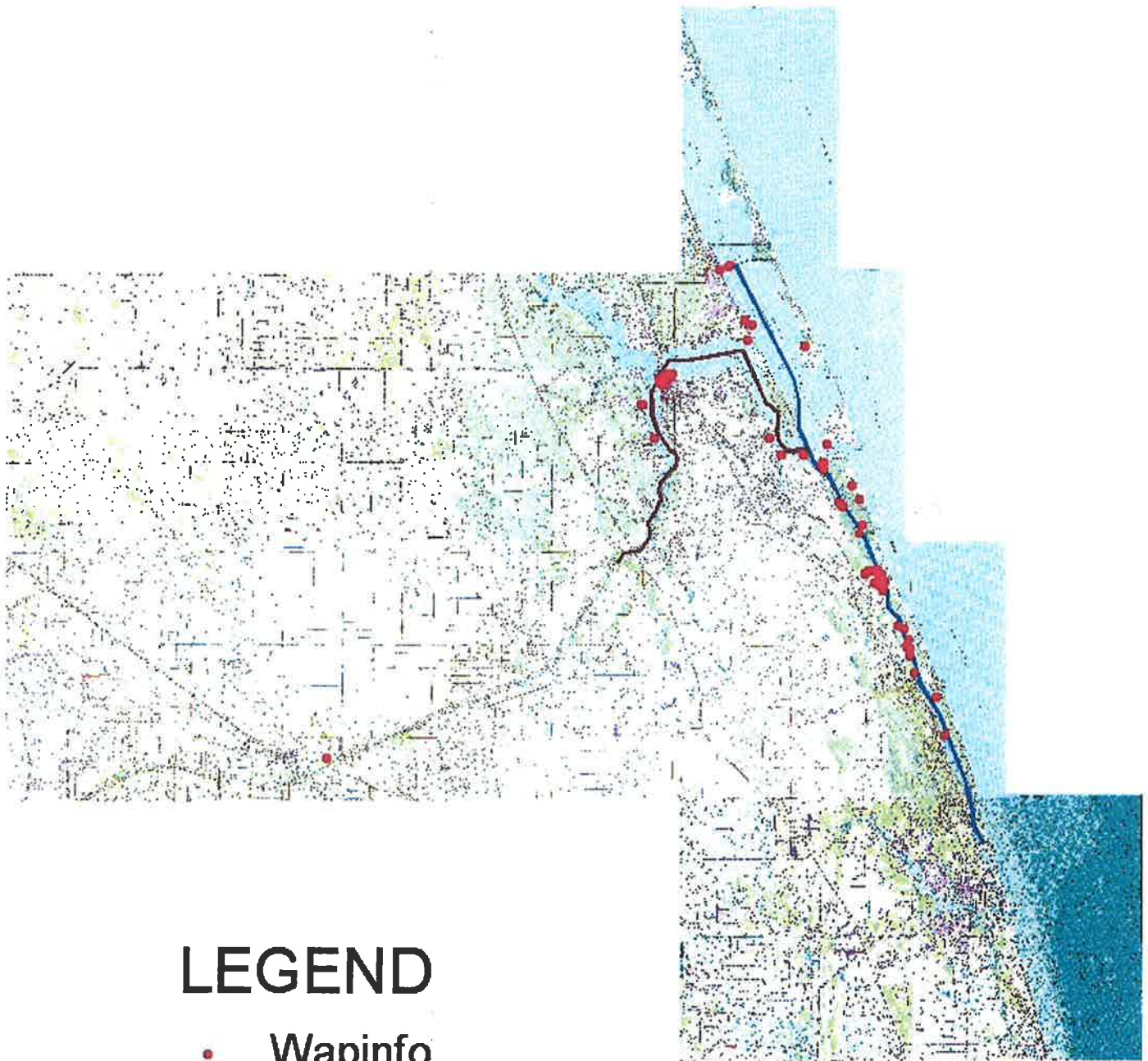
### MARTIN COUNTY WATERWAY RELATED BUSINESSES



## LEGEND





**LOCATION MAP****WATERWAYS ASSISTANCE PROGRAM PROJECTS  
IN MARTIN COUNTY****LEGEND**

- Wapinfo
- Channelok
- Channel







**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 8 of 8**

## ATTACHMENT A

# FLORIDA INLAND NAVIGATION DISTRICT

## REQUEST FOR COST SUMMARY PROPOSALS FOR A CENTERLINE SURVEY OF THE NORTH INTRACOASTAL WATERWAY

### Cost Summary Proposal

Cost Summary Proposals are to be made on a total cost basis and shall include all costs necessary to complete the survey as outlined in the project scope. Proposals shall not be qualified, incomplete or include extra costs to be determined later or on a unit basis. The District reserves the right to reject the cost proposal.

**NAME OF FIRM: SEA DIVERSIFIED, INC.**

|   |                      |
|---|----------------------|
| <b>TOTAL COST FOR A NORMAL HYDROGRAPHIC SURVEY</b>      | <b>\$ 284,250.00</b> |
| <b>TOTAL COST FOR A SHALLOW WATER MULTI-BEAM SURVEY</b> | <b>\$ 345,100.00</b> |
| <b>OPTIONAL SEDIMENT THICKNESS STUDY</b>                | <b>\$ 32,140.00</b>  |

A handwritten signature in blue ink, appearing to read "W. Sadler".

\_\_\_\_\_  
Signature

William T. Sadler Jr., P.E., P.S.M., President  
Name, Title



**SEA Diversified, Inc.**  
 21 NW 2<sup>nd</sup> Street  
 Delray Beach, Florida 33444  
 Phone: 561-243-4920  
 Facsimile: 561-243-4957

1900 South Harbor City Blvd, Suite 110  
 Melbourne, Florida 32901  
 Phone: 321-984-7268  
 Facsimile: 321-984-7270

November 4, 2013  
 (original October 4, 2013)

Mr. Mark Crosley  
 Executive Director  
 Florida Inland Navigation District  
 1314 Marcinski Road  
 Jupiter, Florida 33477

**Re: Proposal for Professional Services - Revised  
 Hydrographic Survey of the Intracoastal Waterway – North Region  
 Optional: Sediment Thickness Study – North Region  
 Brevard / Indian County Line North to Haulover Bridge  
 Sea Diversified P.N. 13-2078**

Dear Mr. Crosley:

In accordance with your request, and pursuant to the latest Scope of Work (SOW) received from the District on September 26, 2013, Sea Diversified, Inc. (SDI) is pleased to submit the following revised proposal for professional services. The scope of work shall include a hydrographic survey of the federal navigation channel, inclusive of wideners and impoundment basins, with limits specifically described as follows:

- AIWW from the southern end of the Fernandina Harbor project southward to the Jacksonville Harbor Project (approximately 22 channel miles)
- ICWW from the Jacksonville Harbor Project southward to the southern end of Cut BV-37, approximately the Brevard County line (approximately 192 miles).

The scope of survey shall be in accordance with the aforementioned latest SOW provided by the District. It is understood that this survey will be used for District planning purposes only and the Corps will have no review or approval role in the project. The survey shall encompass the following tasks:

**Task One: Existing Data Compilation and Project Planning**  
**Task Two: Control Verification and Tide Staff / Gauge Establishment**  
**Task Three: Hydrographic Survey Operations**  
**Task Four: Bridge and Navigation Aid Location**  
**Task Five: Data and Final Chart Preparation**

The hydrographic survey shall be conducted using either a shallow water multi-beam sounder or single-beam sounder at the direction of the District. Whichever sounding system is used, data will be collected along the centerline of the channel including two (2) offset lines parallel to the channel centerline. Channel offset lines shall be forty-two (42) feet where the authorized channel width is 125 feet and fifty (50) feet where the authorized channel width is 150 feet. Data shall be collected along transects spaced at fifty (50) feet within channel wideners and impoundment basins.

**Optional Scope of Work:**

This revised proposal shall include an optional sediment thickness study within the ICWW channel pertaining to a proposed Indian River Lagoon muck removal program. The objective of the investigation is to map and quantify the horizontal and vertical extent of reported sediment / muck deposits along the center



**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 2 of 8**

of the navigation channel. This proposal shall specifically cover the portion of the lagoon extending from the Brevard / Indian River County line north to the Haulover Bridge encompassing approximately 65 miles of waterway.

A detailed description of the scope of survey is as follows:

**General:**

Sea Diversified, Inc. shall provide supervision, field / office support staff and equipment to perform the scope of work described, herewith. All work shall be conducted to the highest level of industry standards and under the responsible charge of a Professional Surveyor and Mapper registered in the State of Florida. All work shall meet or exceed the Minimal Technical Standards set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17, Florida Administrative Code, pursuant to Section 472.027, Florida Statutes. Additionally, the survey shall be conducted in accordance with the criteria established by the U.S. Army Corps of Engineers (USCOE) for hydrographic surveys performed in support of general engineering studies as outlined in USCOE Manual EM 1110-2-1003.

**Horizontal and Vertical Data:**

Horizontal Data: Feet, relative to the Florida State Plane Coordinate System, East Zone,  
 North American Datum (NAD), 83/90  
 Vertical Datum: Feet, relative to Mean Lower Low Water (MLLW), 1983-2001 Epoch.

**Task One: Existing Data Compilation and Project Planning**

SDI will compile existing and relevant data as required for planning and subsequent implementation of survey operations. SDI will coordinate with the District, District Engineers and the U.S. Army Corps of Engineers (USCOE), as necessary to obtain current and reliable data or other pertinent information. This will include, but not necessarily be limited to the following:

- AIWW / ICWW centerline control data including channel widener control
- Impoundment basin control data
- Published horizontal and vertical control data
- Aerial maps or other map files depicting major geographic features suitable for use in survey planning and final chart preparation
- Historical bathymetric data files for quality control

Using the most recent AIWW / ICWW centerline control and other channel information, SDI will prepare electronic base files for pre-planning data collection activities. The electronic base files will include the control centerline with stationing and P.I. coordinate information, channel limits and control depth information, dredging reach limits, wideners and location of impoundment basins to be surveyed as part of the project, as well as any other information pertinent to the data collection efforts. For uncontrolled sections of the waterway, SDI will use centerline control provided by the District.

The electronic base files will also depict the location of published horizontal and vertical control points at specific ranges along the length of the project for establishment of RTK GPS base stations and calibration tide staffs / gauges. The availability and suitability of the horizontal and vertical control points to support the survey efforts will be addressed as part of Task Two. The electronic base files will be prepared or translated to a format compatible for download to the vessel navigation system. Horizontal and vertical control calibration points will also be uploaded to the vessel navigation system to verify horizontal and vertical



**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 3 of 8**

positional accuracy. Electronic base files will be prepared in a format (.dwg or .dgn) required for final charting efforts.

**Task Two: Control Verification and Tide Staff / Gauge Establishment**

Based on the research and compilation of control from Task One, SDI will conduct a reconnaissance survey to locate and determine the suitability of control necessary to support the bathymetric survey operations. Horizontal control will be required at strategic locations along the route of the survey for establishment of RTK-GPS base stations and tide staff / gauge monitoring stations. RTK-GPS base stations and tide staffs / gauges will be set and checked relative to a minimum of two published control points. Temporary bench marks (TBM's) will be set as required. Control verification or establishment procedures will be in accordance with USCOE specifications. All found and used control points will be recorded in field books and subsequently tabulated on final charts. Tabulated control information will include horizontal location (northing, easting in feet, NAD 83/90), elevation (feet, NAVD) and monument description. All vertical control used for the establishment of tide stations will have a typed description including recovery notes as necessary for use as part of subsequent surveys.

**Task Three: Hydrographic Survey Operations**

The bathymetric survey shall be conducted using an automated hydrographic system comprised of a survey launch equipped with a marine grade, shallow water multi-beam swath system (120 degree minimum swath coverage) with integrated motion sensor, RTK GPS, and computer-based navigation / data collection system. Alternatively, and as an option to the District, SDI shall use a single-beam sounder. Bathymetric data shall be collected along the centerline of the channel including two (2) offset lines parallel to the channel centerline. Channel offset lines shall be forty-two (42) feet where the authorized channel width is 125 feet and fifty (50) feet where the authorized channel width is 150 feet. Data shall be collected along transects spaced at fifty (50) feet within channel widenings and impoundment basins. It is noted that full bottom coverage will not be acquired using the shallow water system proposed for the project.

Soundings will be collected in both raw and adjusted (tide corrected) formats using RTK GPS derived water surface elevations. Data shall be collected in feet relative to NAVD 88 datum and subsequently post-processed to MLLW using the latest version of VDatum (Vertical Datum Transformation) provided by NOAA, National Ocean Service (NOS). SDI shall verify the VDatum corrections against local published tide stations with established NAVD to MLLW corrections for the 1983-2001 tide epoch.

Redundant tide measurements will be recorded as a quality control check on the RTK GPS derived water surface elevations. Tide staffs or gauges shall be employed as required to record continuous tidal data either side of the survey launch during the course of bathymetric data collection. Tidal data shall be collected and recorded at intervals 10-minute intervals or less

Equipment calibration procedures shall follow manufacturer recommendations. Survey accuracy, Quality Control (QC) procedures and Quality Assurance (QA) tests shall be in accordance with USCOE criteria for hydrographic surveys performed in support of general engineering studies as outlined in USCOE Manual EM 1110-2-1003.

**Task Four: Bridge and Navigation Aid Location**

During the course of bathymetric survey activities, or as a separate survey event at the discretion of SDI, navigation aids (within 100+/- feet of the edge of channel) and centerlines of each bridge crossing shall be located. Horizontal location (northing, easting relative to NAD 83/90) shall be obtained via RTK GPS or





**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 4 of 8**

DGPS using the U.S. Coast Guard Beacon System. The point of location of each bridge shall be at the approximate centerline of each span where crossing the approximate centerline of the navigation channel. The point of location of each navigation aid shall be as close to the approximate centerline as practical with multiple pile navigation aids described as required relative to the point of location. Floating navigation aids shall be located where existing at the time of survey noting the time and apparent direction of tide. Along with location, each navigation aid shall be described in field books by type and condition for subsequent tabulation on charts. Photographs of each navigation aid to document type and condition along with photographs of each bridge crossing as viewed from each side shall be obtained at the discretion of SDI.

**Task Five: Data Reduction and Final Chart Preparation**

Upon completion of field survey activities, data will be edited and reduced to the project datum and formatted as required for bathymetric modeling and chart preparation. Translation of vertical data from NAVD 88 to MLLW is described under Task Three. Final data, reduced to an x,y,z, ASCII format will be imported to a CADD environment and subsequently translated to Digital Terrain Model (DTM) for preparing survey plan charts, volume reports or other deliverables associated with the project. In accordance with the SOW, final deliverables shall include the following:

Survey Plan Charts (Electronic Media Format, (2) copies on CD ROM or DVD)

Plan charts shall be divided by County and shall depict channel centerline and boundaries, wideners, impoundment basins and elevations relative to MLLW datum. Charts for each County shall specifically encompass the following:

- Cover sheet with sheet index
- Tabulation of horizontal / vertical control used for the survey
- Tabulation of navigation aids (location and description)
- Tabulation of bridge locations (location and name)
- Tabulation of shoal volumes in cubic yards to design by Cut with both +1 and +2 foot over-dredge volumes
- Vertical datum diagram (MLLW relative to NAVD 88 and NGVD 29)
- Notes pertinent to the survey

Plan data shall be superimposed on georeferenced aerial imagery or other map reference (base map) with approximate County lines and major geographic features annotated (major roads, shoreline features and other). Elevation points shall be depicted at intervals of twenty-five (25) feet across the channel, wideners and impoundment basins and fifty (50) feet along the channel, wideners and impoundment basins. Charts shall depict channel centerline and channel limits including wideners and impoundment basins; channel cut, stationing and P.I. descriptions including other pertinent control information. Charts shall additionally depict RTK GPS base station and tide staff / gauge locations (with NAVD – MLLW corrections), navigation aids and bridges with appropriate naming or cross references to the tabulation and a graphic depiction of areas shoaler than design (shading or cross hatching). Final charts shall be certified to the Florida Inland Navigation District by a Professional Surveyor and Mapper licensed in the State of Florida.

Survey Plan Charts shall be provided in AutoCAD (.dwg, Release 12 or later), MicroStation (.dgn, version V8.1) and Adobe (.pdf) formats

Data Files (Two (2) copies each of the following on DVD (separated by County):



**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 5 of 8**

- Final data in ASCII (x,y,z) format relative to MLLW datum separated to intervals of twenty-five (25) feet across the channel, wideners and impoundment basin and fifty (50) feet along the channel, wideners and impoundment basins.
- Final set of all data in ASCII (x,y,z) format relative to MLLW datum – Final processed.
- All raw data files in ASCII (x,y,z) format.
- Recorded positions of navigation aids and bridge centerlines in ASCII format.
- Digital Terrain Model (.tin) files for both existing conditions and design surfaces used for computing shoal volumes.
- Scanned copies of field notes / books, survey logs and published control data used for the survey.

**Optional Scope of Work: Sediment Thickness Study – North Region**

As an option for the District, SDI shall conduct a sediment thickness study within the ICWW channel pertaining to a proposed Indian River Lagoon muck removal program. The study shall include the mapping of reported sediment / muck deposits along the center of the navigation channel. Limits of this supplemental data collection effort shall extend from the Brevard / Indian River County line north to the Haulover Bridge encompassing approximately 65 miles of waterway. Cost for this task shall be based on conducting the survey concurrent with **Task Three, Hydrographic Survey Operations**, described above.

The scope of work pertaining to this supplemental task shall include the collection of dual-frequency sounding data along three longitudinal transects of the waterway within the limits described above. This will be followed by sediment probes to verify and/or supplement the data collected from the dual-frequency sounder. Separate charts will be prepared pertaining to this supplemental mapping effort. Details of the scope of work are as follows:

**Dual-Frequency Bathymetric Survey**

The sediment thickness study will be conducted using an Odom Echotrac MKIII dual-frequency single-beam sounder operating at simultaneous 24kHz / 200kHz. It is the intent to collect dual-frequency single-beam data simultaneously and along the same transects established for the multi-beam data collection. To minimize noise or interference between the two sounders especially at the high frequencies, transducers will be separated to the extent practical. Additionally, adjustments in frequency settings will be conducted, as necessary.

The higher frequency will typically record the highest bottom elevation of the channel with the lower frequency penetrating any fine suspended material to map the elevation of underlying denser material. If suspended materials are present and penetration is possible, this will enable the identification and quantification of such materials along the center of the channel. It is noted that the ability of the sounder to penetrate fine suspended material, typically considered “fluff”, or muck deposits, to identify a lower strata of denser / coarser material is based on the characteristics of the bottom material. The actual depth of penetration through bottom sediments to characterize between varying types of material stratifications will have inherent limitations, which may require employment of alternate systems and/or extensive groundtruthing. For this study, groundtruthing via conventional poling techniques will be used to supplement or verify the results of the dual-frequency mapping efforts. Alternate systems to map and characterize sediment stratifications will be evaluated after completion of this initial mapping effort.



**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 6 of 8**

### **Sediment Probes**

Sediment probes will be conducted at intervals of 2,000 feet along the centerline of the channel only. Total number of probes along the specified 65 miles of waterway shall be approximately 172. Probes shall be conducted using a small diameter steel or aluminum rod pushed manually with moderate force through the sediments until refusal. The thickness of the semi-fluid muck layer will be based upon the surface of the sediment layer, which shall be determined using a plate attached to the bottom of a survey rod. Initial resistance using the rod with plate will be indicative of the surface of the top layer. Sediment probes will not exceed elevation (-) 16 feet MLLW. At each probe location, SDI field personnel will note the location (X,Y, feet, SPCS), top of sediment elevation and characteristics of the sub-bottom material stratifications, as reasonably detectable using the described methodologies. Additionally, it is recommended that at each probe location a ponar grab of the surface sediments will be obtained as required to characterize the material as shell, shell mixed with sand, sand, silt mixed with sand or sand mixed with silt. Samples will be discarded after characterization. Surface material sampling and characterization is not included in the scope of work.

It is noted that SDI in coordination with the District may adjust probe spacing during the course of data collection based upon the characteristics of the material encountered. This may include probes at greater density in areas of extreme changes in muck thickness and / or probes at lower density in areas where muck thickness is found to be relatively uniform. It is also noted that probe length in excess of that described above that require longer length probe equipment or the deployment of a dive team is not included as part of this scope of work but can be addressed as part of a subsequent phase of survey.

### **Data Processing and Final Deliverables**

Upon completion of field survey activities, data will be edited and reduced to the project datum and formatted as required for chart preparation. Charts will depict plan and profile bathymetric data collected as part of Task One. Charts will also show the location of sediment probes along with a tabulation of sediment probe results. A tabulation of the sediment probes will include probe number, location, top of sediment elevation, maximum depth of penetration and description / notes pertinent to the probe.

In summary the following deliverables shall be provided:

- Charts (separate from the ICWW centerline maps) encompassing cover sheet, plan and centerline profile plots depicting top and bottom of sediment, as applicable. Charts will also include location of sediment probes with tabulation of probes information. Hardcopy (24"x36")
- MicroStation (.dgn version V8.1), AutoCAD (.dwg, Release 12 or later), digital files copied to DVD media
- X,Y,Z ASCII digital data files copied to DVD media
- Tabulation of sediment probe data, EXCEL (.xls) or Adobe (.pdf) format(s) copied to DVD media

### **Reference ATTACHMENT A for SDI's Cost Summary Proposal**

Note: Proposed fees are inclusive of all estimated expenses pertaining to fuel, lodging, meals and incidentals, boat launch and dockage fees and reproduction costs.

### **Time of Performance:**

The above described scope of work including data collection, processing and preparation of deliverables shall be completed within 180 Calendar days from Notice to Proceed.



**Proposal / Agreement for Professional Services - Revised**  
**Hydrographic Survey of the Intracoastal Waterway - North Region**  
**Optional: Sediment Thickness**  
**Sea Diversified P.N. 13-2078**  
**November 4, 2013 (Original October 4, 2013)**  
**Page 7 of 8**

Should you have questions or require additional information please do not hesitate to contact us at your convenience. We appreciate this opportunity to assist you with this project and look forward to hearing from you soon.

Sincerely,

A handwritten signature in black ink, appearing to read "W. T. Sadler, Jr.", written over a horizontal line.

William T. Sadler, Jr., P.E., P.S.M.  
President

WTS/dq

Attachment



**ATTACHMENT A**

**FLORIDA INLAND NAVIGATION DISTRICT**

**REQUEST FOR COST SUMMARY PROPOSALS**

**FOR**

**A CENTERLINE SURVEY OF THE**

**SOUTH INTRACOASTAL WATERWAY**


**Cost Summary Proposal**

Cost Summary Proposals are to be made on a total cost basis and shall include all costs necessary to complete the survey as outline in the project scope. Proposals shall not be qualified, incomplete or include extra costs to be determined later or on a unit basis. The District reserves the right to reject the cost proposal.

NAME OF FIRM: Morgan & Eklund, Inc.

TOTAL COST FOR NORMAL HYDROGRAPHIC SURVEY \$ 240,490

TOTAL COST FOR SHALLOW MULTI-BEAM SURVEY \$ 289,640

  
Signature

President  
Title

## **FLORIDA INLAND NAVIGATION DISTRICT**

### **SCOPE OF WORK**

#### **HYDROGRAPHIC SURVEY OF THE INTRACOASTAL WATERWAY - SOUTH**

---

The contractor shall conduct a reconnaissance hydrographic survey of the Intracoastal Waterway (ICWW) channel as described in this Scope of Work. Results of the survey shall be submitted to the District in electronic media formats as described in this Scope of Work. The survey shall be certified to the District by a registered land surveyor licensed in the State of Florida.

This survey will be used for planning purposes only. Although this scope references Corps of Engineers specifications and documents, the Corps has no approval or review role in this project.

#### **SURVEY AREA**

The channel areas, inclusive of any identified channel wideners and impoundment basins, to be surveyed are described as follows:

A portion of the federal navigation channel of the Jacksonville to Key West portion of the ICWW from the southern end of Cut BV-37 at approximately the Brevard County line to the southern Miami-Dade County line (approximately 186 miles).

#### **GENERAL SURVEY PARAMETERS**

The contractor will provide all personnel, equipment, transportation and materials necessary to conduct the survey. The survey shall be in compliance with the U.S. Army Corps of Engineers (USACE) "Technical Requirements for Hydrographic and Topographic Surveying" for Class 1 Hydrographic Surveys.

The survey shall consist of a shallow water multi-beam survey or regular hydrographic survey of the centerline and two (2) offset lines parallel to either side of the channel centerline at specified ranges of forty-two (42) feet where the authorized channel is one hundred and twenty-five feet in width and fifty (50) feet where the authorized channel is one hundred and fifty feet in width of the channel, wideners and impoundment basins.

#### **Task One: Existing Data Compilation and Project Planning**

The first task for this project shall be to compile existing and relevant data such as that obtained from the ICWW control data maps, recent master channel control files, and both horizontal and vertical control data throughout the entire limits of the project. Any uncontrolled section of the

waterway will use centerline control data provided by the District. Using this data, a complete and updated tabulation of horizontal and vertical control will be developed along with applicable reconnaissance notes to enable field efforts to be completed very effectively. Horizontal control will be used to conduct daily horizontal position checks during the course of the survey. This control will also be used, as required, to establish Real Time Kinematic (RTK) global positioning system base stations for the survey. Vertical control will be used to establish and verify tidal stations at locations referenced by previous survey efforts or as otherwise required to meet the criteria specified for the project.

In addition to preparing a complete tabulation of horizontal and vertical control, the channel centerline and survey limits will be pre-established and loaded into the vessel computer navigation and data collection system. The pre-established centerline and survey limits will be based on ICWW Points of Intersection (P.I.) data, channel offset data, channel widener and impoundment basin data provided on USACE surveys or other project data sheets. In addition to the channel centerline and limits, other valuable information will be input into the computer navigation system such as dredging reach limits, channel cut identification, channel azimuths, and any other information that will assist with the hydrographic survey efforts. This information will be input in either a DWG or DGN format and will subsequently be used during the final charting efforts. The resultant product of this effort will assist the vessel operator with navigation along the channel centerline and survey limits and enable the identification of NAVAIDS, bridges, and/or shoreline features.

In addition to this complete database of navigational information, horizontal and vertical control data will be pre-established as targets within the navigation system. This will enable the vessel operator to navigate directly to known control monuments for horizontal and vertical positional accuracy verification.

### **Task Two: Control Verification and Tide Staff/Gauge Establishment**

Upon completing the initial planning efforts, the next step of the hydrographic survey operations shall be to verify the location of horizontal and vertical control at predefined and strategic locations along the entire route of the survey. The objective will be to identify adequate control for RTK/GPS base stations and for daily horizontal/vertical positioning checks based on the anticipated rate of the vessel and required position checks at the beginning and end of each survey day. It shall also be an objective to locate control in close proximity to the edge of water accessible by the survey launch.

As part of this task, tide staffs and/or gauges will be set as required to ensure that adequate tidal information is collected during the course of the survey. Vertical control used to establish tidal stations shall be verified in accordance with USACE specifications.

All horizontal and vertical control data shall be recorded in field books along with other applicable information such as level run results, tide staff/gauge locations and establishment procedures. Vertical and horizontal control points established or recovered with no description or out-of-date description shall be described in the field book as specified by procedures outlined by the USACE "Technical Requirements for Surveying, Mapping, and Photogrammetric Surveys



Manual, Appendix A-2". All vertical control used for the establishment of tidal stations will have a typed description including recovery notes prepared for use during subsequent surveys.

### **Task Three: Hydrographic Survey Operations**

Upon establishing the necessary tidal stations and completion of the required reconnaissance and/or establishment of horizontal and vertical control, the hydrographic survey operations shall be initiated. The survey will be conducted simultaneously with the establishment of the tide stations maintaining adequate time between the two tasks to ensure that tide staffs/stations are set and ready for monitoring well in advance of the survey launch.

For horizontal positioning, RTK/GPS shall be used. Due to the extent of the survey, careful attention relative to proper datum transformation parameters will be maintained to ensure adequate horizontal accuracy throughout the limits of the survey. Adjustments to datum transformation parameters will be implemented as required and verified for accuracy via periodic positioning checks at control points established during Task Two of the survey. Horizontal positioning shall be relative to the Florida State Plane Coordinate System, East Zone, NAD 83. All horizontal positioning checks shall be recorded in the field books.

Sounding data shall be continuously collected over the entire survey area. Elevations shall be collected in feet relative to NAVD, 88 using RTK methods to determine tide corrections. Tide staffs shall be set as a redundant measurement and for start and end of day calibration checks for RTK tide methodologies. Data shall be post-processed to MLLW using the latest version of VDatum (Vertical Datum Transformation) provided by NOAA, National Ocean Service (NOS). It shall be the responsibility of the surveyor to verify the VDatum corrections against local published tide stations with established NAVD to MLLW corrections for the 1983-2001 tide epoch.

During the course of the survey, tides will be recorded at 10-minute intervals or less. Adequate personnel will be employed to maintain continuous tide readings with a minimum of one (1) tide staff either side of the survey launch being monitored at all times or tide gauges will be installed to provide a second independent check on RTK/GPS derived surface water elevations.

The shallow multi-beam survey will be performed using a multi-beam of at least 120 degrees swath.

### **Task Four: Bridge and Navigation Aid Location**

During the course of or prior to the hydrographic survey operations, a second survey launch, equipped with personnel and positioning / navigation equipment will be used to locate NAVAIDS and bridges. The center of the bridge opening over the channel will be used for bridge locations.

Each structure location shall be recorded in the field books along with structure description. Similar to the hydrographic survey operations, horizontal positioning checks will be performed at periodic intervals throughout this part of the survey.

### **Task Five: Data Reduction and Final Chart Preparation**

Upon completion of the field data collection activities, data will be edited, reduced, and formatted for final chart preparation. Raw digital data will be edited using Hypack Navigation Software. Electronic spikes and/or other anomalies shall be removed and/or reconciled after comparison with fathometer analog charts.

Once edited, raw data will be reduced to mean lower low (MLLW) datum. Data shall be post-processed to MLLW using the latest version of VDatum (Vertical Datum Transformation) provided by NOAA, National Ocean Service (NOS). It shall be the responsibility of the surveyor to verify the VDatum corrections against local published tide stations with established NAVD to MLLW corrections for the 1983-2001 tide epoch.

Upon developing a complete set of edited and reduced data, final deliverable items shall be prepared as follows:

1. Survey Plan Charts (Electronic Media format) – One (1) copy of plan view survey charts showing the channel centerline and boundaries, wideners, impoundment basins and elevations (referenced to MLLW) shall be provided. The plan charts shall be divided into sets by county and include a title page, index page, and survey results. Survey results shall be plotted over a basemap that depicts major roads and shoreline features at a level of detail comparable to that show in USGS 1:24,000 scale quadrangle maps or on a recent aerial photograph. Survey must also clearly and graphically identify the relationship between MLLW and the standard vertical datums NGVD 1929 and NAVD88.

Elevation points shall be plotted at 25 ft. intervals across the channel, wideners and impoundment basins and 50 ft. intervals along the channel, wideners and impoundment basins. In addition to water depths' each plan sheet shall also show county boundary lines, dredging reaches, channel cuts, all NAVAIDS and bridges, including the identifying name and/or number of each, as appropriate.

Additional information shown in the survey plan book shall include tide station/gauge location and MLLW corrections. Survey Charts shall be certified by a registered Professional Surveyor and Mapper licensed in the State of Florida. Additionally, the surveyor will calculate required dredging volume in cubic yards, by dredging reach and cut designation for the design depth, design depth + 1-ft, and design depth +2-ft increments. The cover sheet shall summarize the results of the volume calculation for each dredging reach and each cut.

Two (2) complete copies of the Survey Plan Charts on CD ROM shall be provided. Files shall be provided in AutoCAD DWG, Release 12 or later, Microstation V8.1, and in PDF format.

2. Data Files - Two (2) copies of the following digital data on CD ROM:

- (a) Bathymetric data corrected for tidal variation and referenced to MLLW at 25-foot sampling intervals across the channel, wideners and impoundment basins and at 50-foot intervals along the channel, wideners and impoundment basins. All files shall be in

ASCII.XYZ format.

- (b) All raw bathymetric and tide data files in ASCII format.
  - (c) Recorded positions of all NAVAIDS and bridges in ASCII format.
  - (d) 3D TIN lines for digital terrain model surfaces (both existing conditions and channel surfaces) used to calculate dredging volumes.
4. Field Notes - Two (2) copies of all original notes, survey logs, and descriptions of tide stations and benchmarks used for the survey.

**Time of Performance**

Contractor shall complete the above described scope of work including all field data collection, data processing and preparation of deliverables within one hundred and eighty (180) calendar days of the date of Notice to Proceed.

---





# MORGAN & EKLUND, INC.

PROFESSIONAL SURVEY CONSULTANTS

November 4, 2013

Florida Inland Navigation District  
Attn: Mr. Mark Crosley, Executive Director  
1314 Marcinski Road  
Jupiter, Florida 33477

**RE: Map location of muck along the three Channel Alignments using Dual Frequency Fathometer together with probes @ 2,000' intervals along the Centerline Alignment from the Brevard/Indian River County Line South to Jupiter Inlet (68.7 miles +/-)**

Dear Mark:

Morgan & Eklund, Inc. is pleased to provide you with the following proposal to furnish professional land and hydrographic survey services for the above referenced project. In accordance with the scope of work as provided, please find below our estimate of costs:

|           |                                      |                        |
|-----------|--------------------------------------|------------------------|
| <b>I.</b> | <b>Field Survey (180 Probes +/-)</b> | <b><u>Cost/Day</u></b> |
|           | Pontoon Boat w/Spuds.....            | \$ 300.00              |
|           | Differential GPS.....                | \$ 350.00              |
|           | Three Man Survey Crew.....           | \$ 1,350.00            |
|           | Hypack Navigation Software.....      | \$ 50.00               |
|           |                                      | <u>\$ 2,050.00/Day</u> |
|           | <b>X 10 Days = .....</b>             | <b>\$ 20,500.00</b>    |

|            |  |           |
|------------|--|-----------|
| <b>II.</b> | <b>Additional Cost for<br/>Dual Frequency Fathometer</b> |           |
|            | 15 days @ \$40/day.....                                  | \$ 600.00 |

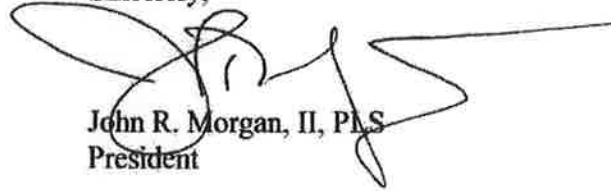
|             |  |             |
|-------------|--|-------------|
| <b>III.</b> | <b>Data Reduction/Drafting</b>                               |             |
|             | <b>A. Review Analog Charts</b>                               |             |
|             | Project Surveyor   |             |
|             | 100 hours @ \$85/hr.....                                     | \$ 8,500.00 |
|             | <b>B. Plot muck limits and Centerline muck depths (0-5')</b> |             |

|                         |                     |
|-------------------------|---------------------|
| Computer Technician     |                     |
| 80 hours @ \$65/hr..... | \$ 5,200.00         |
|                         | <u>\$ 13,700.00</u> |

**Total Cost I-II..... \$ 34,800.00**

As always, Morgan & Eklund, Inc. appreciates this opportunity to work with you and the Florida Inland Navigation District.

Sincerely,

A handwritten signature in black ink, appearing to be "John R. Morgan, II", written over the printed name and title.

John R. Morgan, II, PLS  
President

JRM:sm

**327.4105 Pilot program for regulation of mooring vessels outside of public mooring fields.**--The Fish and Wildlife Conservation Commission, in consultation with the Department of Environmental Protection, is directed to establish a pilot program to explore potential options for regulating the anchoring or mooring of non-live-aboard vessels outside the marked boundaries of public mooring fields.

(1) The goals of the pilot program are to encourage the establishment of additional public mooring fields and to develop and test policies and regulatory regimes that:

- (a) Promote the establishment and use of public mooring fields.
- (b) Promote public access to the waters of this state.
- (c) Enhance navigational safety.
- (d) Protect maritime infrastructure.
- (e) Protect the marine environment.
- (f) Deter improperly stored, abandoned, or derelict vessels.

(2) Each location selected for inclusion in the pilot program must be associated with a properly permitted mooring field. The commission, in consultation with the department, shall select all locations for the pilot program prior to July 1, 2011. Two locations shall be off the east coast of the state, two locations shall be off the west coast of the state, and one location shall be within Monroe County. The locations selected must be geographically diverse and take into consideration the various users and means of using the waters of this state.

(3) Notwithstanding the provisions of s. 327.60, a county or municipality selected for participation in the pilot program may regulate by ordinance the anchoring of vessels, other than live-aboard vessels as defined in s. 327.02, outside of a mooring field. Any ordinance enacted under the pilot program shall take effect and become enforceable only after approval by the commission. The commission shall not approve any ordinance not consistent with the goals of the pilot program.

(4) The commission shall:



- (a) Provide consultation and technical assistance to each municipality or county selected for participation in the pilot program to facilitate accomplishment of the pilot program's goals.
  - (b) Coordinate the review of any proposed ordinance with the department; the United States Coast Guard; the Florida Inland Navigation District or the West Coast Inland Navigation District, as appropriate; and associations or other organizations representing vessel owners or operators.
  - (c) Monitor and evaluate at least annually each location selected for participation in the pilot program and make such modifications as may be necessary to accomplish the pilot program's goals.
- (5) The commission shall submit a report of its findings and recommendations to the Governor, the President of the Senate, and the Speaker of the House of Representatives by January 1, 2014.
- (6) The pilot program shall expire on July 1, 2014, unless reenacted by the Legislature. All ordinances enacted under this section shall expire concurrently with the expiration of the pilot program and shall be inoperative and unenforceable thereafter.
- (7) Nothing in this section shall be construed to affect any mooring field authorized pursuant to s. 253.77, s. 327.40, or part IV of chapter 373, as applicable, or any lawful ordinance regulating the anchoring of any vessels within the marked boundaries of such mooring fields.

**History.**--s. 48, ch. 2009-86.

# **Florida Statute 327.4105**

## **Pilot Program for Regulation of Mooring Vessels Outside of Public Mooring Fields**





# Anchoring and Mooring Pilot Program

The FWC, in consultation with the DEP, is directed to establish a pilot program to explore potential options for regulating the anchoring or mooring of non-live-aboard vessels outside the boundaries of public mooring fields.

The goals of the pilot program are to encourage the establishment of additional public mooring fields and to develop and test policies and regulatory regimes that:

- (a) Promote the establishment and use of public mooring fields.
- (b) Promote public access to the waters of this state.
- (c) Enhance navigational safety.
- (d) Protect maritime infrastructure.
- (e) Protect the marine environment.
- (f) Deter improperly stored, abandoned, or derelict vessels.



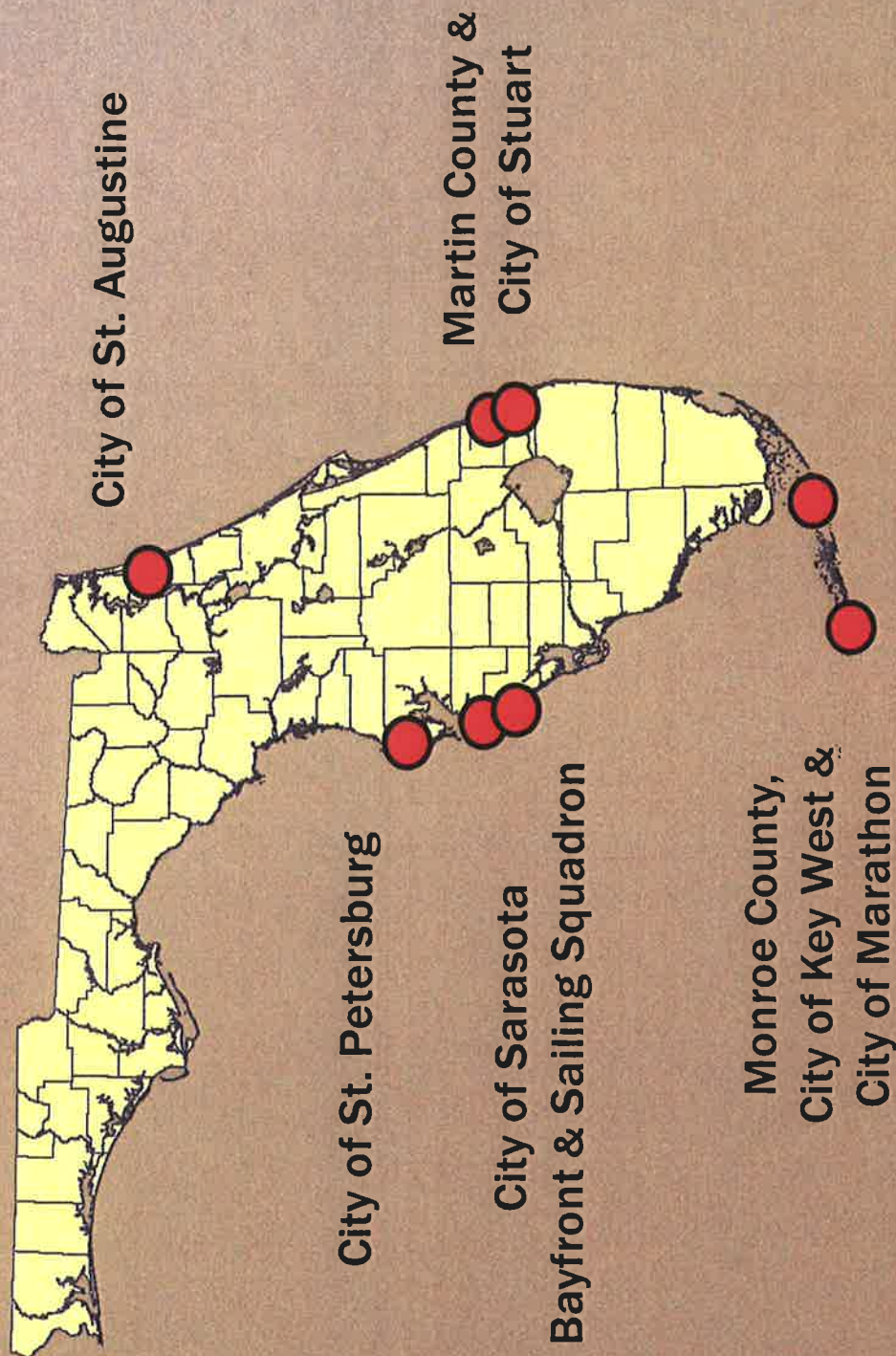


**Florida Statute 327.4105**  
**Pilot Program for**  
**Regulation of Mooring Vessels**  
**Outside of Public Mooring Fields**  
**Monthly Monitoring**  
**of Boats at Each Participant Site**  
**March 2009 through August 2013**





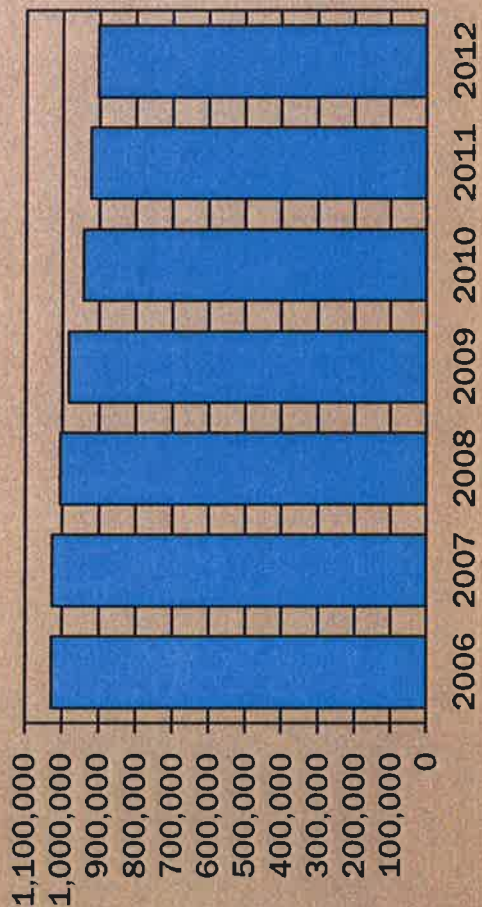
# Five Pilot Program Participants



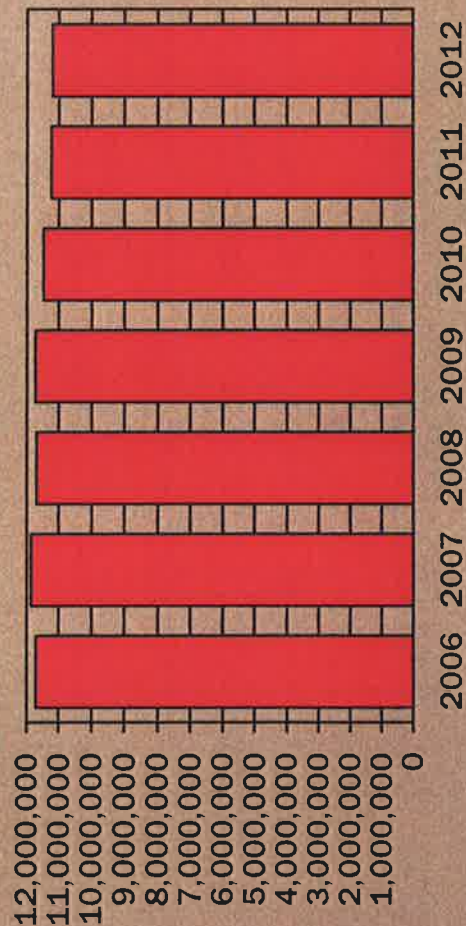


# Trend in Vessel Registrations from 2006 through 2012

## Florida

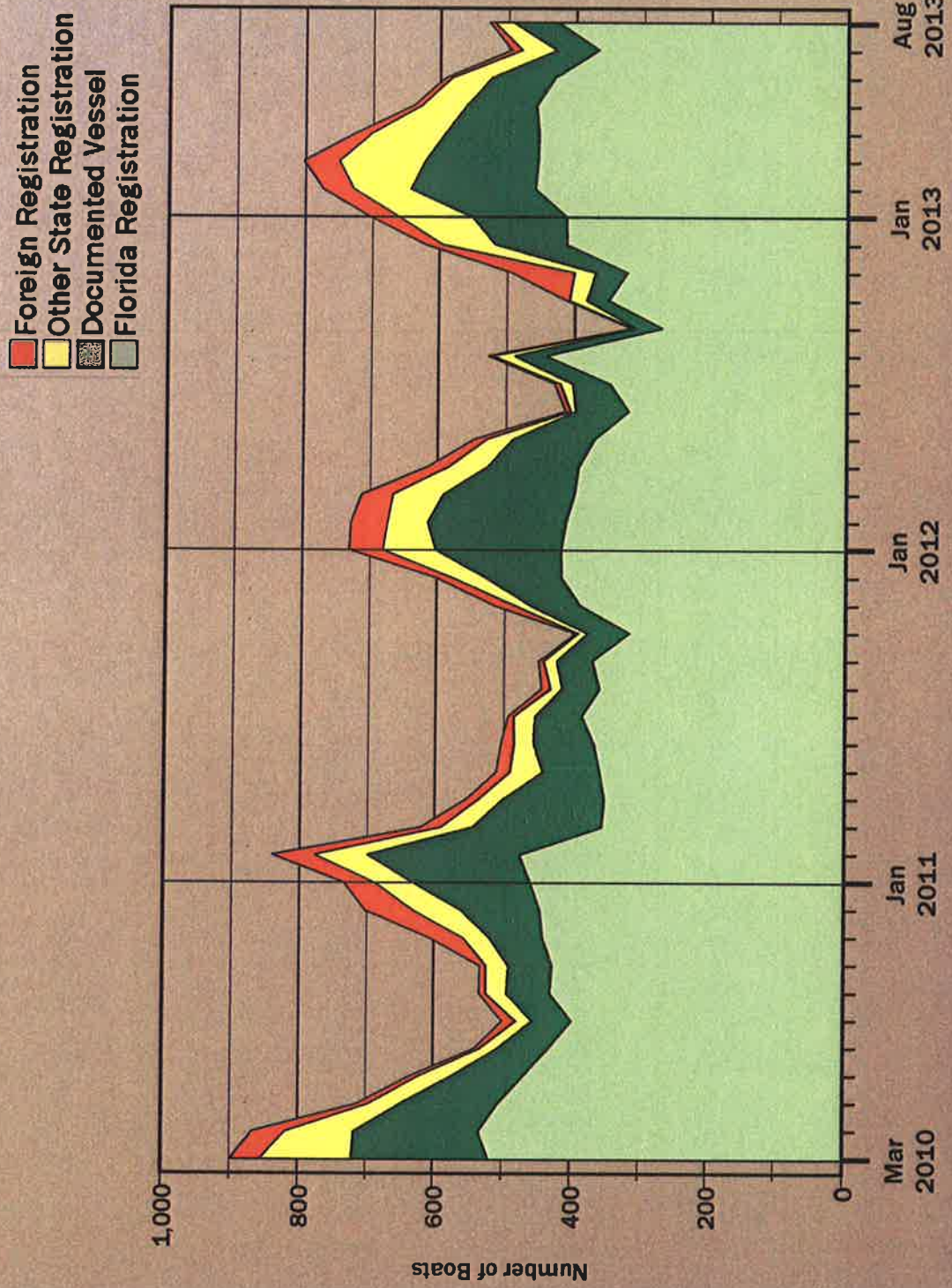


## United States





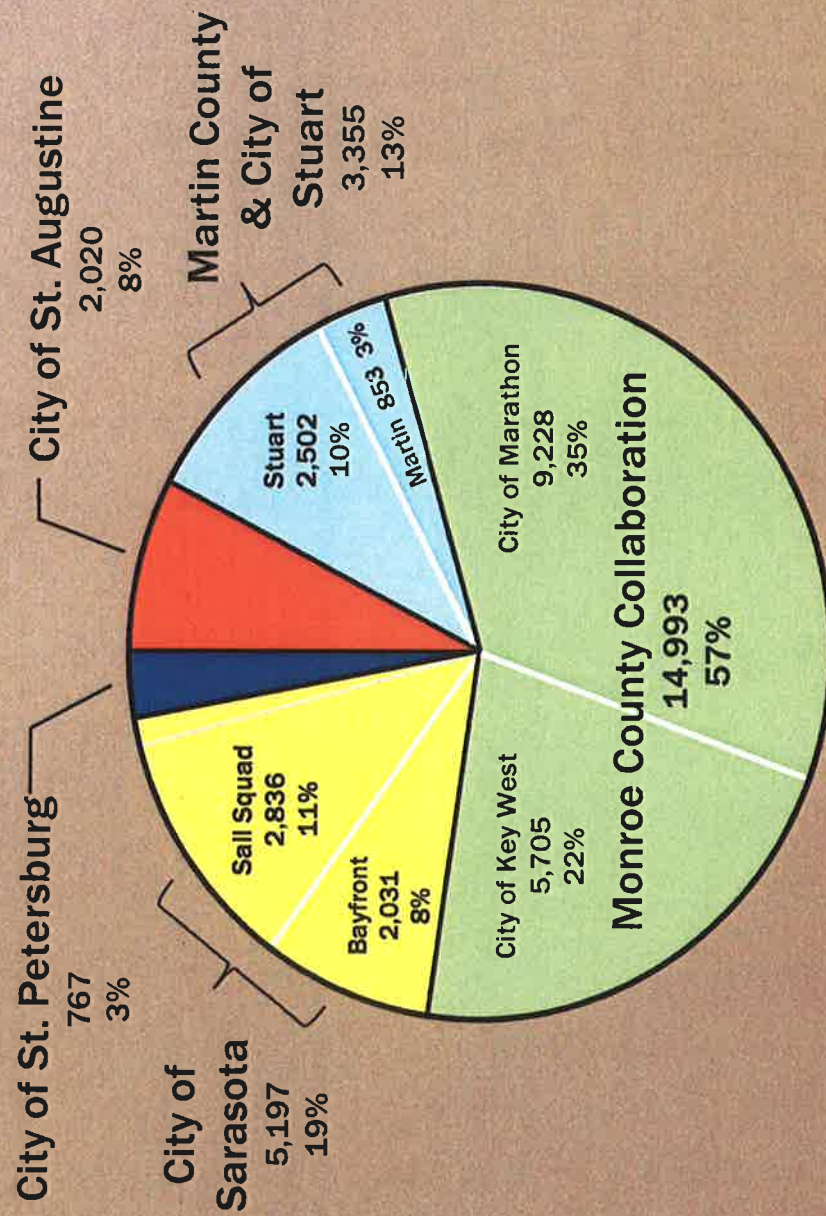
# Total Number of Boats Counted at All Sites Separated by State of Registration





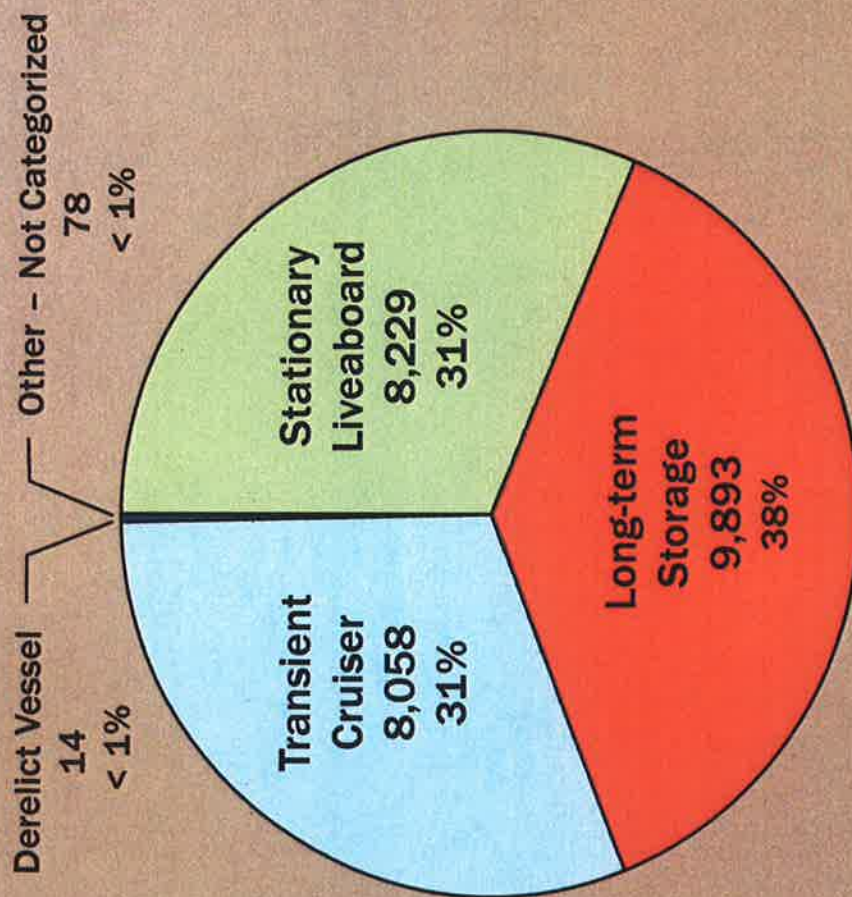
# Percentage of Boats Counted at Each Site

Total number of boats counted at all sites during 44 month period was 26,272





# Vessel Types Across All Sites

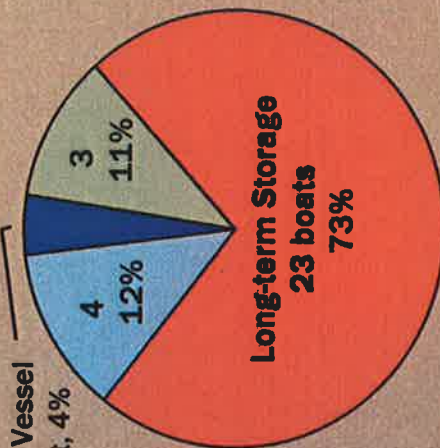




# Types of Boats among the Five Participant Sites

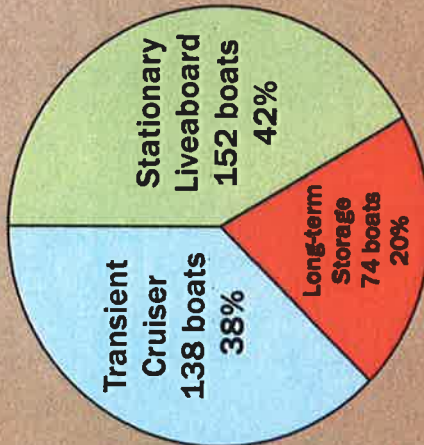
## St. Petersburg

5% of daily average  
31 boats per observation



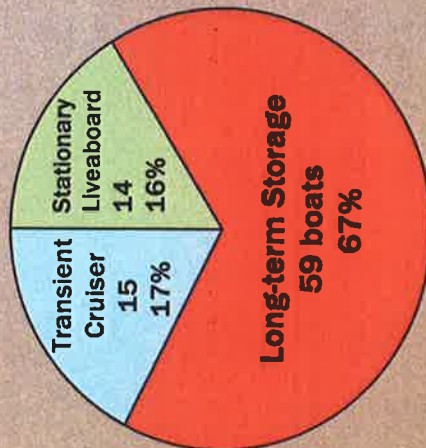
## Monroe/Key West/Marathon

53% of daily average  
364 boats per observation



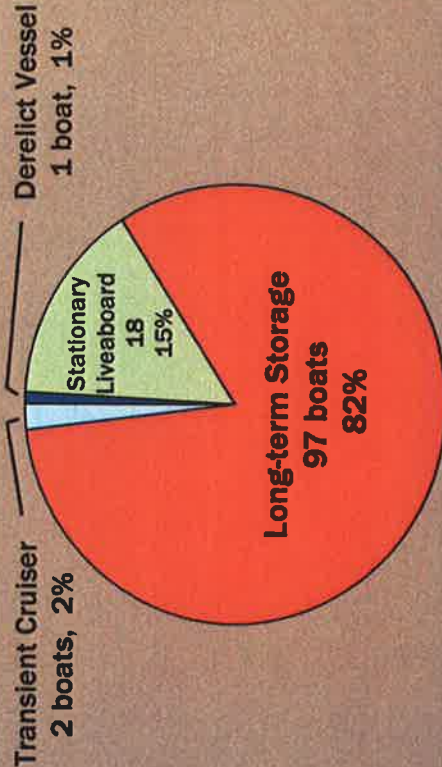
## St. Augustine

13% of daily average  
88 boats per observation



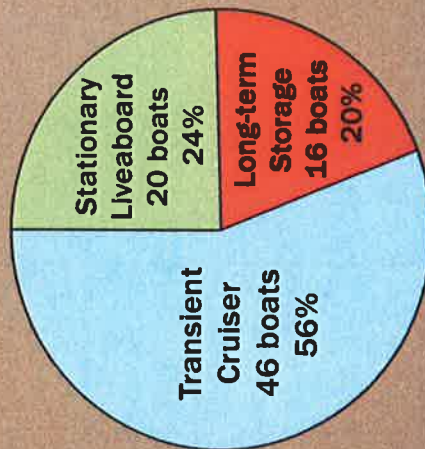
## Sarasota

17% of daily average  
118 boats per observation



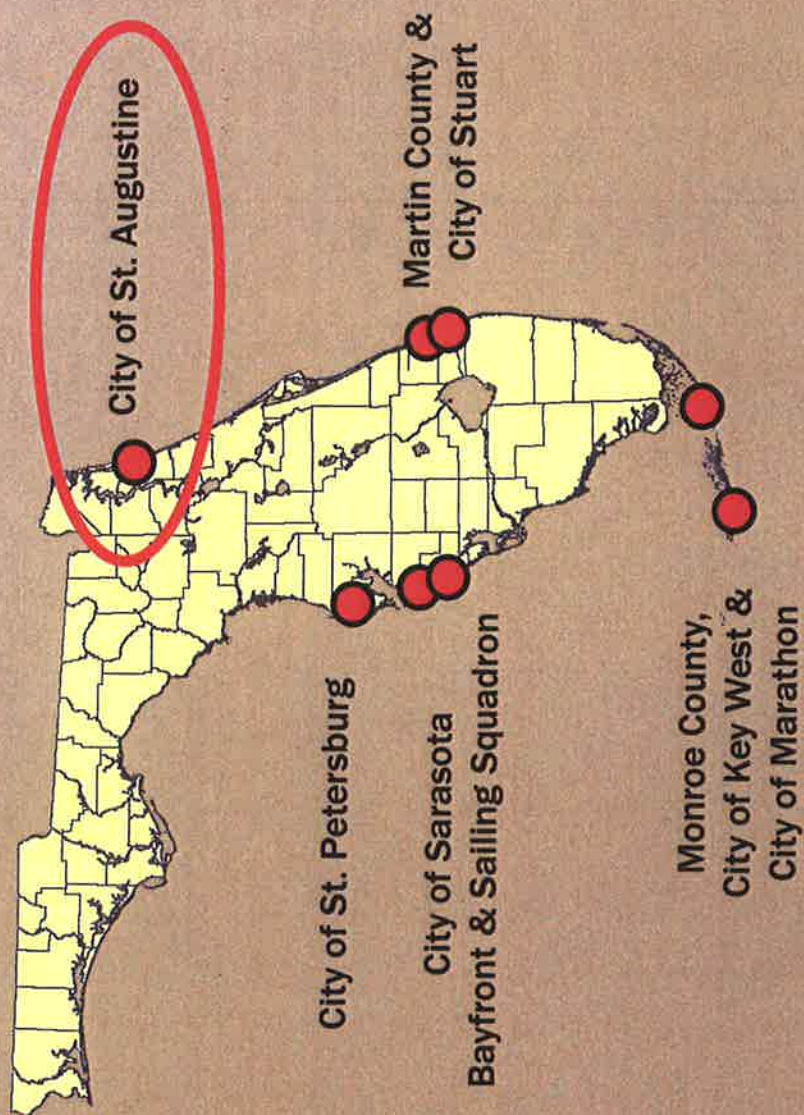
## Stuart and Martin

12% of daily average  
82 boats per observation





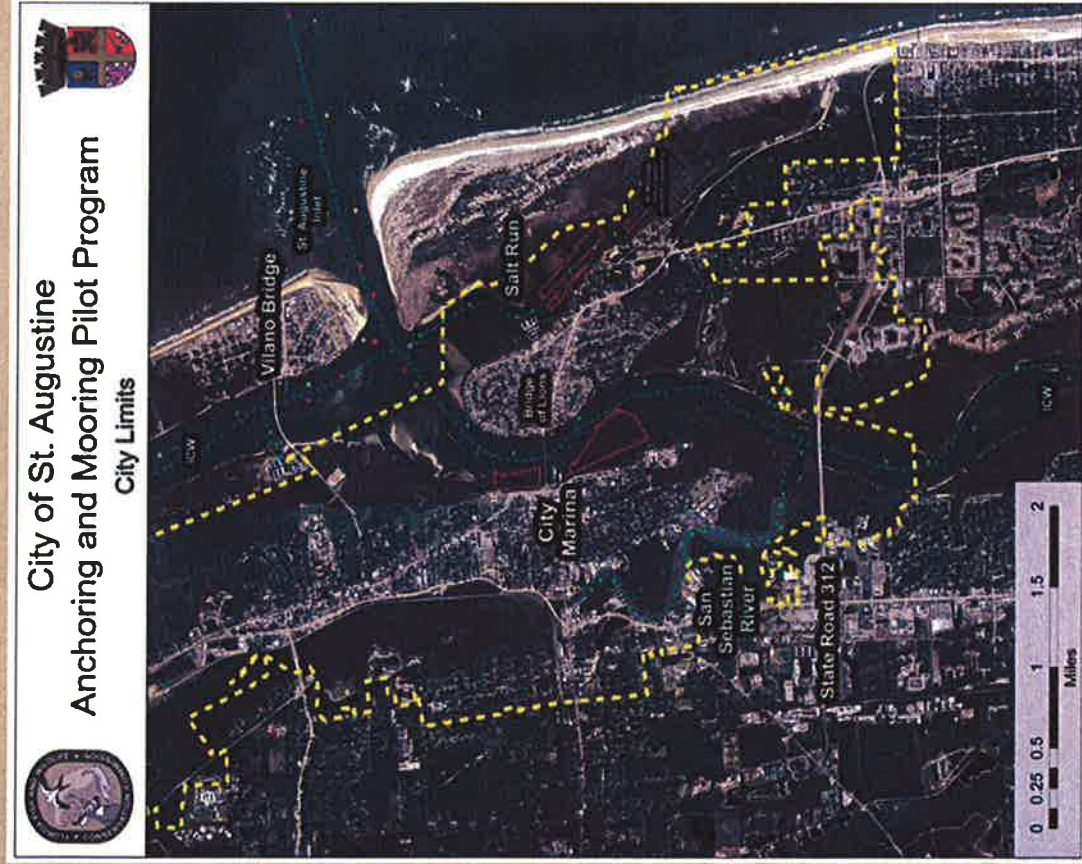
# City of St. Augustine





# St. Augustine Ordinance

- Set Backs
- Time Restriction
- Medallion Program





# St. Augustine - Changes

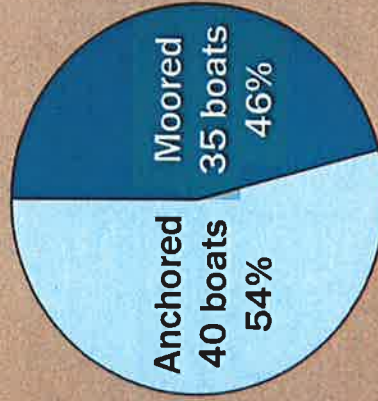
## Before Mooring Field

Mean = 110 boats per observation  
During 6 monthly observations



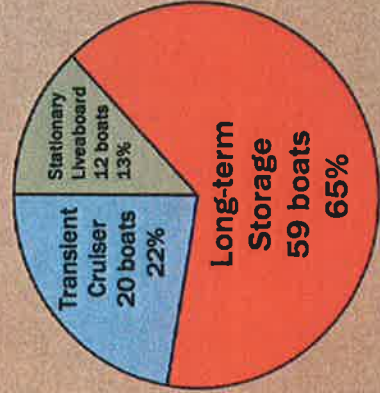
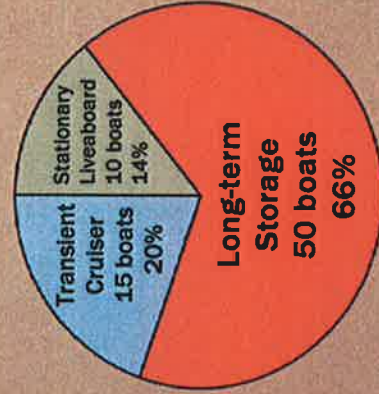
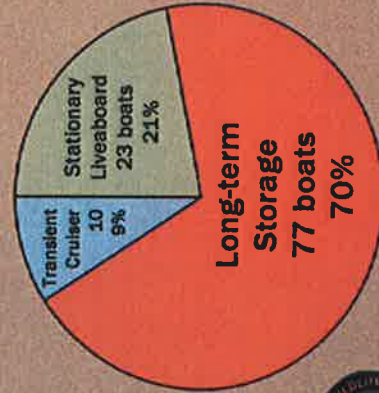
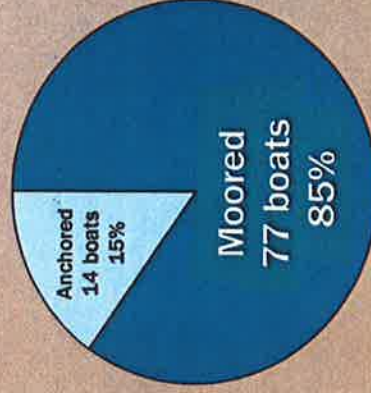
## Mooring Field in Operation but Before Ordinance Enforced

Mean = 75 boats per observation  
During 6 monthly observations



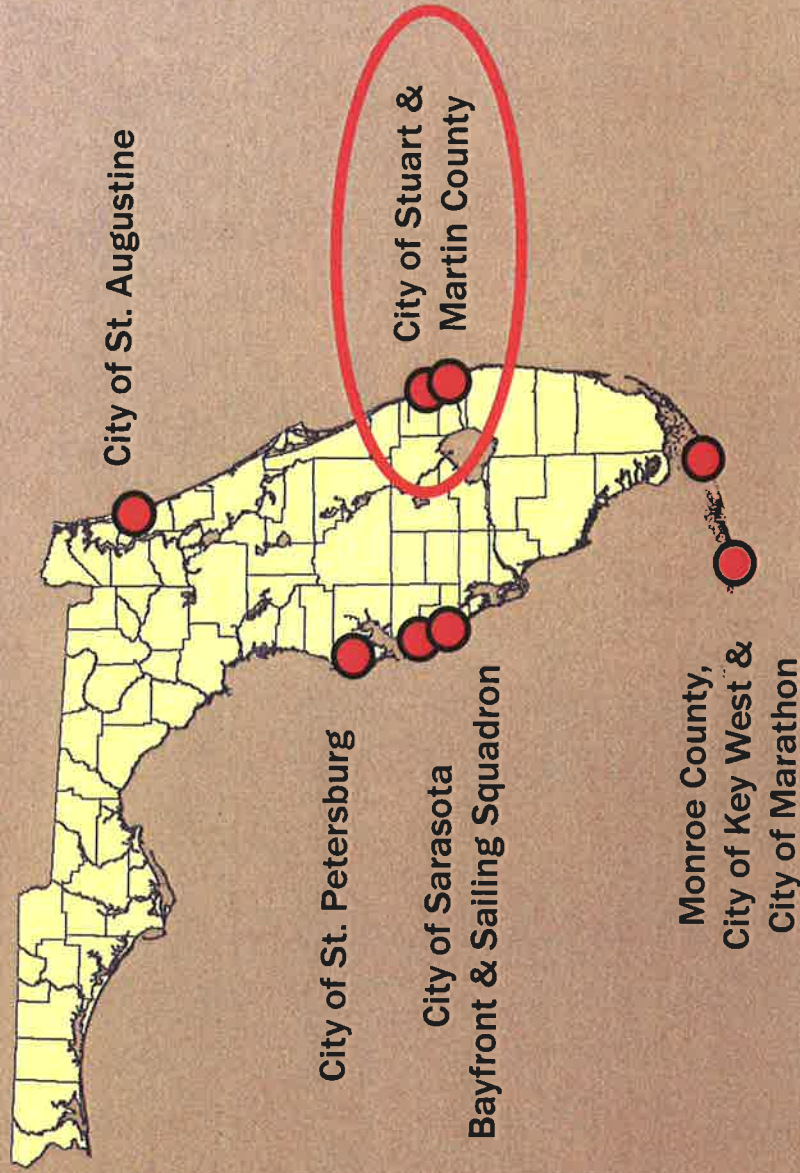
## Mooring Field in Operation and After Ordinance Enforced

Mean = 91 boats per observation  
During 10 monthly observations





# City of Stuart and Martin County Partnership





# Stuart/Martin County



- Program areas
- Buffers
- Operability
- Proof of pumpout





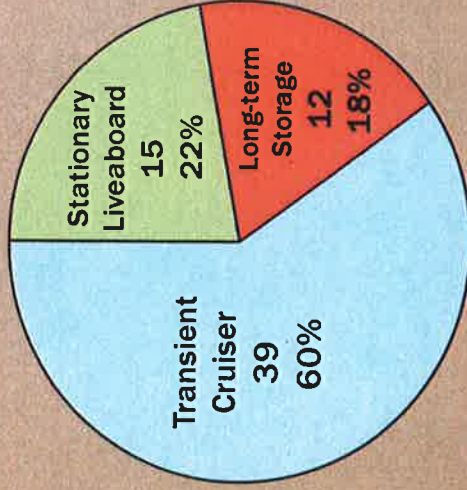
# City of Stuart and Martin County Partnership

## City of Stuart

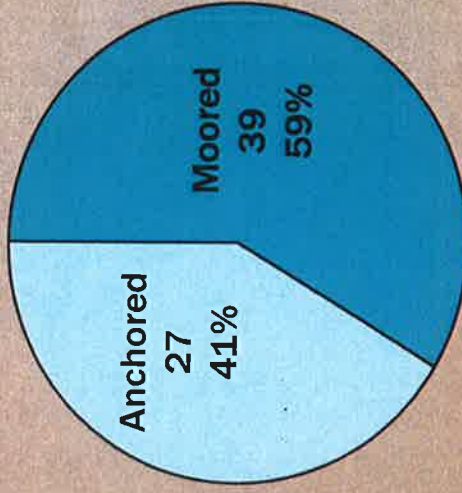
### St Lucie River

- Mooring field capacity = 69 moorings
- Accounts for 75% of boats observed at the two locations
- Average 66 boats per observation
- During 38 monthly observations
- Numbers in charts represent daily averages

Type of Boat  
66 boats per day



Anchored vs. Moored  
66 boats per day

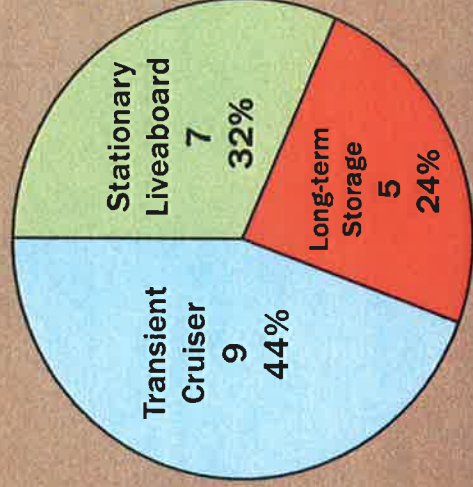


## Martin County

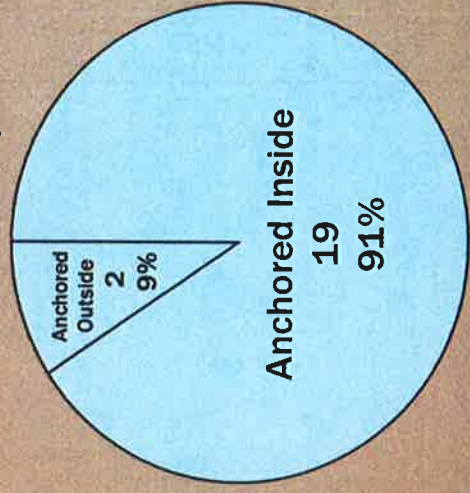
### Indian River Lagoon

- No Mooring Field
- Accounts for 25% of boats observed at the two locations
- Average of 21 boats per observation
- During 41 monthly observations
- Numbers in charts represent daily averages

Type of Boat  
21 boats per day

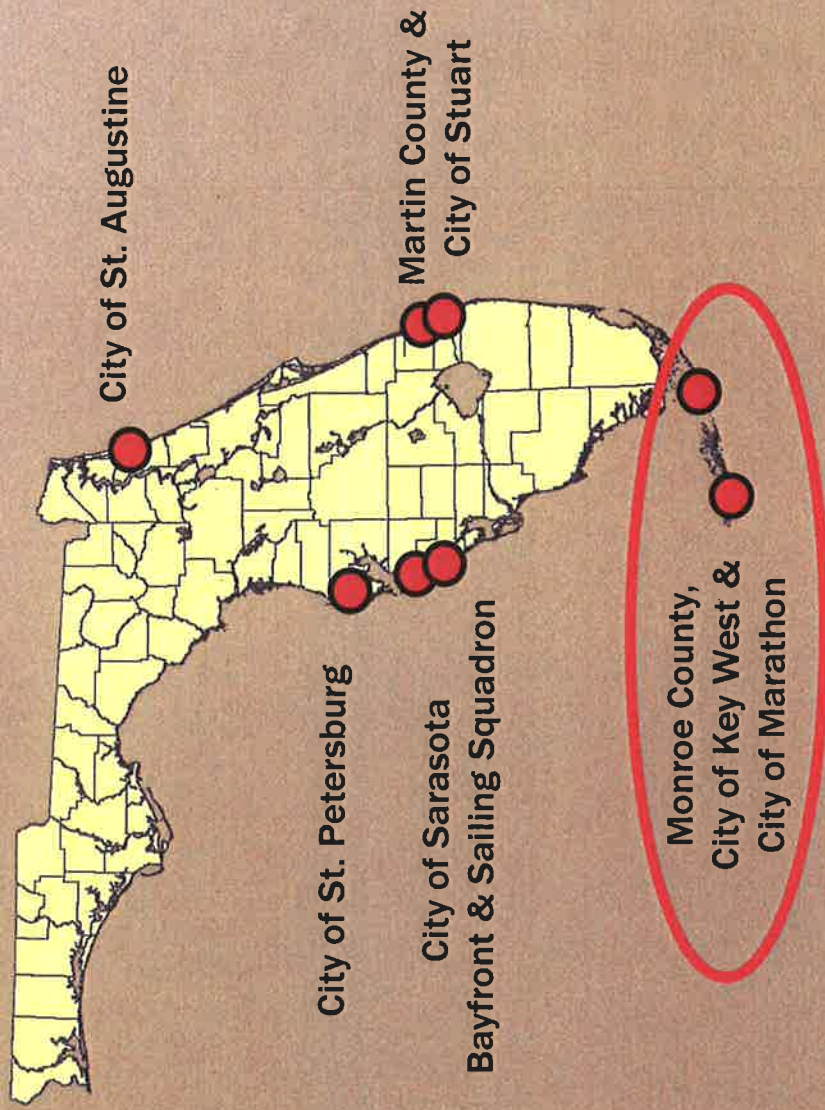


Anchored Boats  
21 boats per day



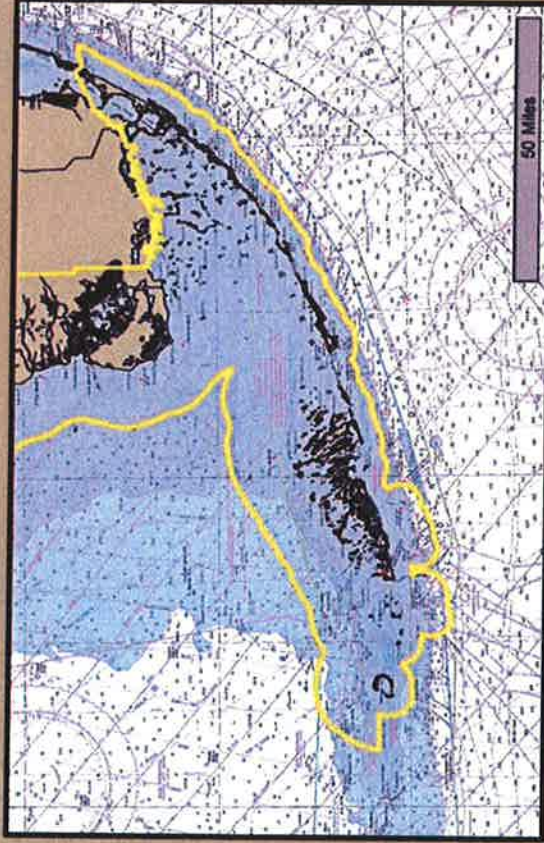


# Monroe County, City of Key West & City of Marathon





# Monroe County/Key West/Marathon



- Managed Anchoring Zones
- No Anchoring Buffer Zones
- Exemptions



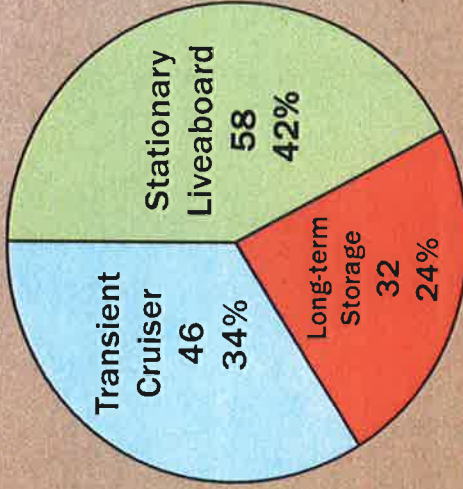


# Monroe County, City of Key West & City of Marathon

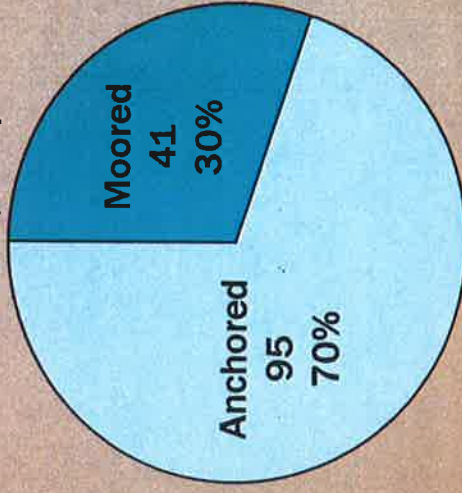
## Key West

- Accounts for 38% of boats observed at the two cities
- Average of 136 boats per observation
- During 42 monthly observations
- Mooring field capacity = 81 moorings during 2010 / 2011, increased to 149 during 2012
- Numbers in charts represent daily averages

Type of Boat  
136 boats per day



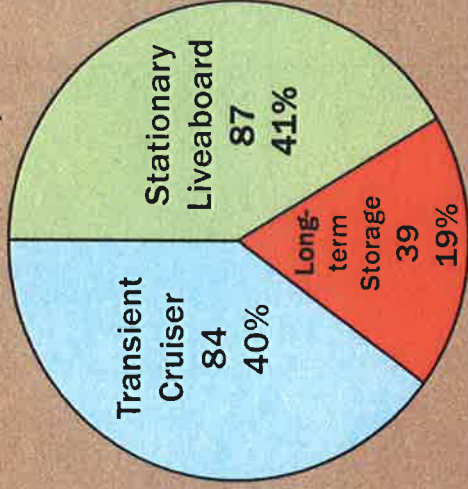
Anchored vs. Moored  
136 boats per day



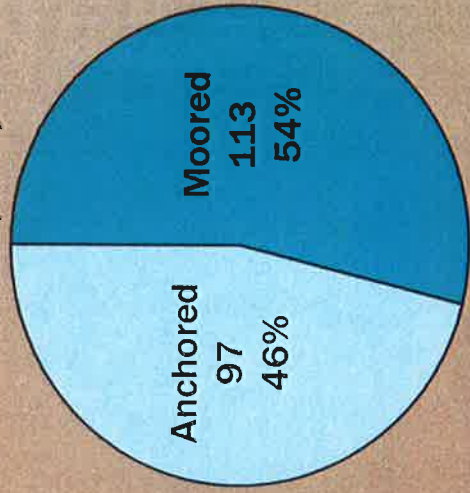
## Marathon

- Accounts for 62% of boats observed at the two cities
- Average of 210 boats per observation
- During 44 monthly observations
- Mooring field capacity = 226 moorings, no boat storage allowed at mooring field
- Numbers in charts represent daily averages

Type of Boat  
210 boats per day



Anchored vs. Moored  
210 boats per day



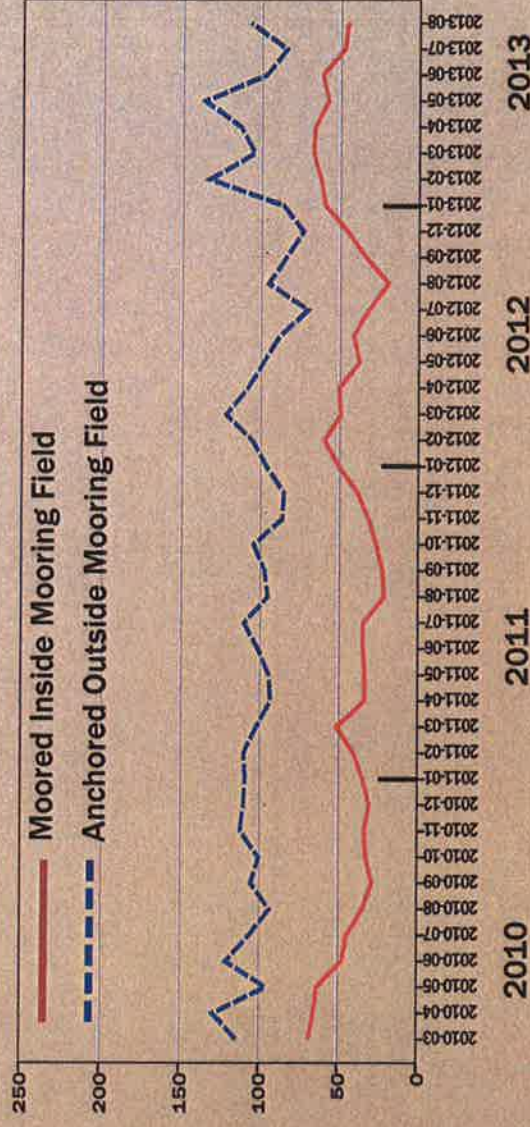


# Monroe County, City of Key West & City of Marathon

## Long-term Trend in Occupancy

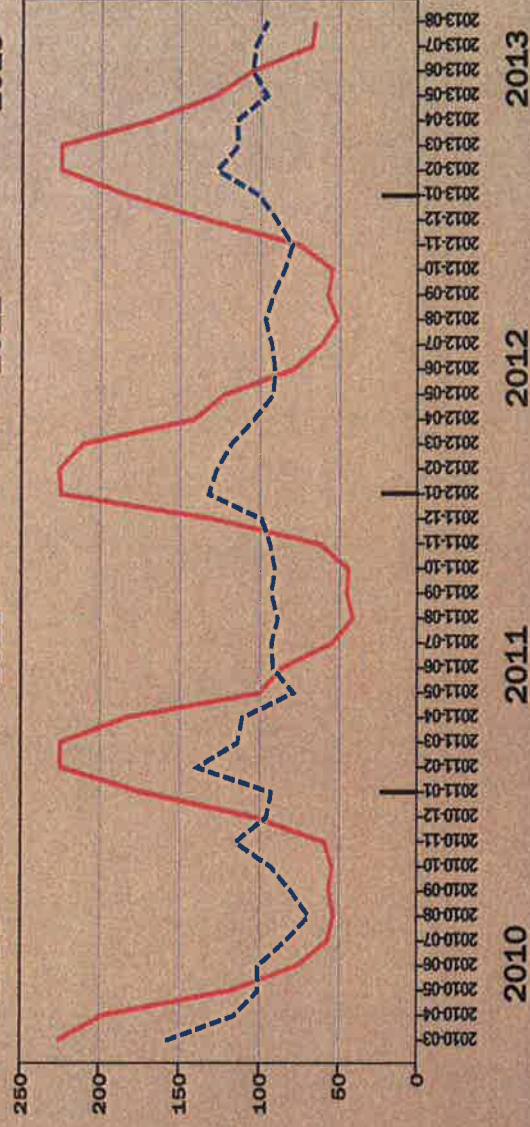
### Key West

- Mooring field capacity started at 81 moorings
- Increased to 149 moorings during 2012
- Numbers in charts represent monthly averages
- Based upon one observation per month



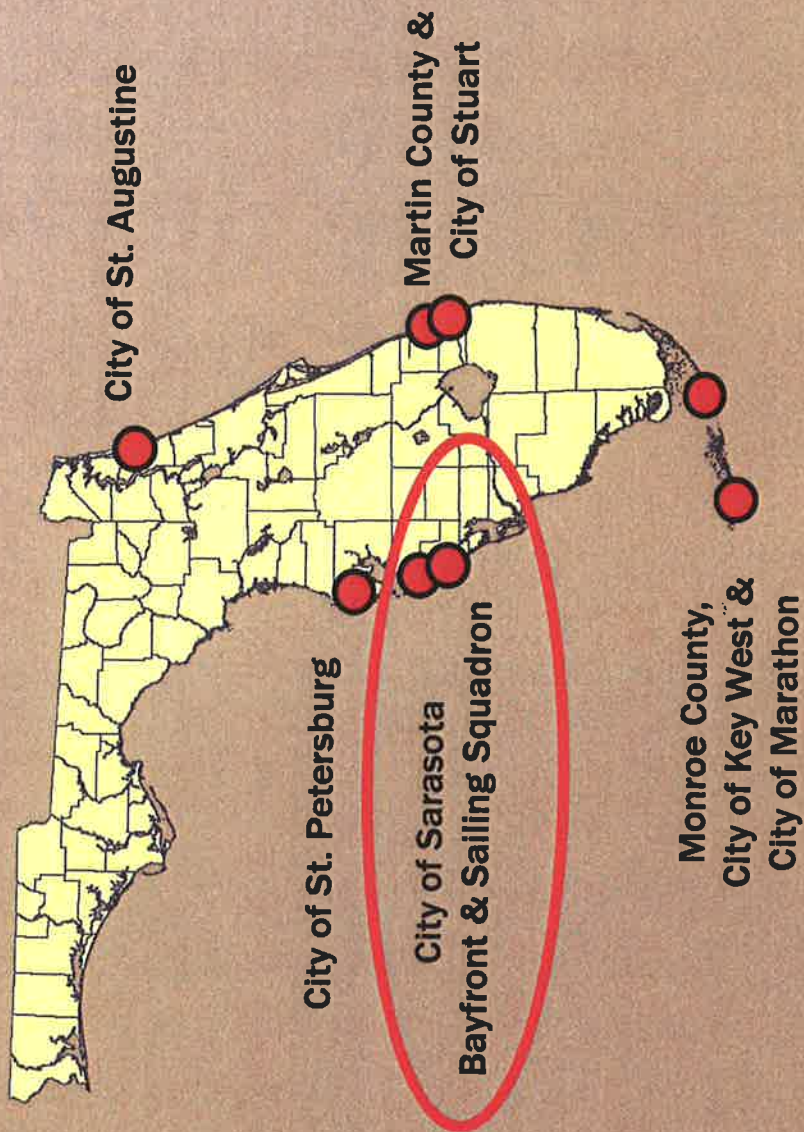
### Marathon

- Mooring field capacity = 226 moorings
- Numbers in charts represent monthly averages
- Based upon one observation per month





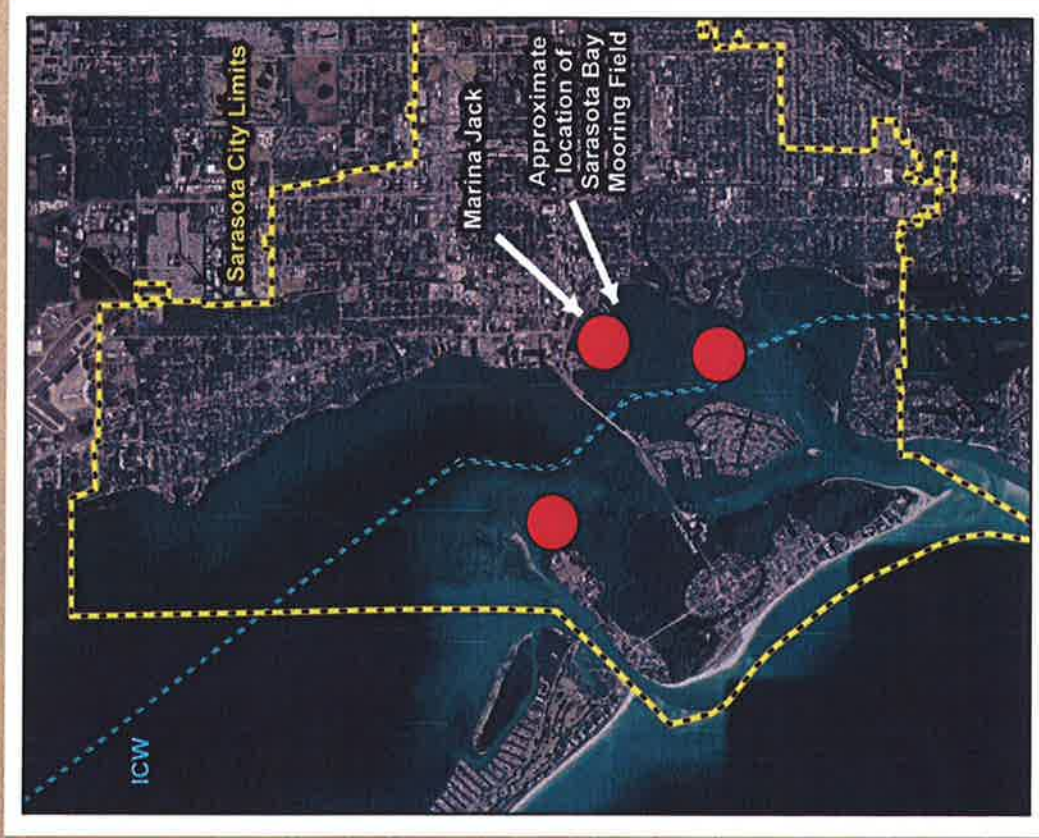
# City of Sarasota - Bayfront and Sailing Squadron





# Sarasota's Ordinance

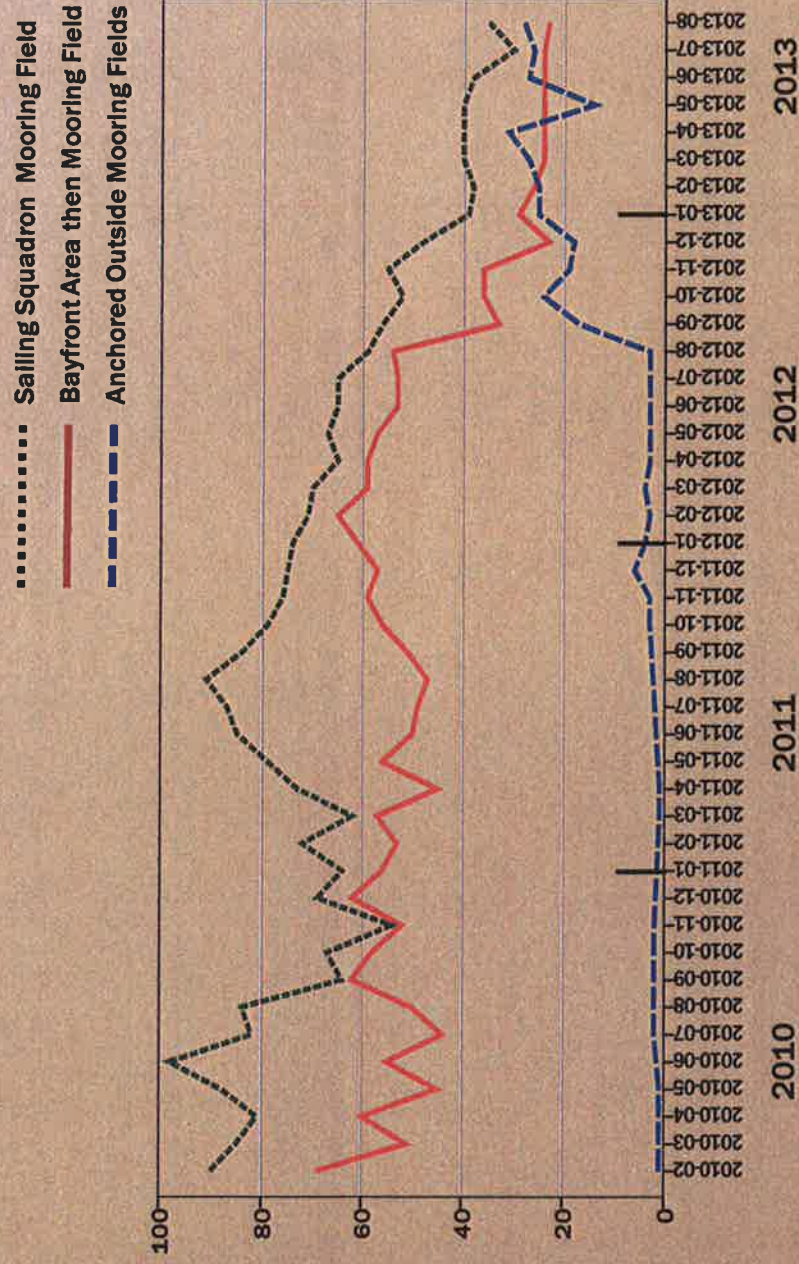
- Anchoring Restrictions
- Time
- Set Backs





# City of Sarasota - Bayfront and Sailing Squadron

## Monthly Trend in Number of Boats



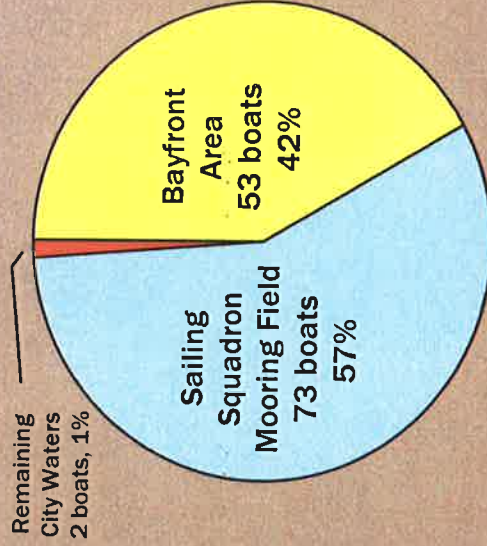


# City of Sarasota - Bayfront and Sailing Squadron

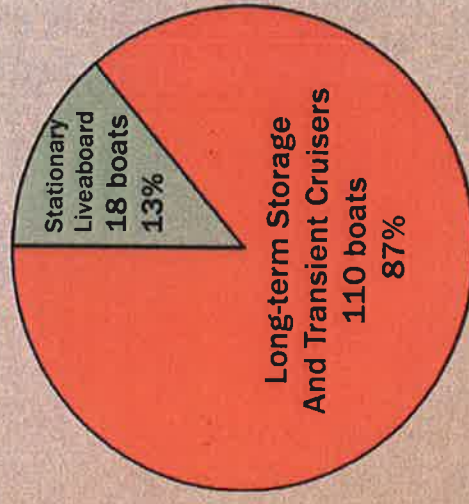
## Before

- Before enforcement of ordinance
- Before operation of Bayfront mooring field
- Before reduction to Sailing Squad mooring field
- Average of 128 boats per observation
- During 32 monthly observations
- Sailing Squad mooring field capacity = ~75
- Numbers in charts represent daily averages

### Location within the City of Sarasota

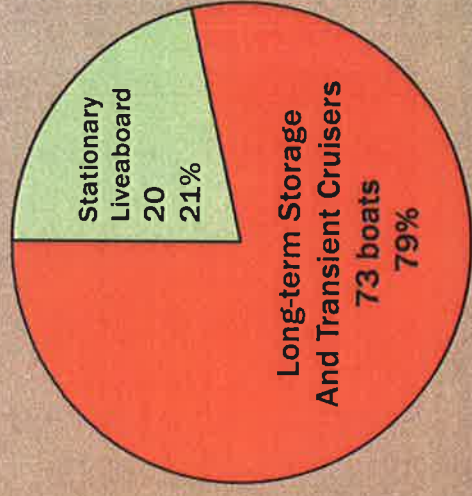
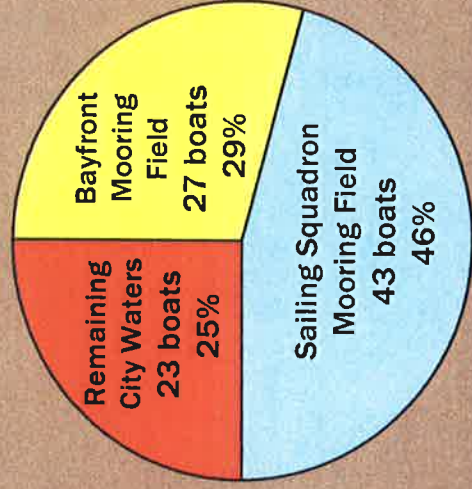


### Type of Boat



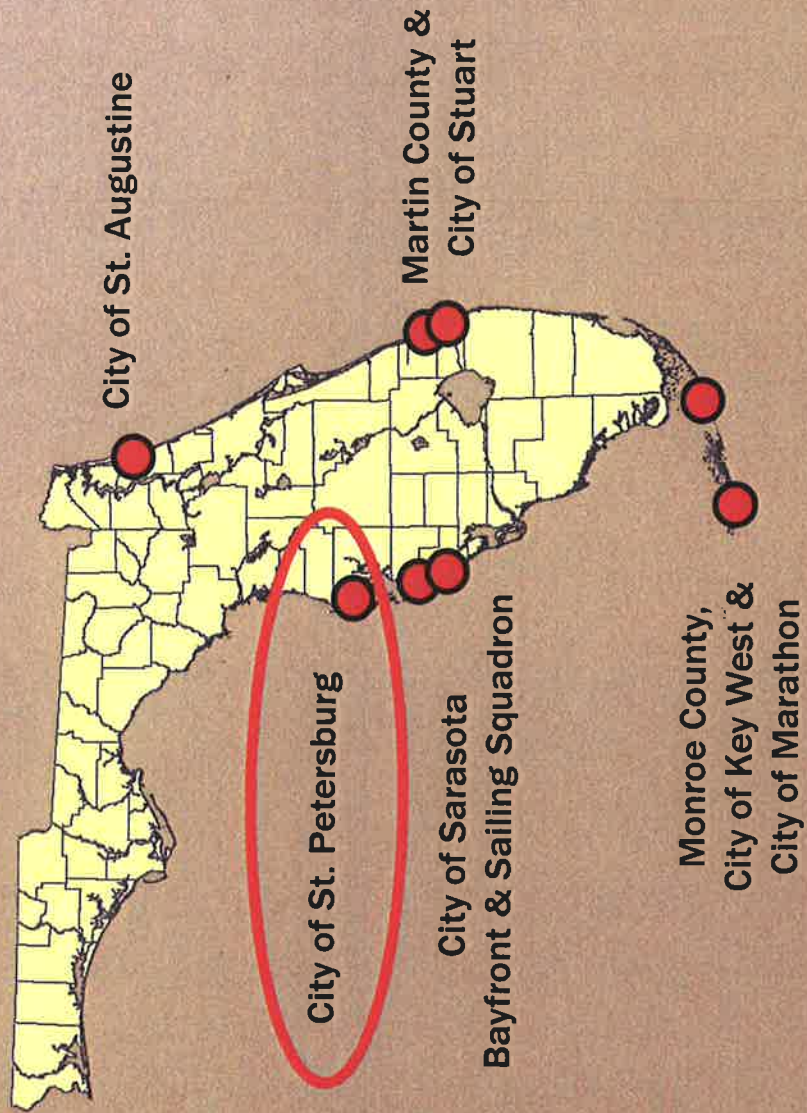
## After

- After enforcement of ordinance
- After operation of Bayfront mooring field
- After reduction to Sailing Squad mooring field
- Average of 93 boats per observation
- During 12 monthly observations
- Sailing Squad mooring field capacity = 38
- Bayfront Mooring field capacity = 35
- Numbers in charts represent daily averages





# City of St. Petersburg





# St. Petersburg's Ordinance

- Anchoring Restrictions
- Anchoring Prohibitions

St. Petersburg Waterways  
City Limits



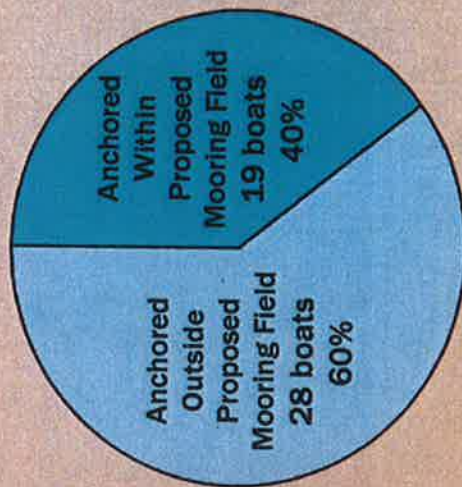
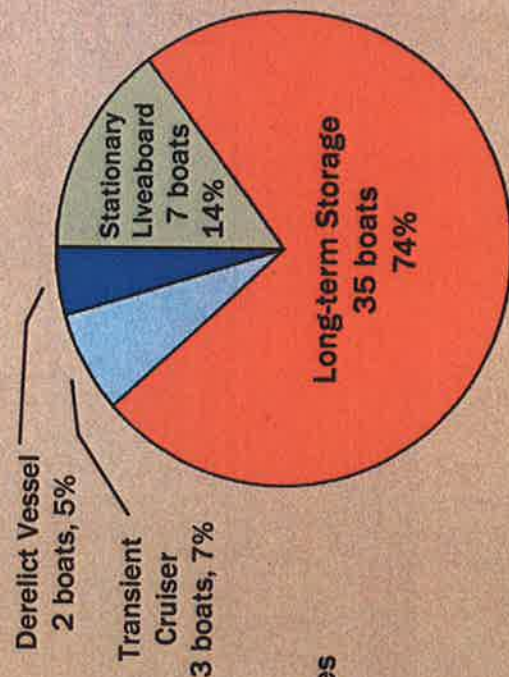


# City of St. Petersburg - Changes

## Type of Boat Anchored vs. Moored

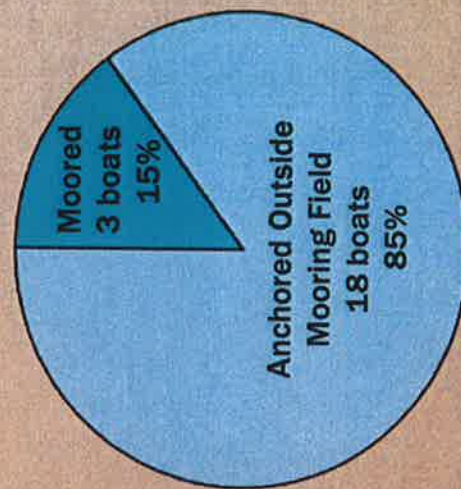
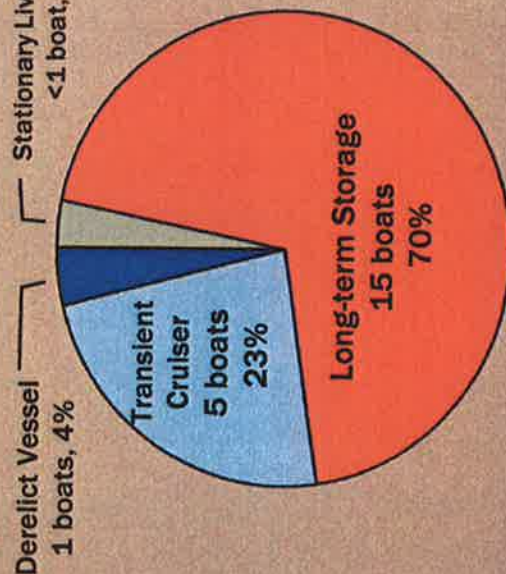
### Before

- Before operation of mooring field
- Before enforcement of ordinance
- Average of 47 boats per observation
- During 11 monthly observations
- Numbers in charts represent daily averages



### After

- After operation of mooring field
- After enforcement of ordinance
- Average of 21 boats per observation
- During 12 monthly observations
- Numbers in charts represent daily averages





**Florida Statute 327.4105  
Pilot Program for  
Regulation of Mooring Vessels  
Outside of Public Mooring Fields**

**On-line Public Opinion Survey  
Preliminary Results**

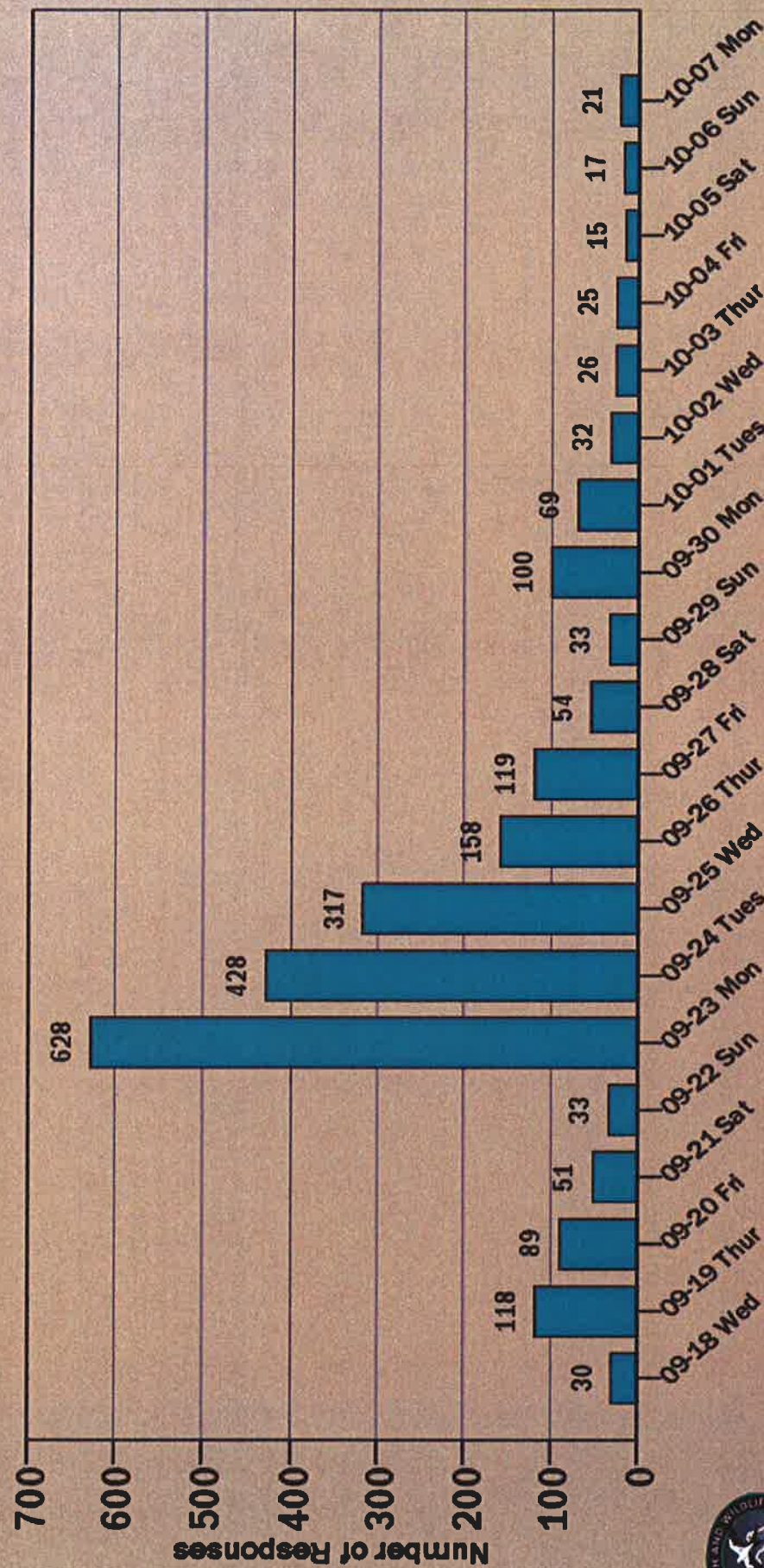




# Public Opinion Survey - 2,363 Responses

## Daily Responses

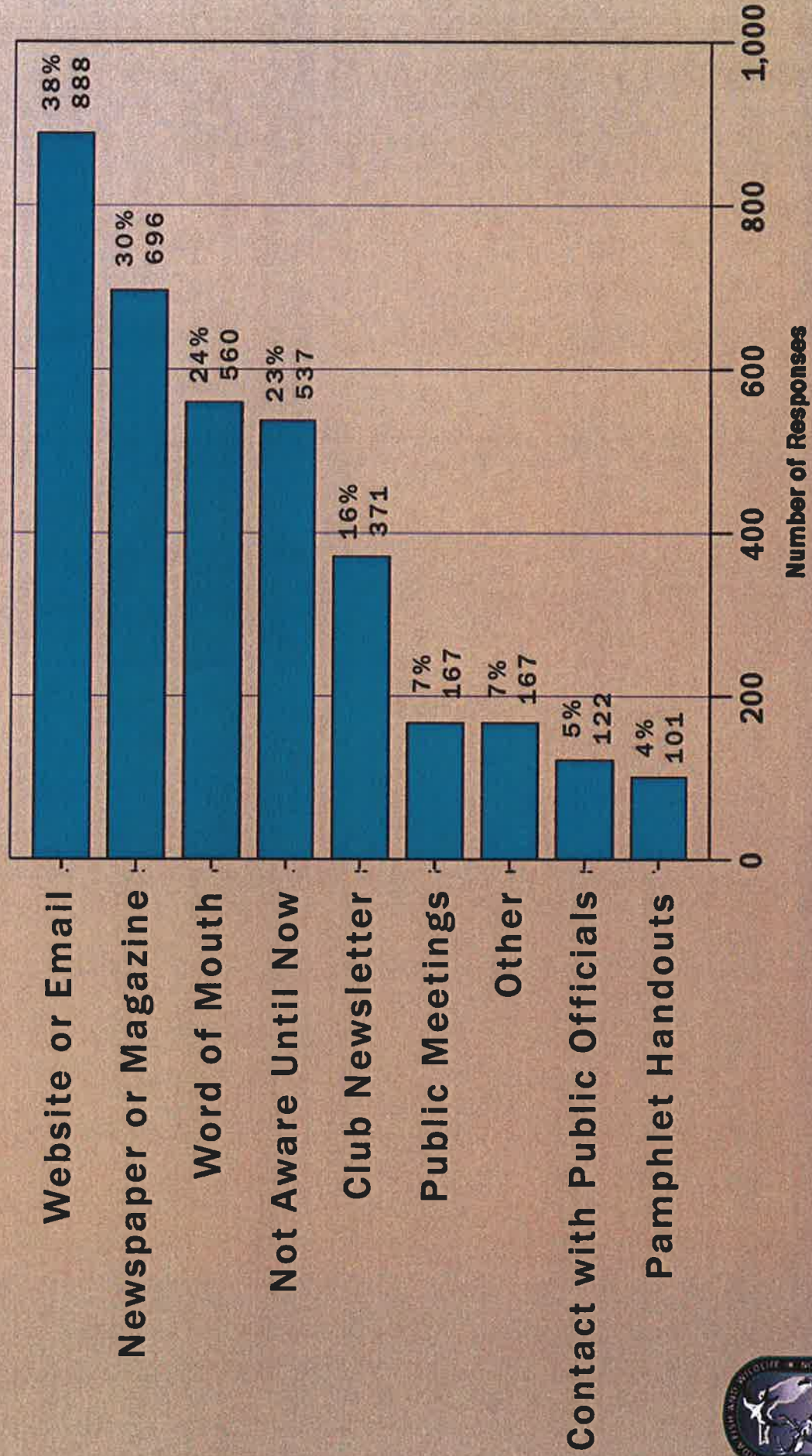
Wednesday September 18th through Monday October 7th





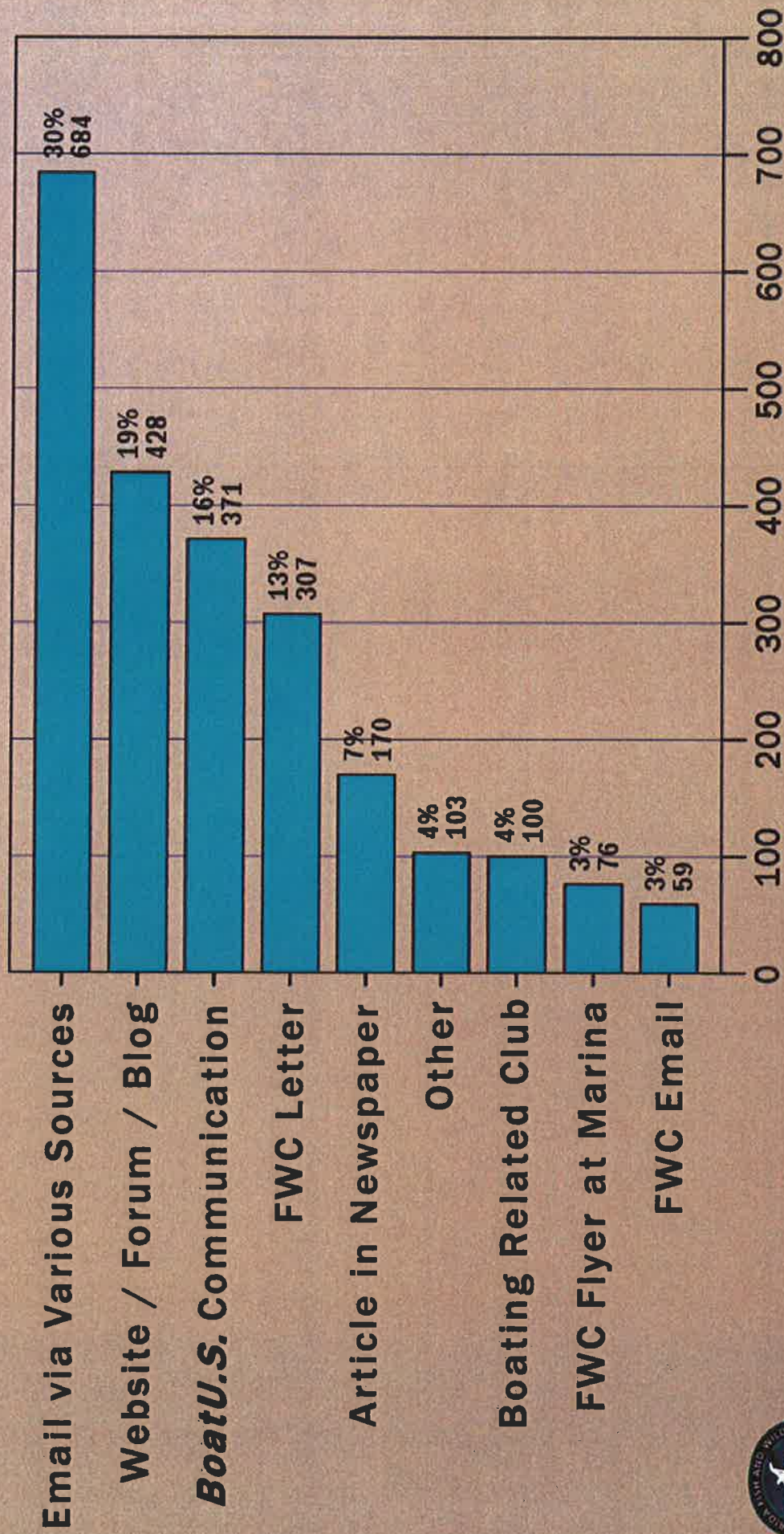
# How did you first become aware of the Anchoring and Mooring Pilot Program?

Select all that apply.



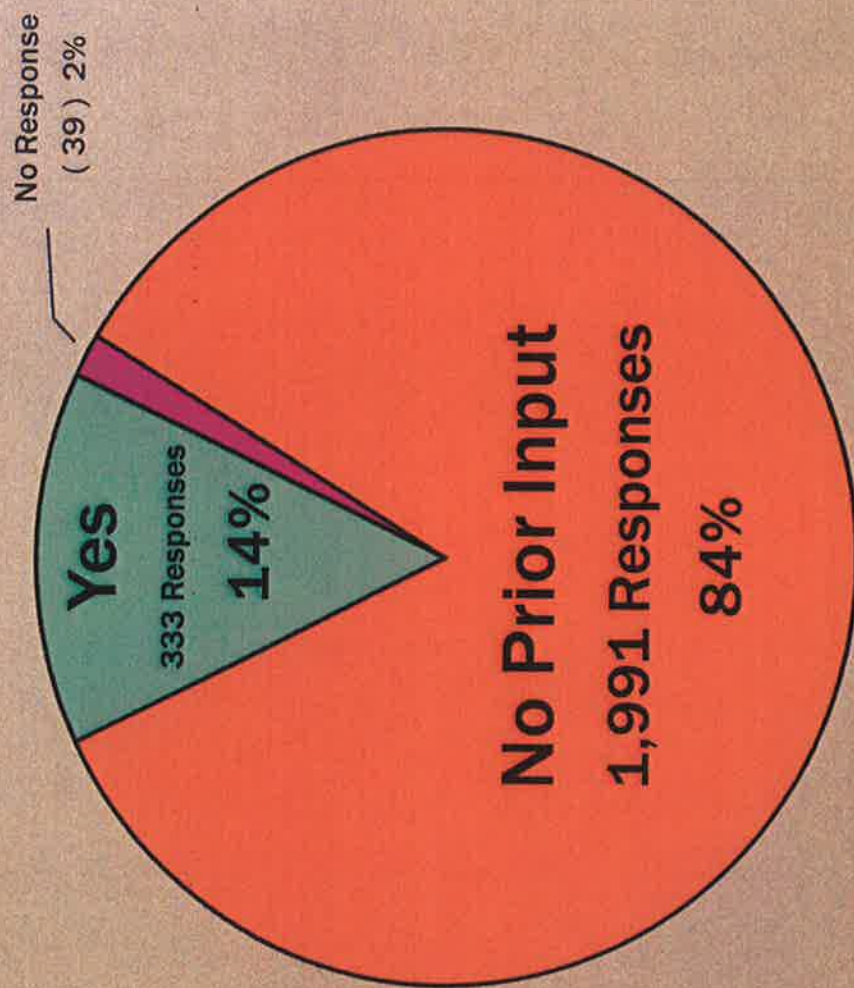


# How did you learn of this survey?



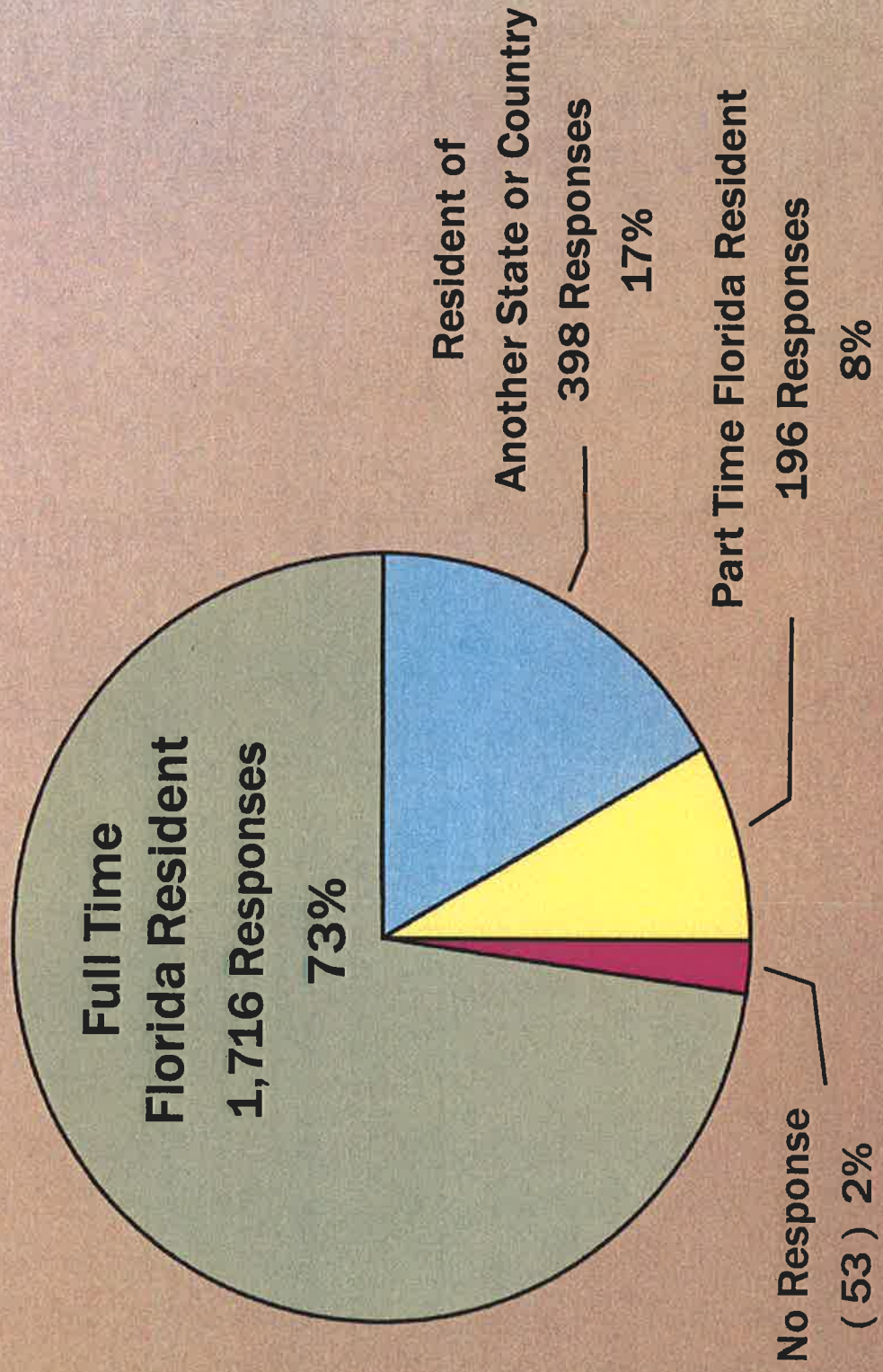


## Participated in Prior Public Input Opportunity



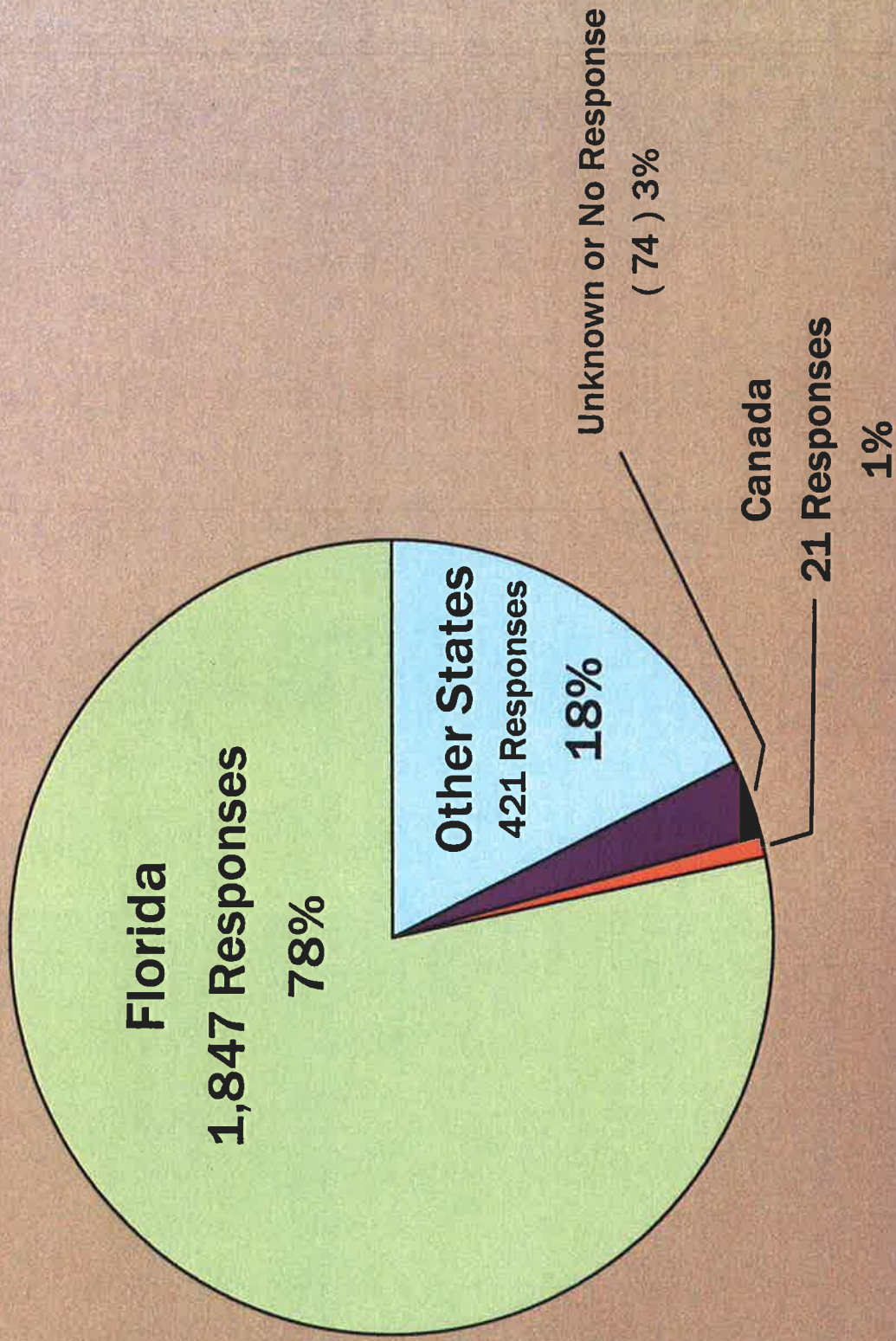


# Reported Residency Status





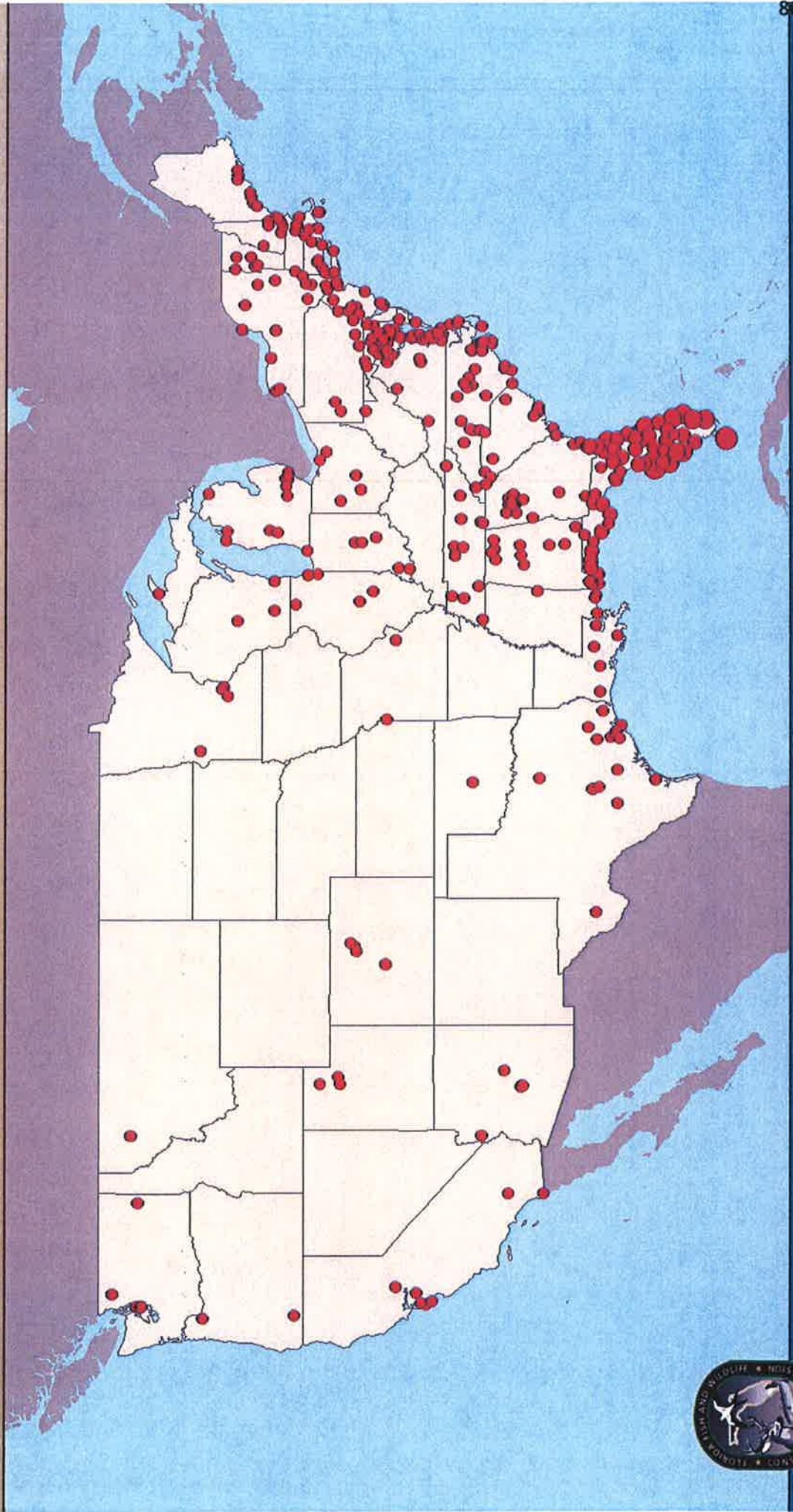
# Primary Residence Reported by Zip Code





# Location of Primary Residence

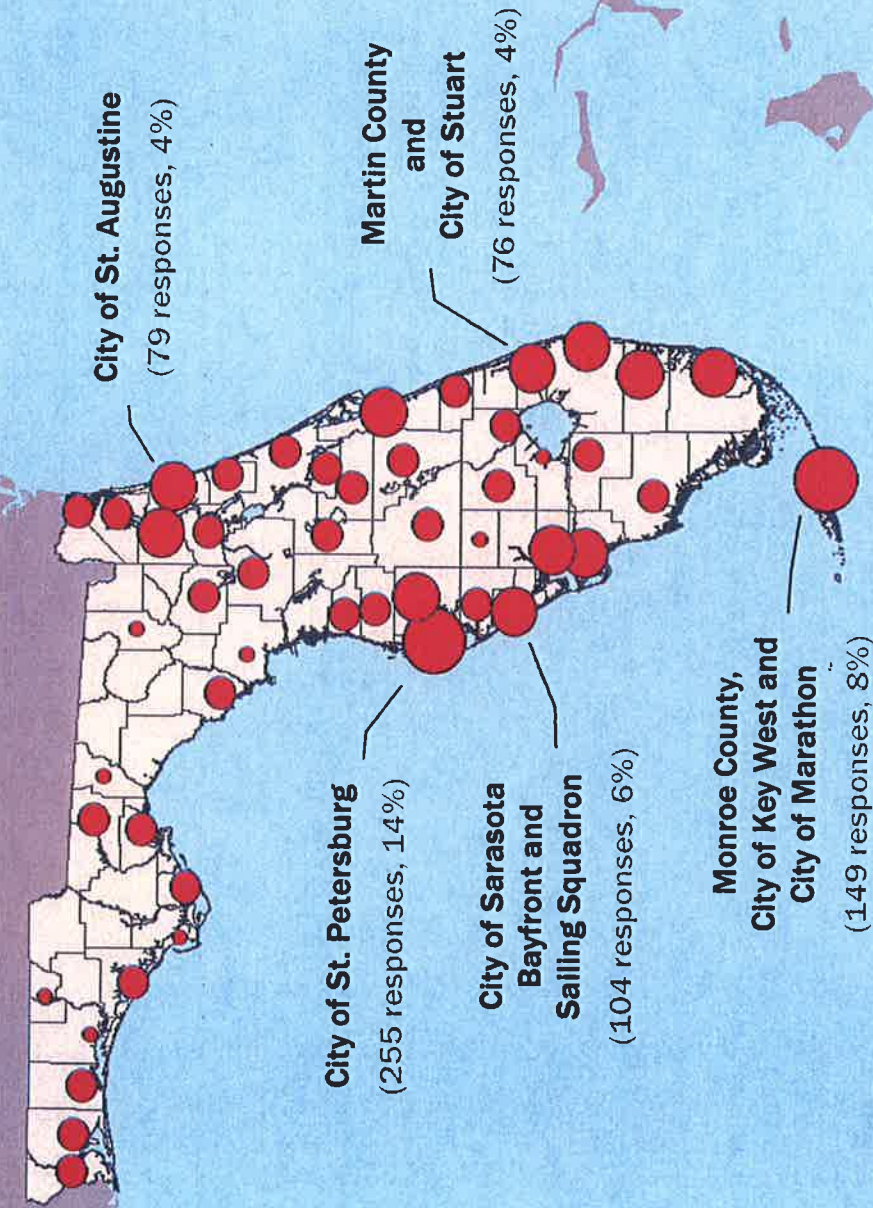
Florida = 1,847 responses (78%)      39 Other States = 421 responses (18%)





# Location of Primary Residence

1,847 respondents (78%) report their primary residence to be in Florida



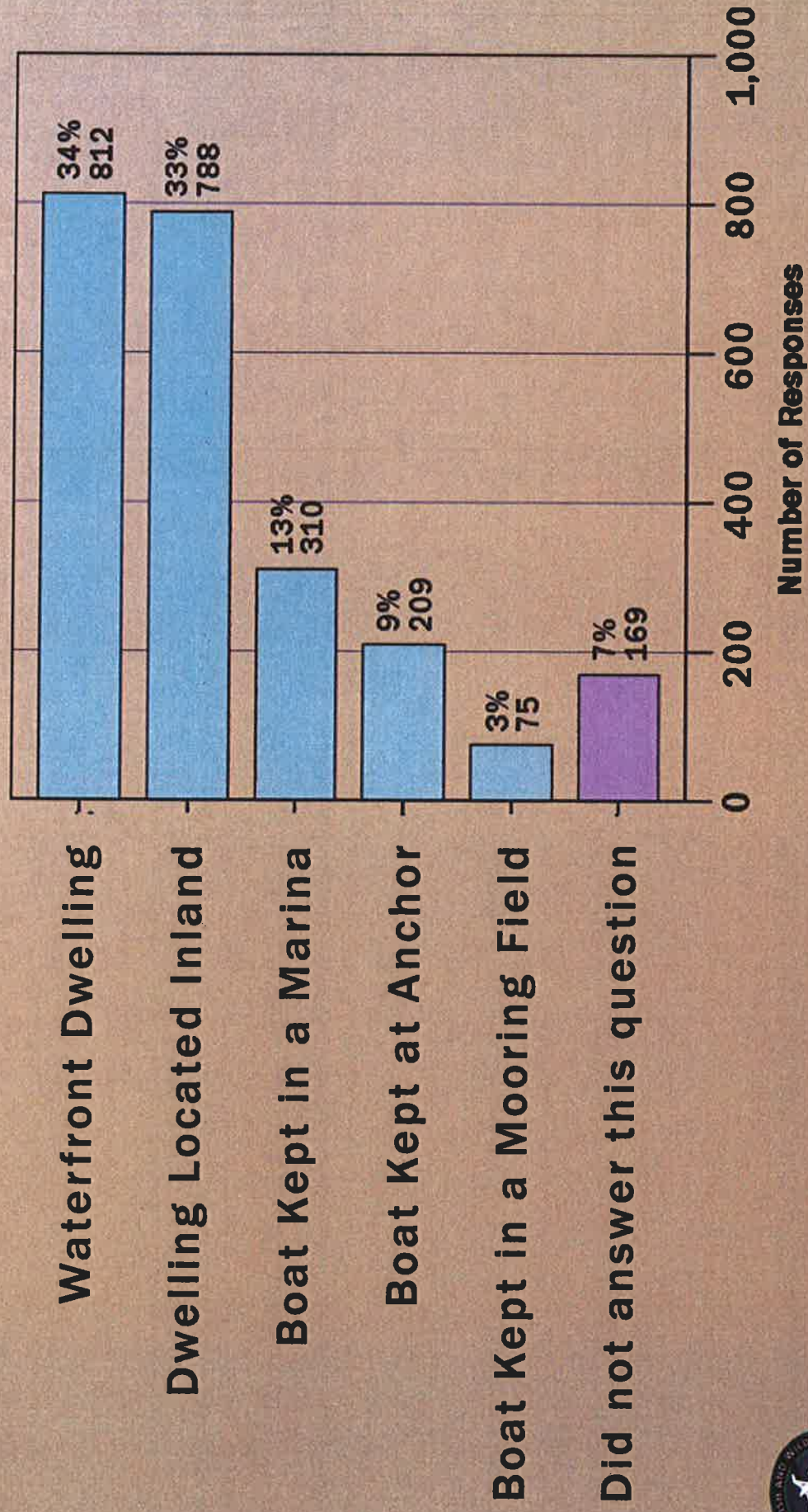
Top 15 Counties (80%)

| County       | Responses | Percent |
|--------------|-----------|---------|
| Pinellas     | 255       | 14%     |
| Monroe       | 149       | 8%      |
| Miami-Dade   | 110       | 6%      |
| Sarasota     | 104       | 6%      |
| Broward      | 103       | 6%      |
| Brevard      | 96        | 5%      |
| Palm Beach   | 96        | 5%      |
| Lee          | 94        | 5%      |
| Charlotte    | 86        | 5%      |
| Clay         | 82        | 4%      |
| St. Johns    | 79        | 4%      |
| Martin       | 76        | 4%      |
| Hillsborough | 58        | 3%      |
| Manatee      | 49        | 3%      |
| Duval        | 43        | 2%      |



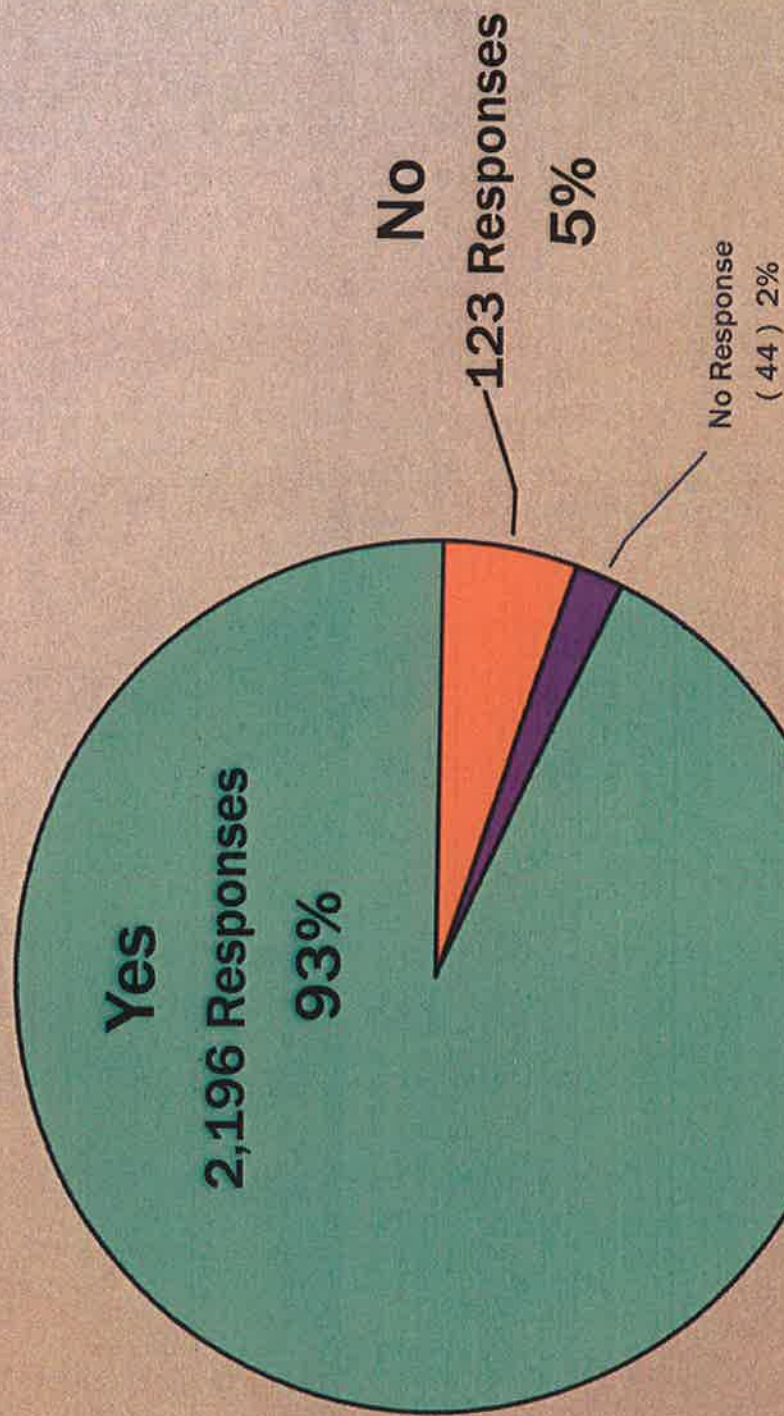


# Type of Residence in Florida



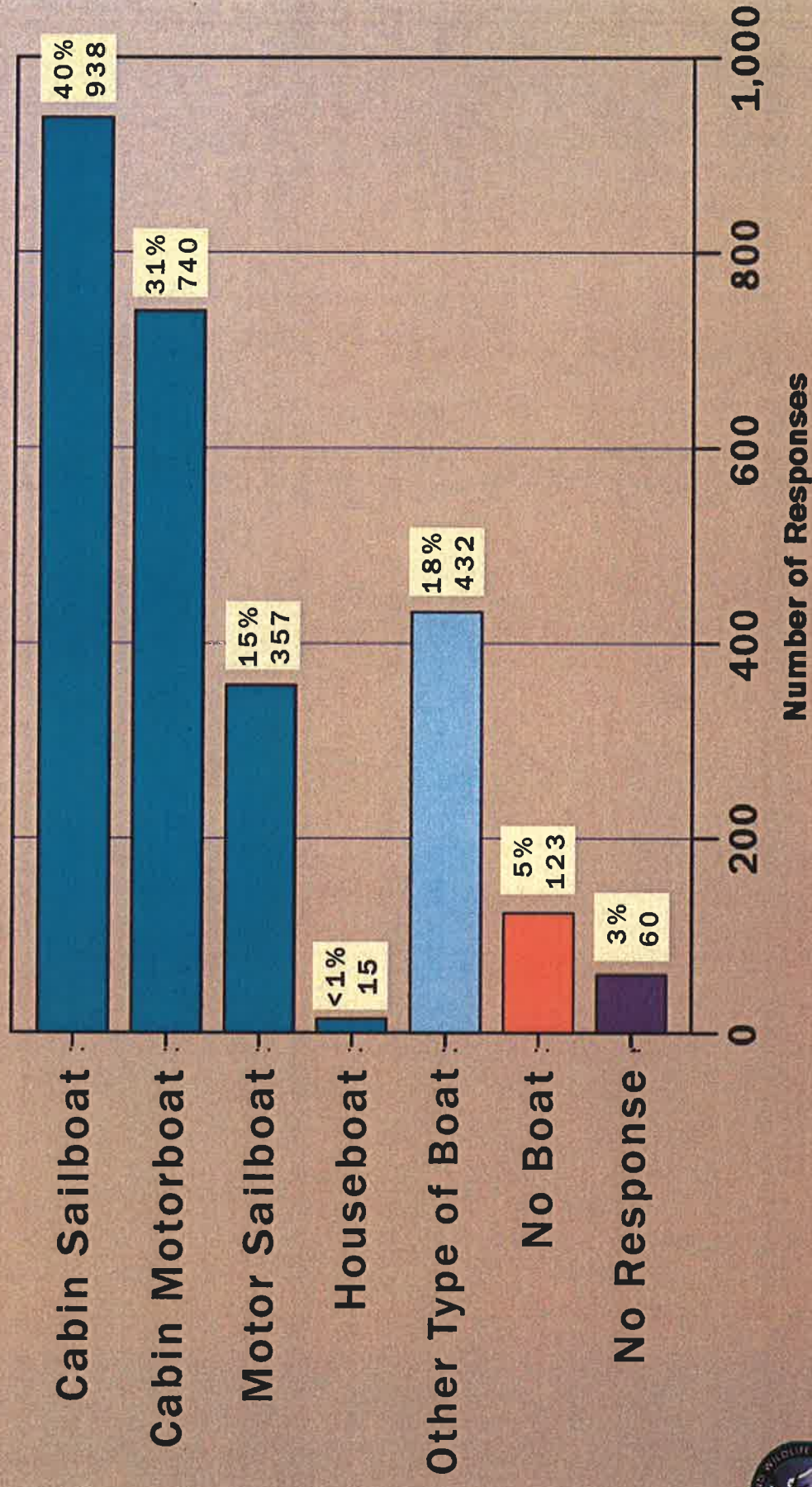


## Do you own a boat?



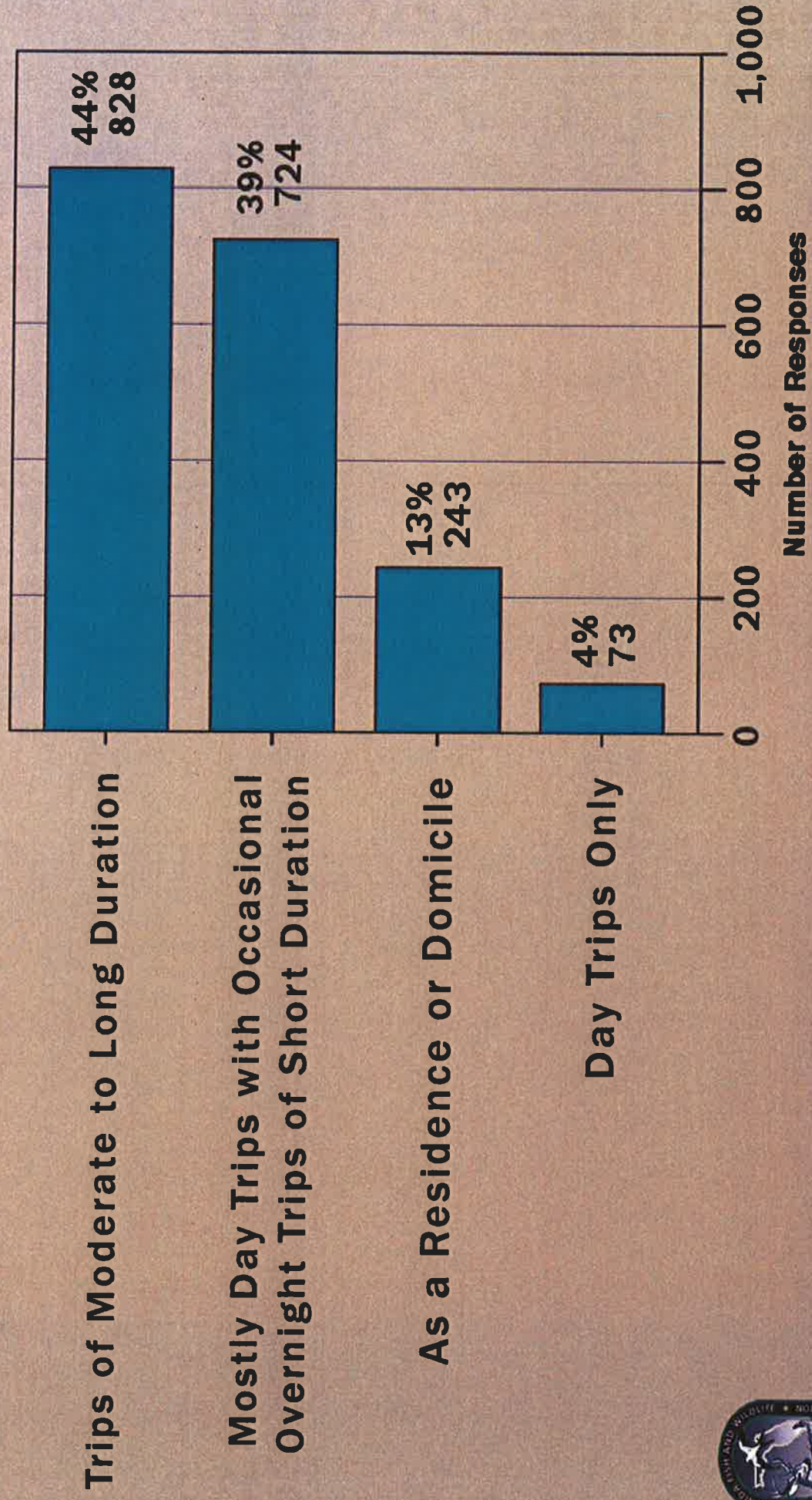


What type(s) of boat(s) do you use most often in Florida? Check all that apply.





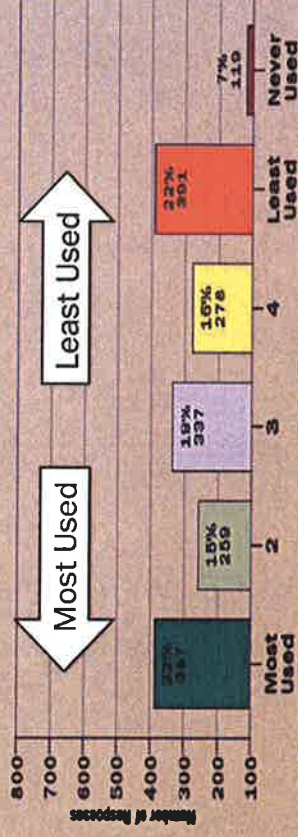
## How do you use your boat(s) most often in Florida?



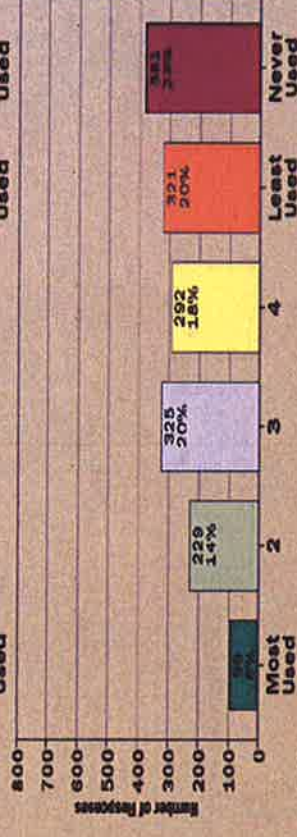


# Preferred Method of Mooring when Travelling Overnight

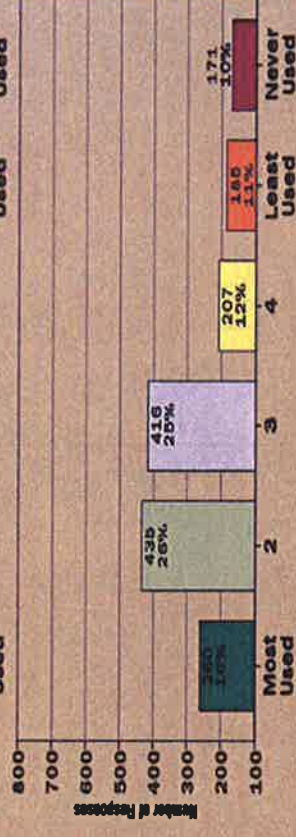
Stay at Marinas  
or Dock Facilities



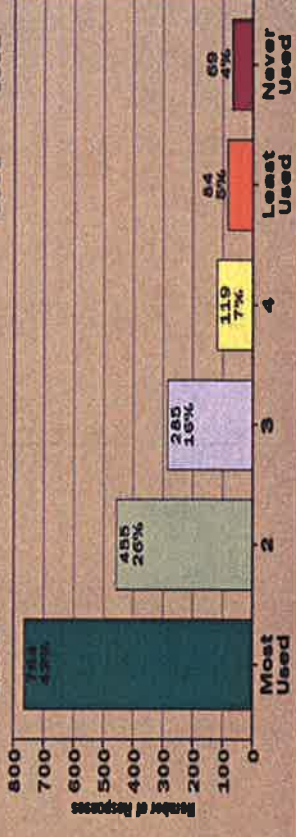
Stay at Managed  
Mooring Fields



Anchor in Officially  
Designated Anchorages

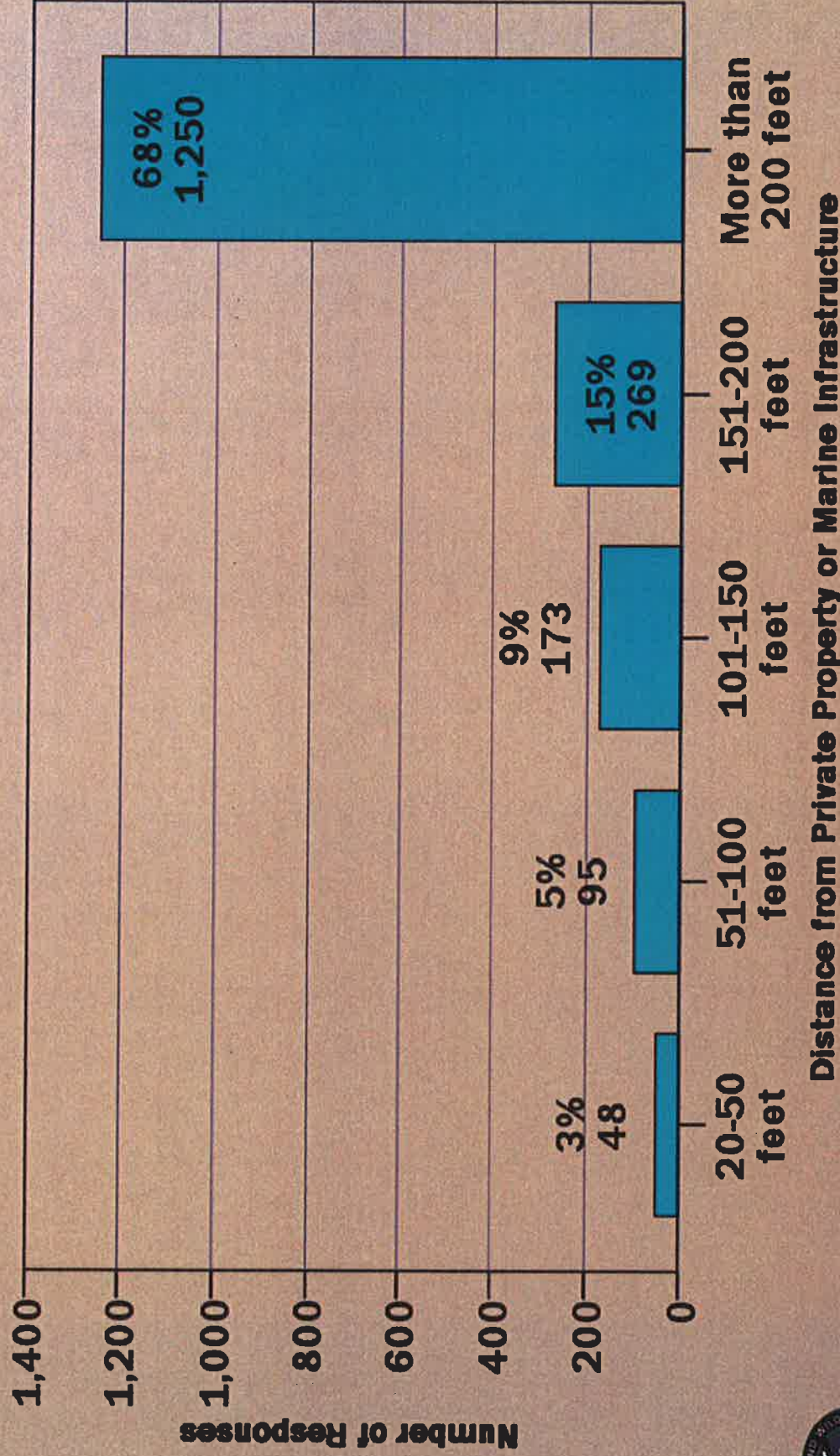


Anchor in Other  
Convenient Locations



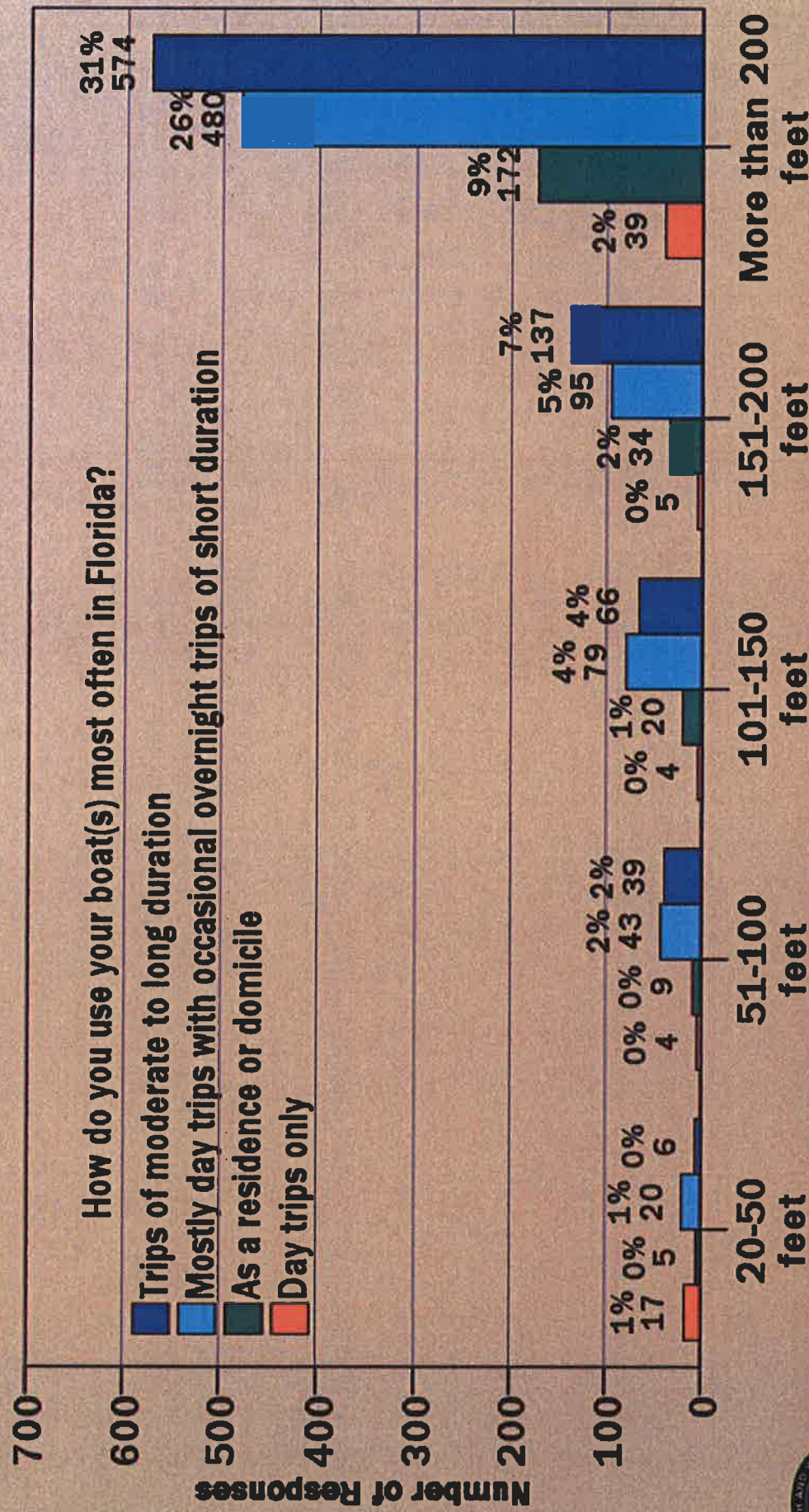


# How far do you traditionally anchor your boat from private property or marine infrastructure?



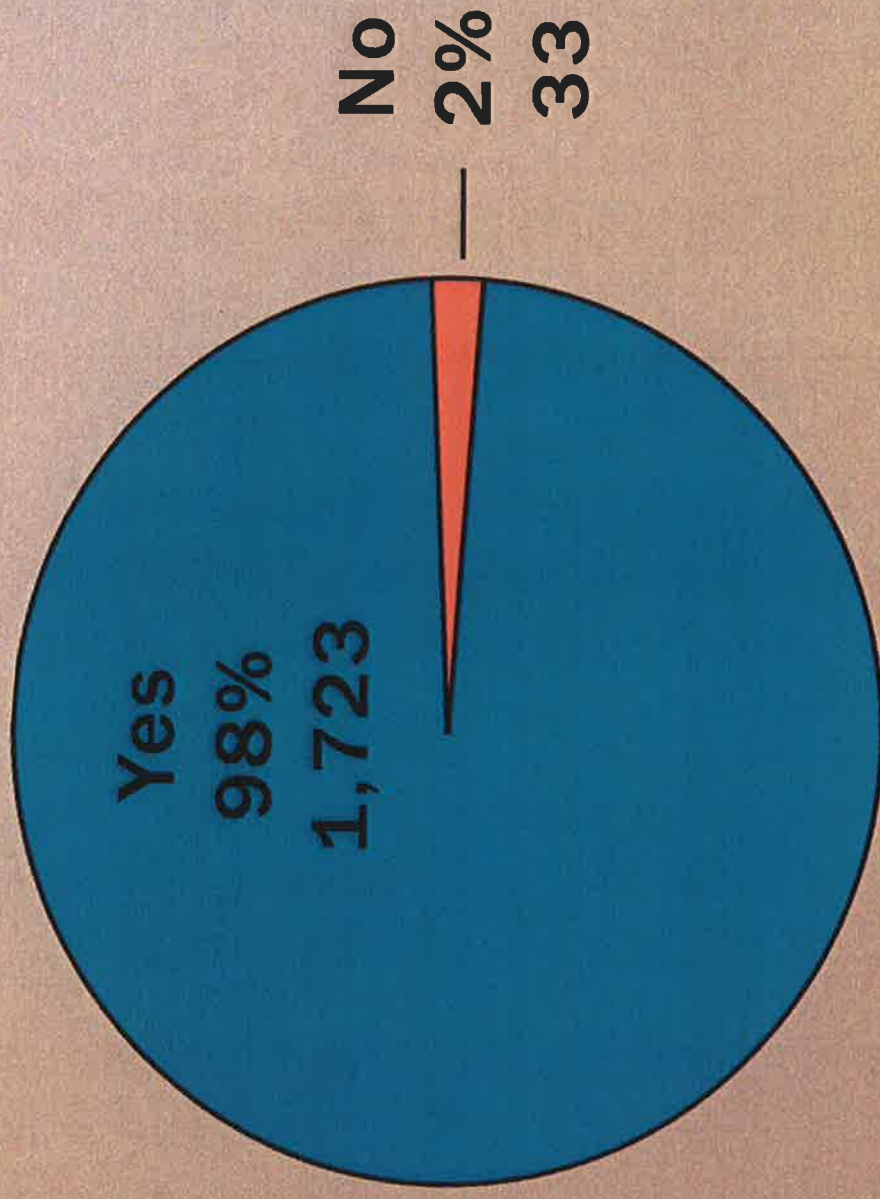


# How far do you traditionally anchor your boat from private property or marine infrastructure?



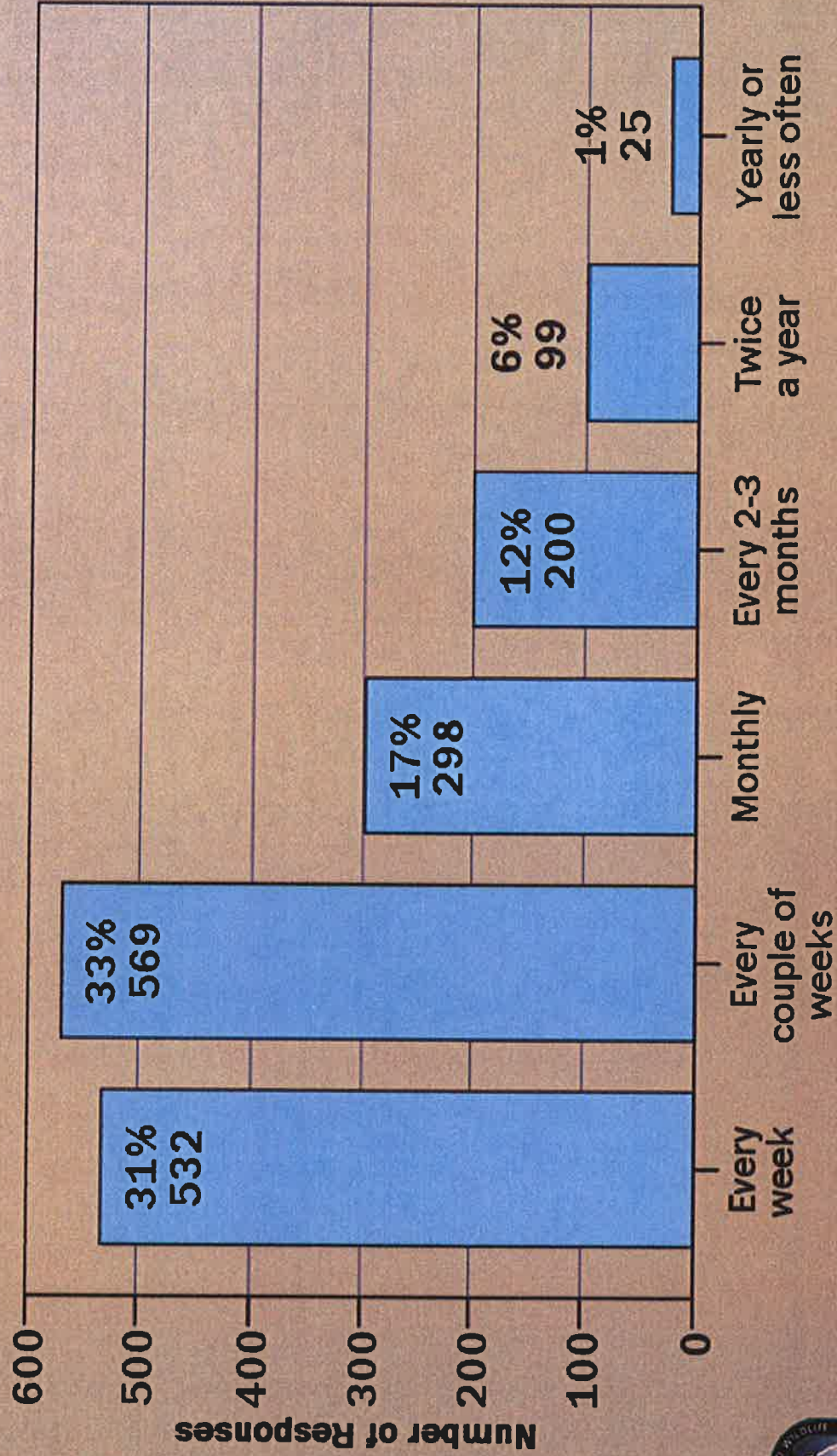


**Has your boat been underway  
at any time since January 2011?**



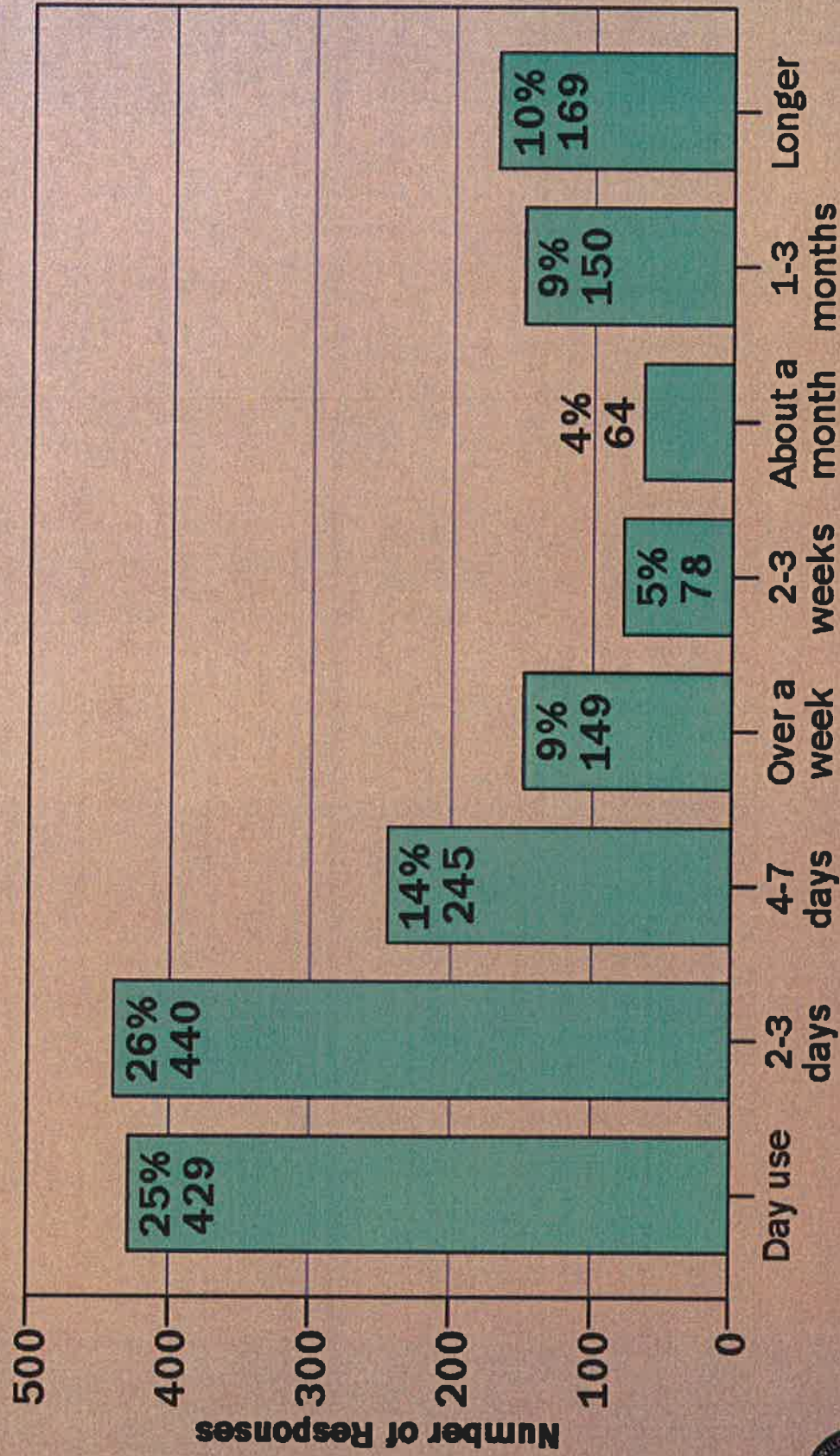


# How often, on average, do you get your boat underway?





# How long is your average trip?



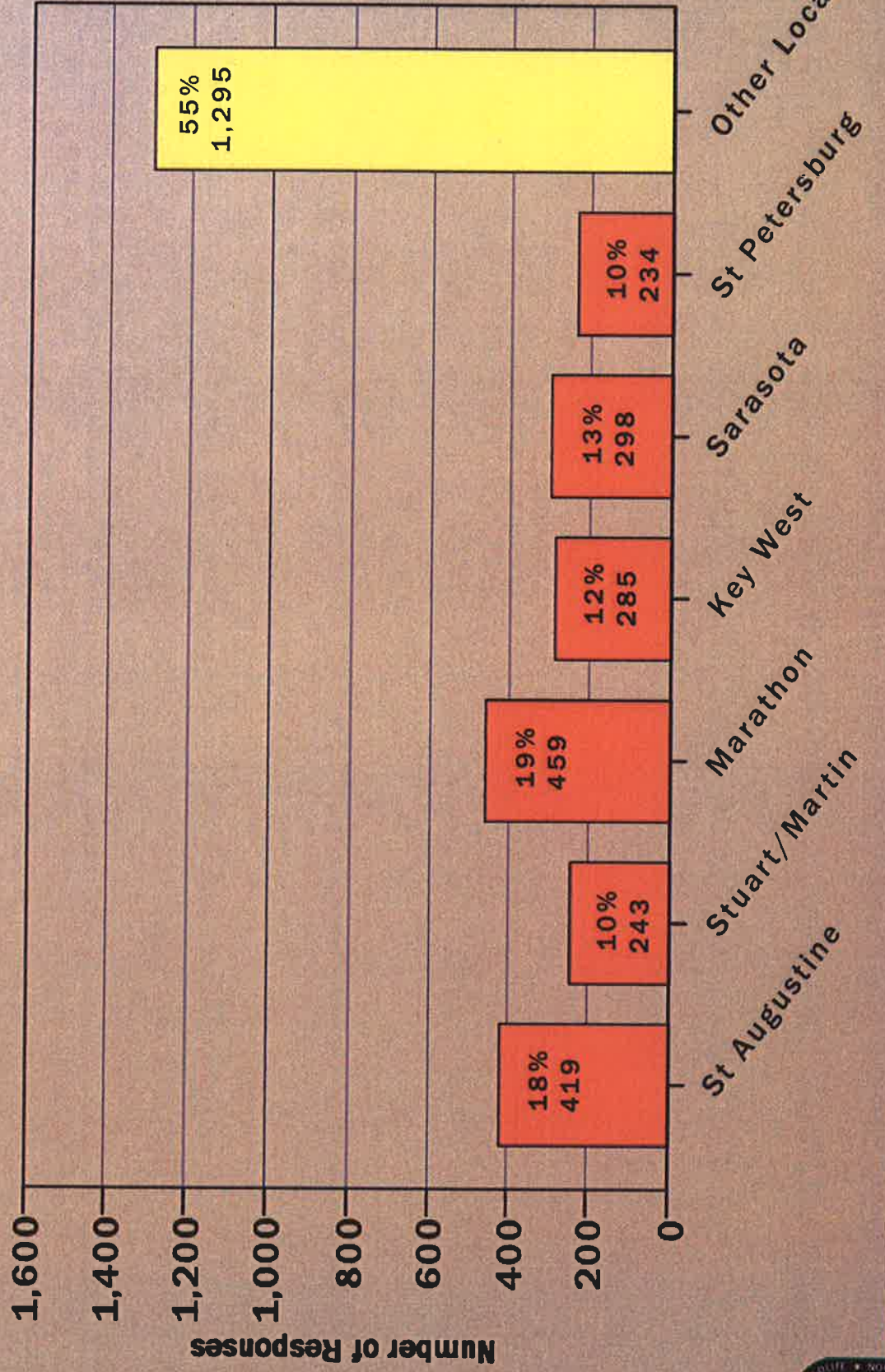


# Locations Respondents Boated at since January 2011





# Specific Ordinances Respondents are Familiar With

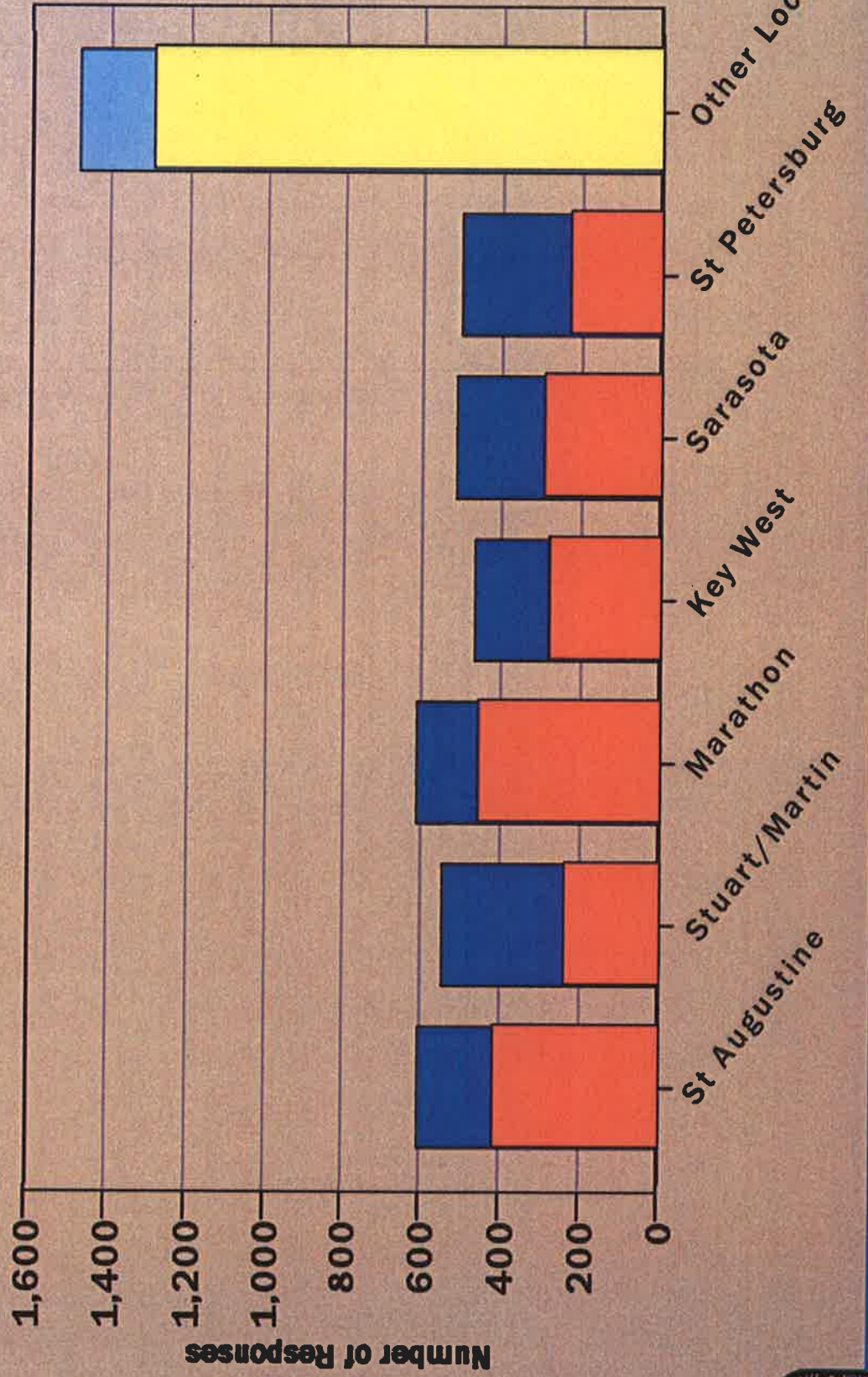




# Specific Ordinances Respondents Familiar With

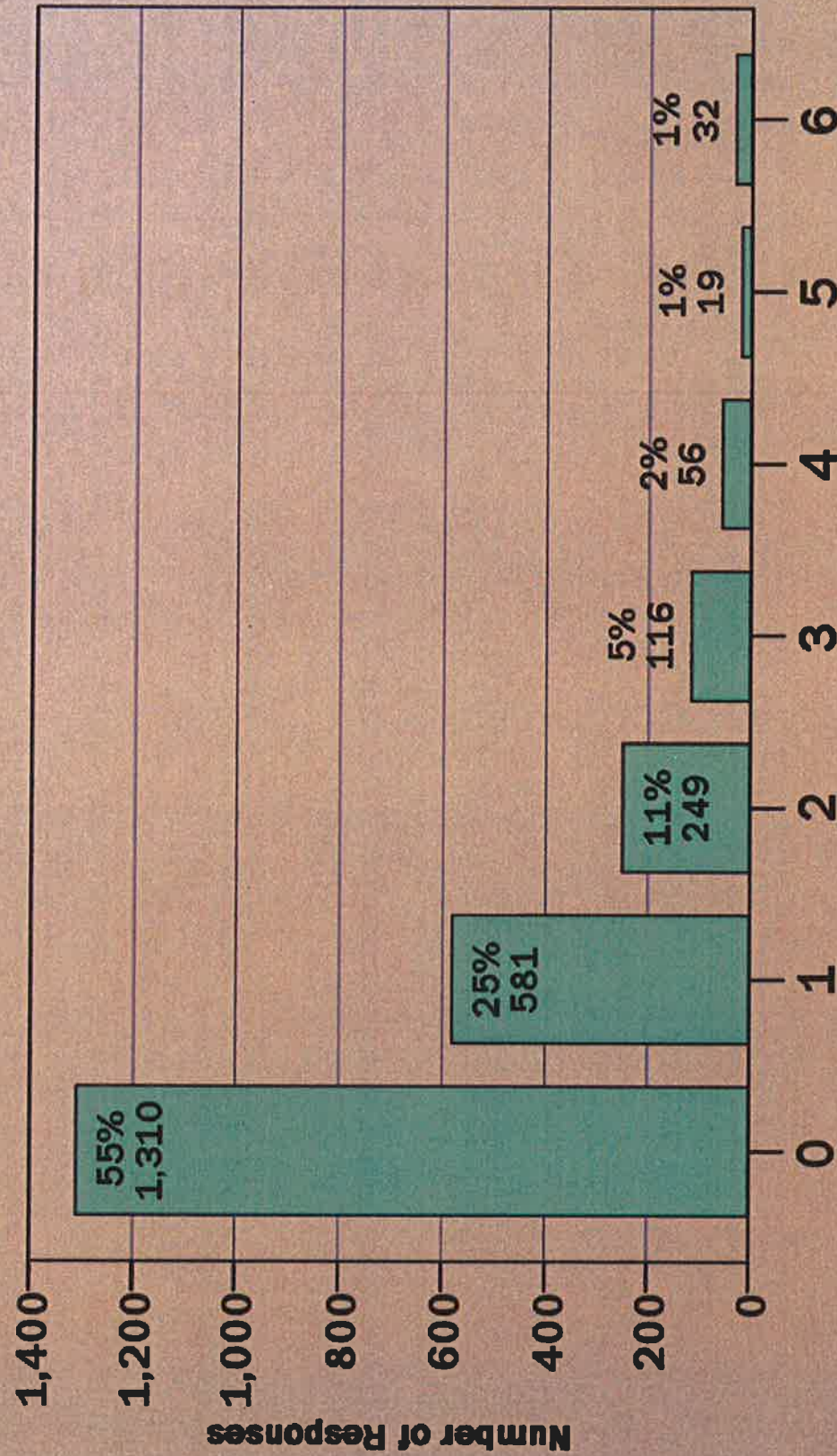
vs.

## Locations Boated



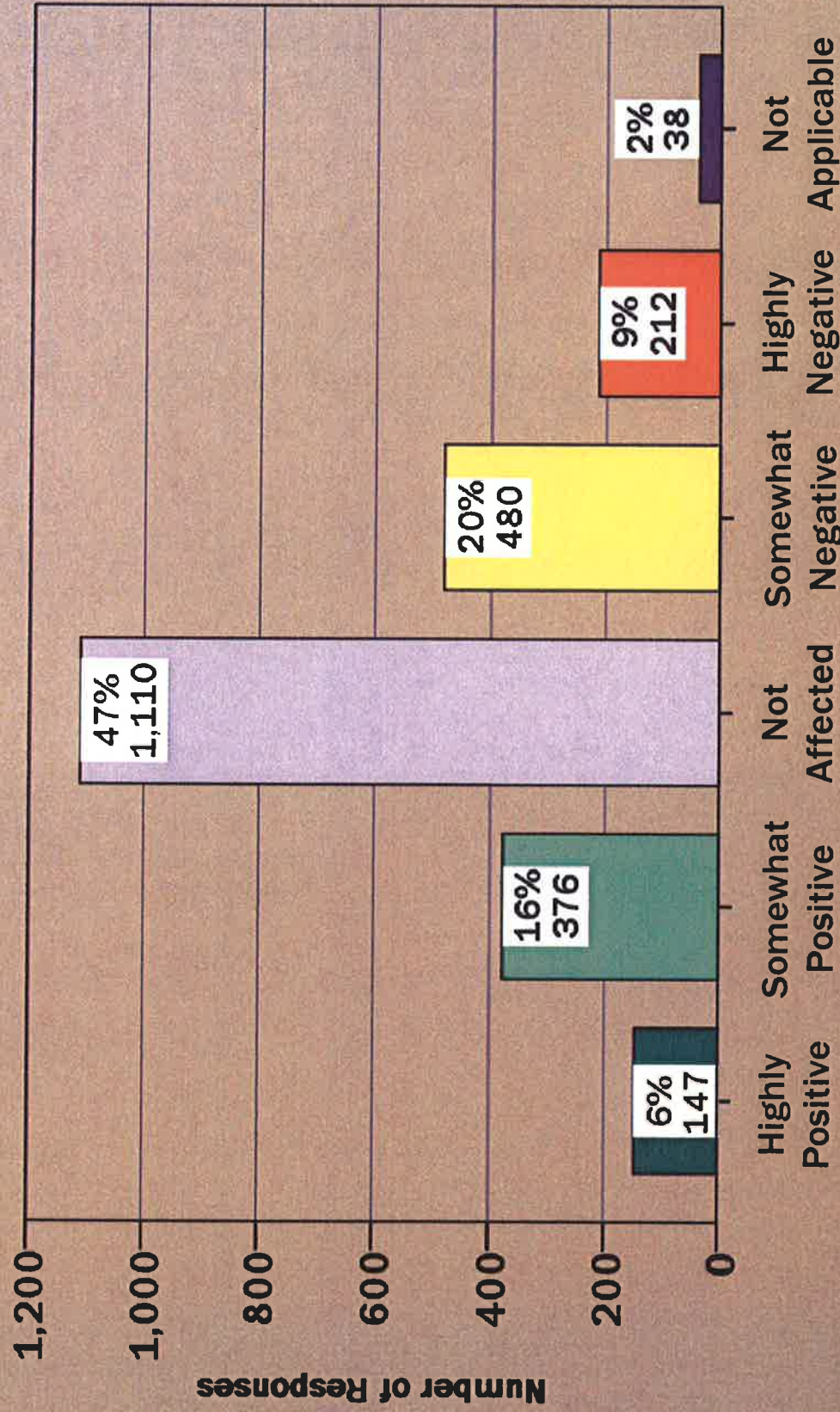


# Number of Ordinances Respondents Report Being Familiar With





# To what degree were you affected by the Pilot Program?

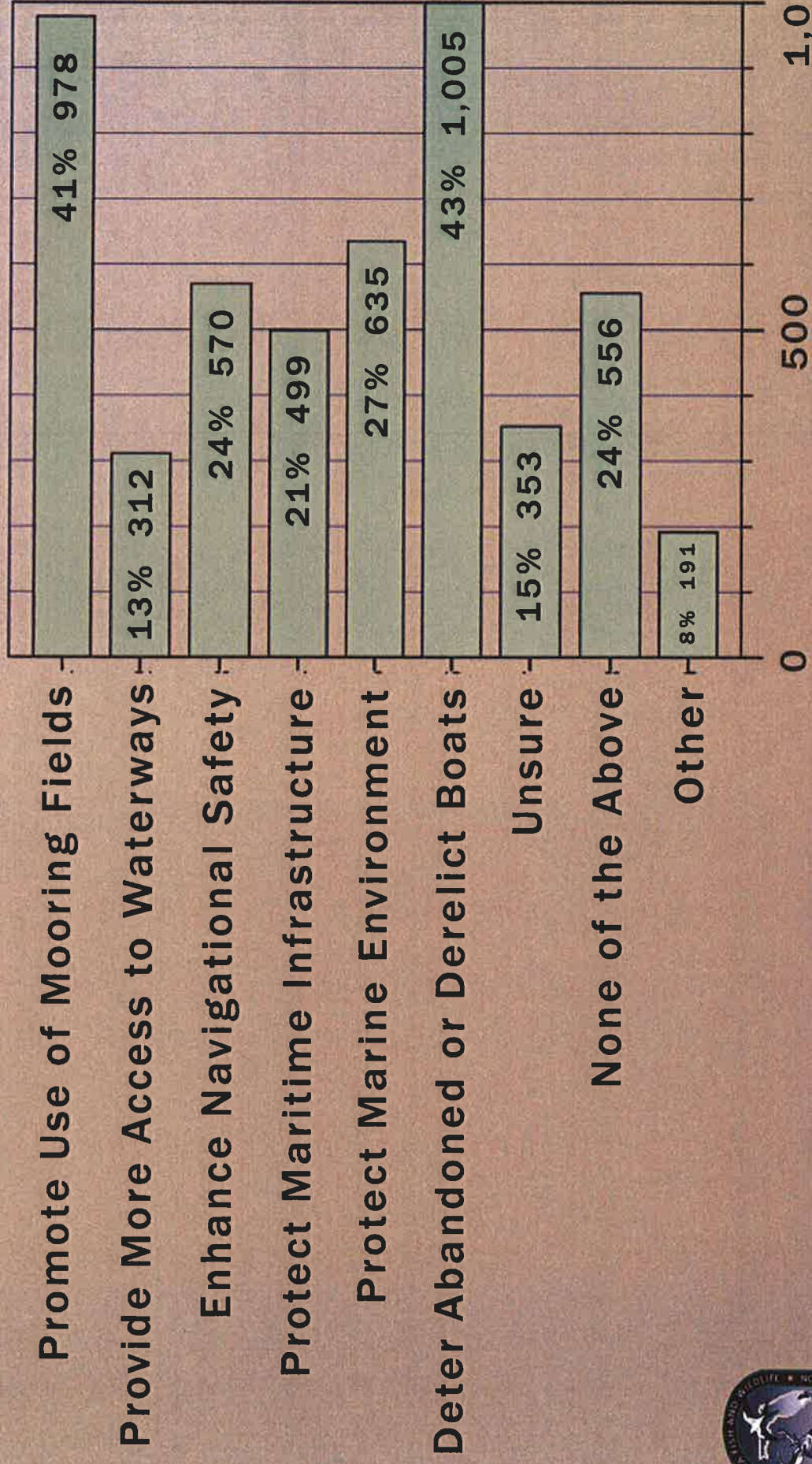




# Reported Effects of Pilot Program in Totality

## Pilot Program Goals

## Number of Responses



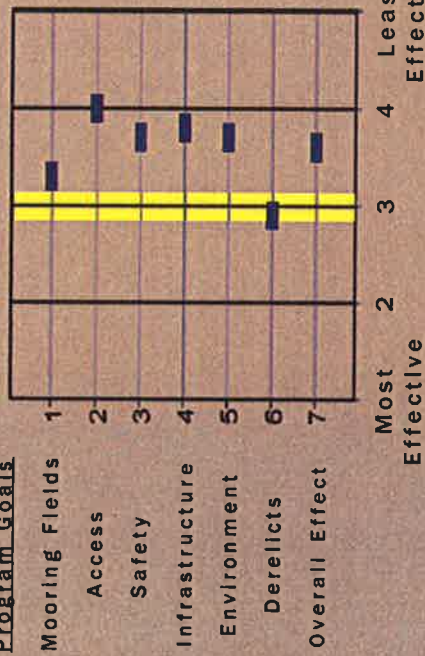


# Effectiveness of Each Ordinance

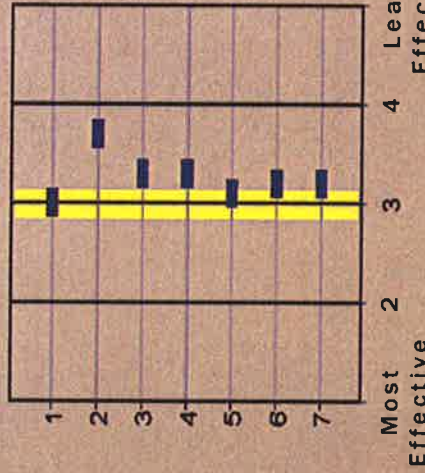
## Towards Achieving the 6 Pilot Program Goals

**St. Petersburg**

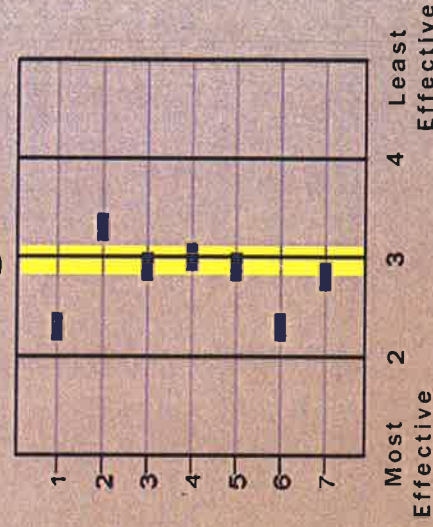
Program Goals



**Key West**

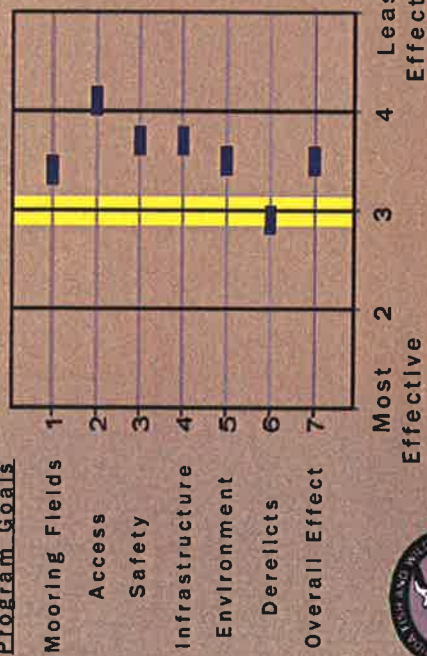


**St. Augustine**

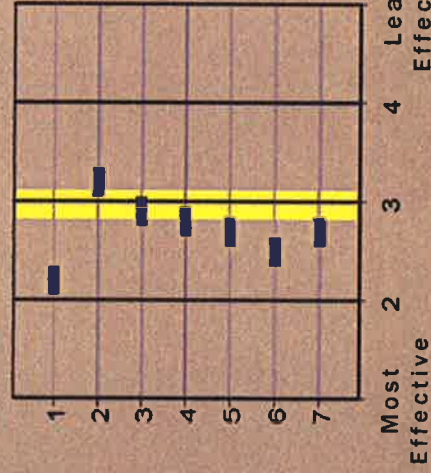


**Sarasota**

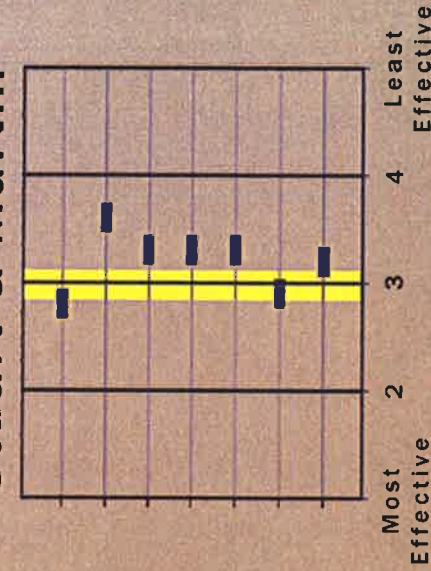
Program Goals



**Marathon**



**Stuart & Martin**

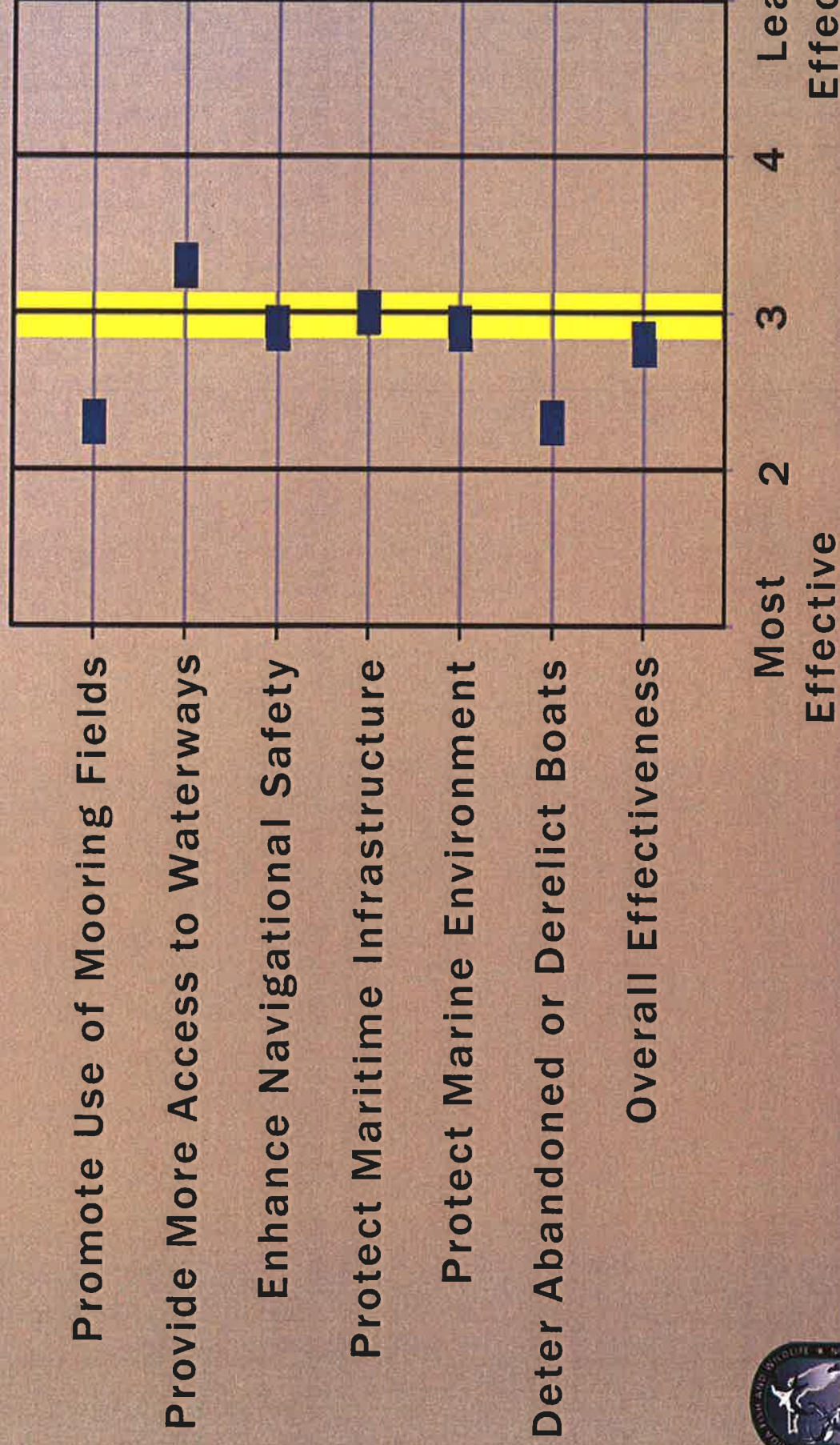




# City of St. Augustine Ordinance

## Pilot Program Goals

## Rated Effectiveness

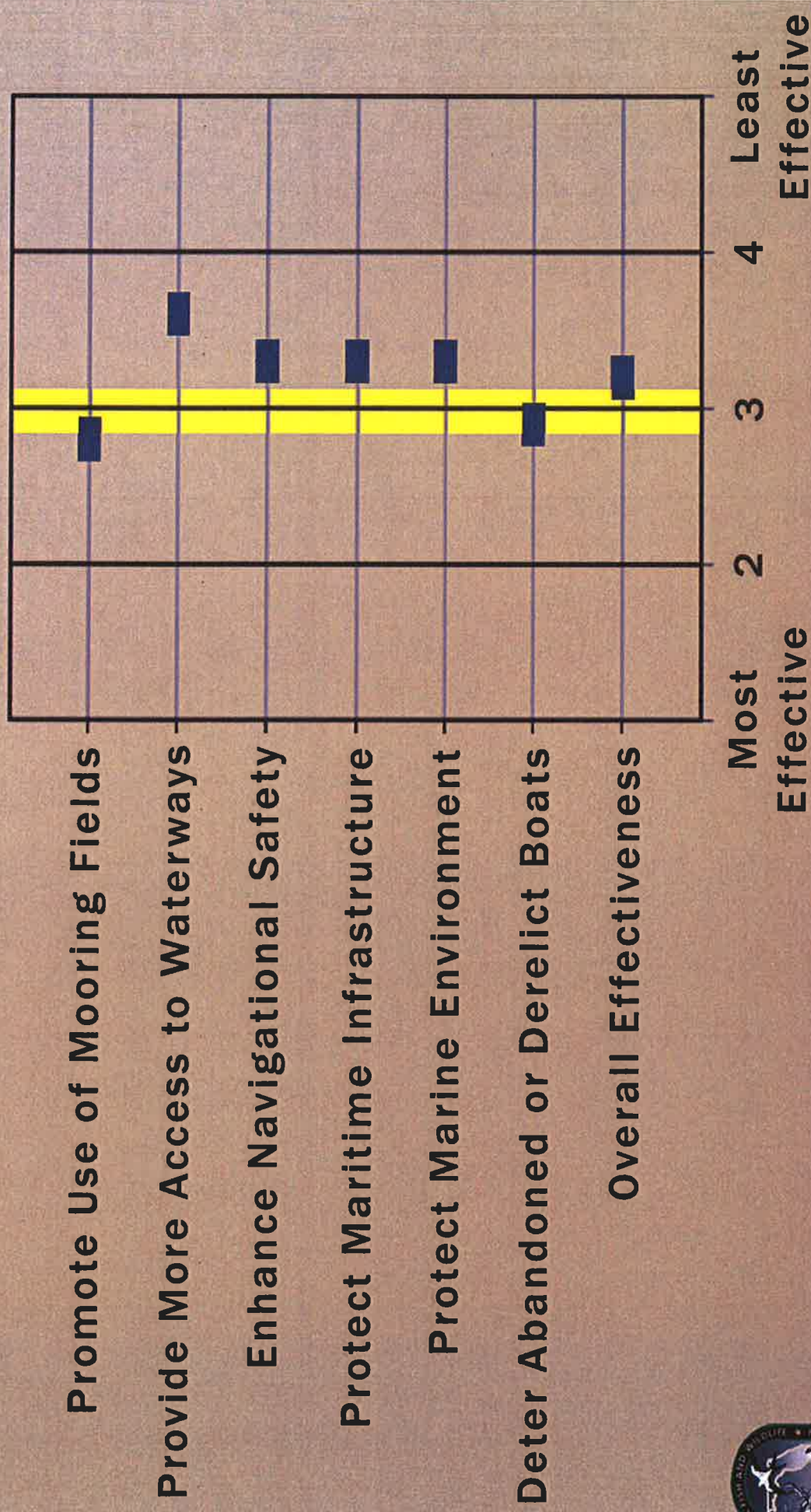




# Martin County / City of Stuart Ordinance

## Pilot Program Goals

## Rated Effectiveness

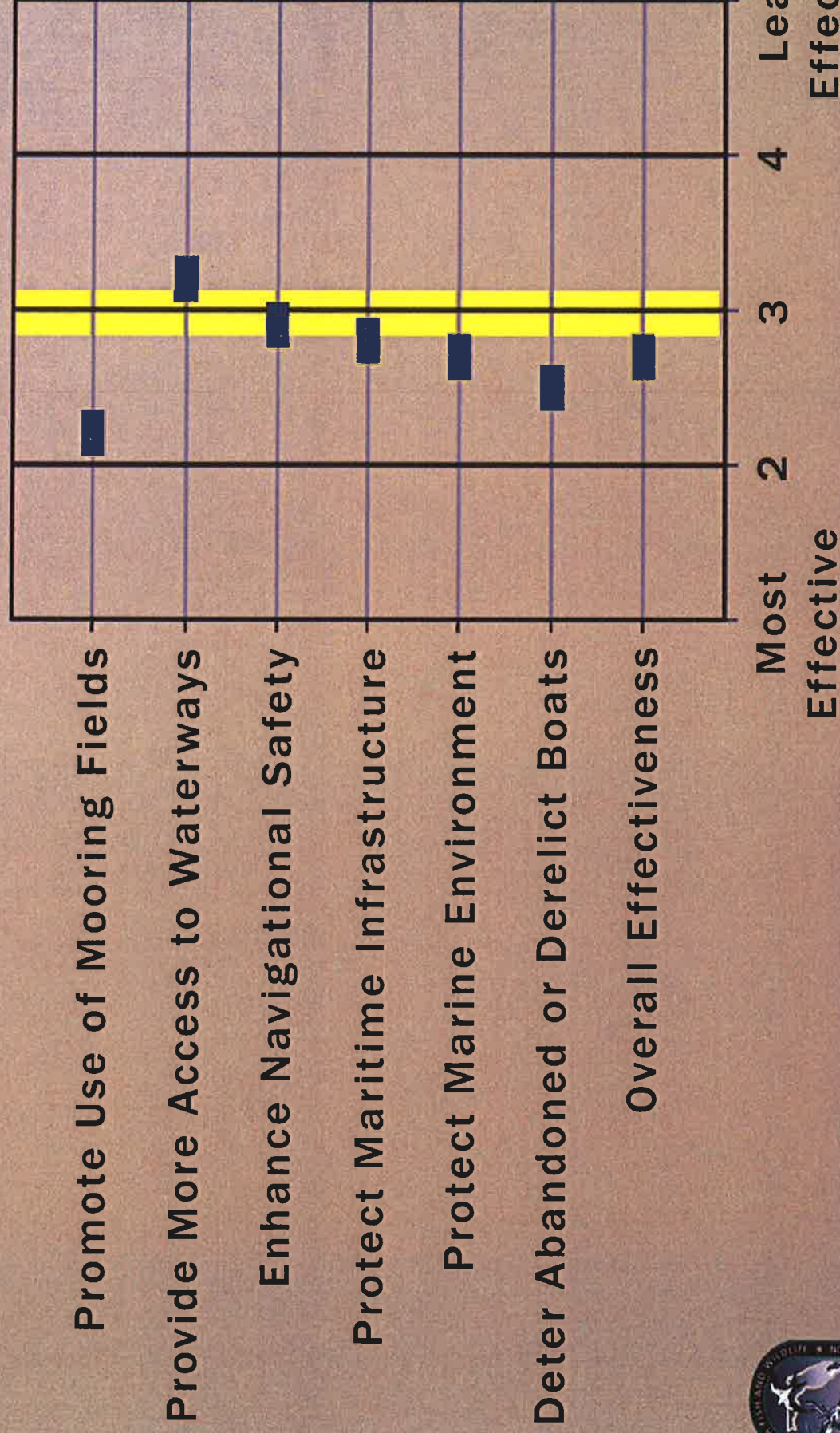




# Monroe / Marathon Ordinance

## Pilot Program Goals

## Rated Effectiveness

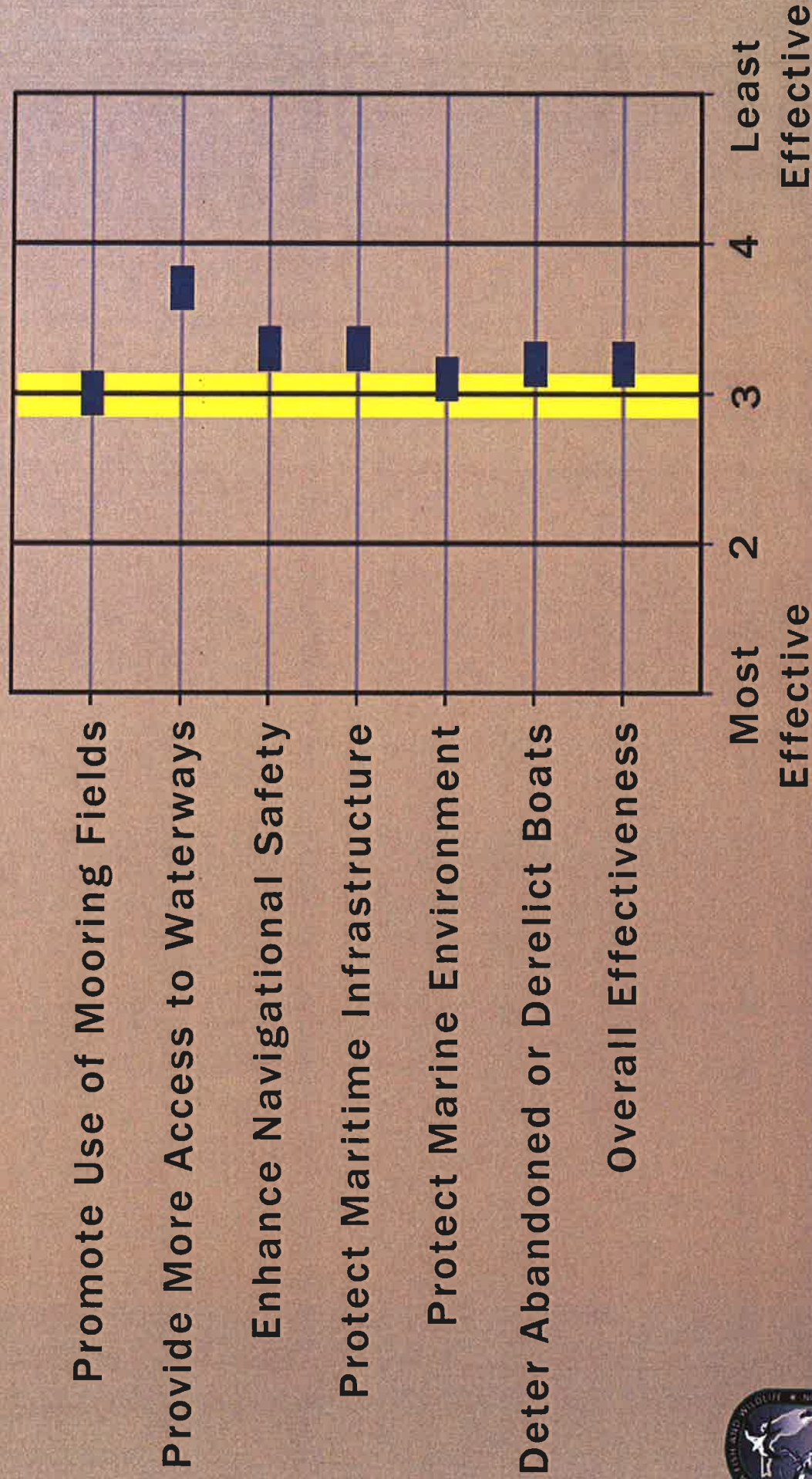




# Monroe / Key West Ordinance

## Pilot Program Goals

## Rated Effectiveness

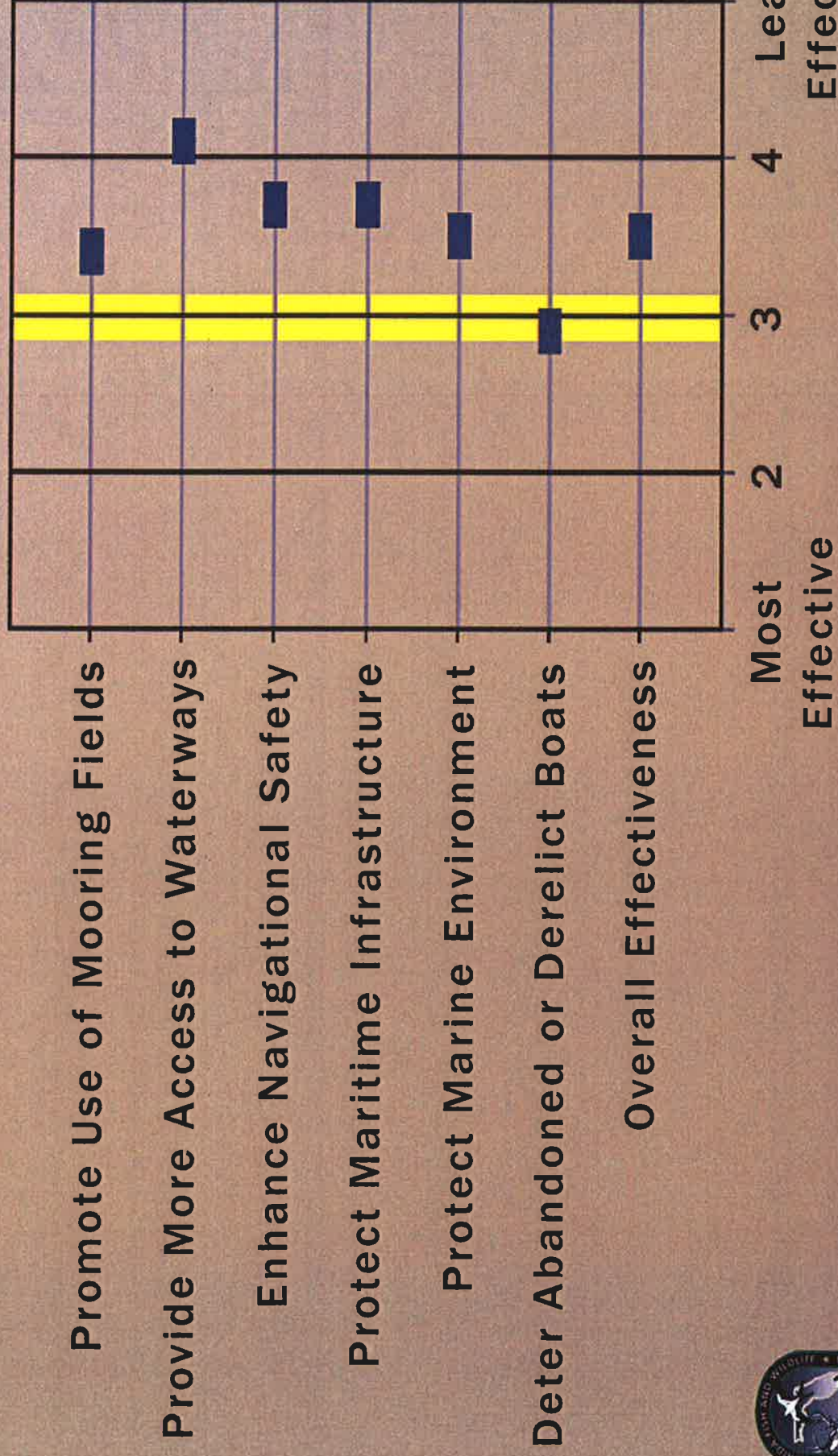




# City of Sarasota Ordinance

## Pilot Program Goals

## Rated Effectiveness

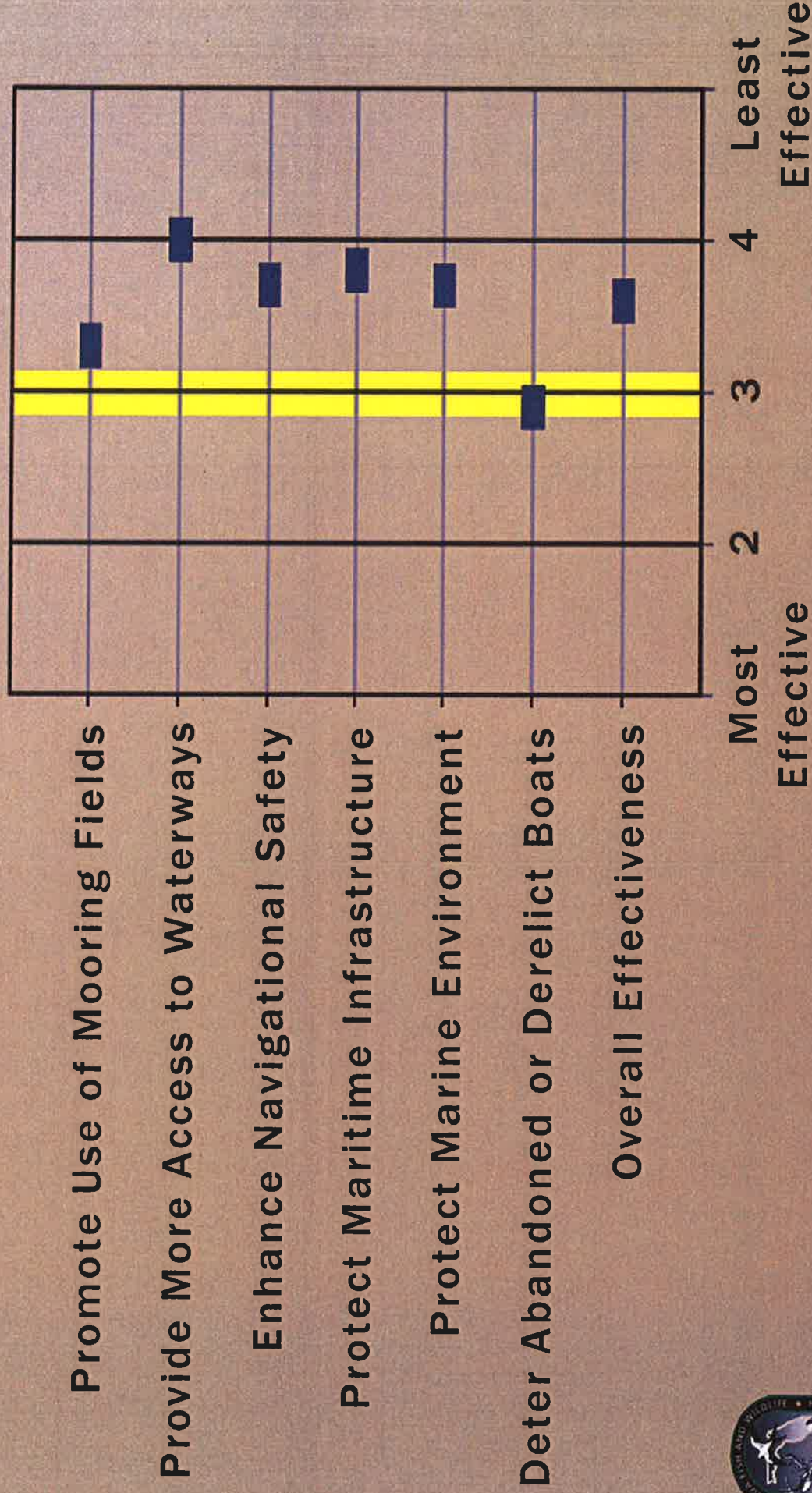




# City of St. Petersburg Ordinance

## Pilot Program Goals

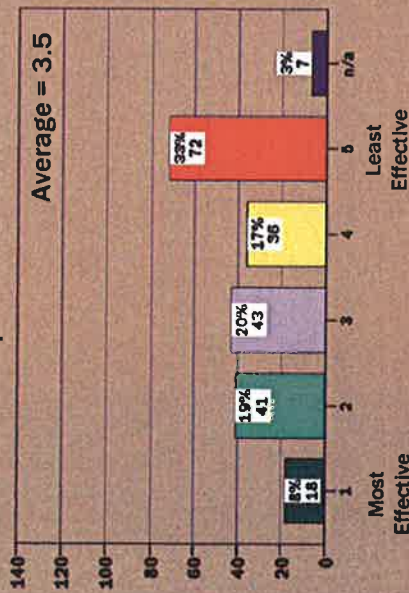
## Rated Effectiveness



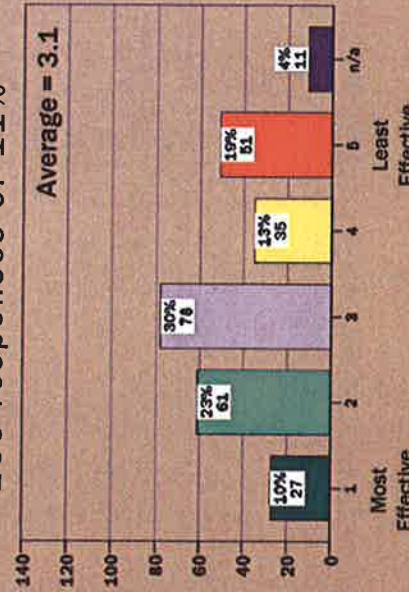


# Overall Effectiveness of Each Ordinance

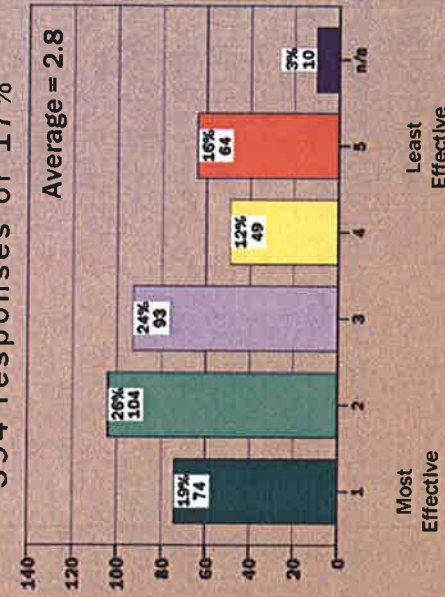
**St. Petersburg**  
217 responses or 9%



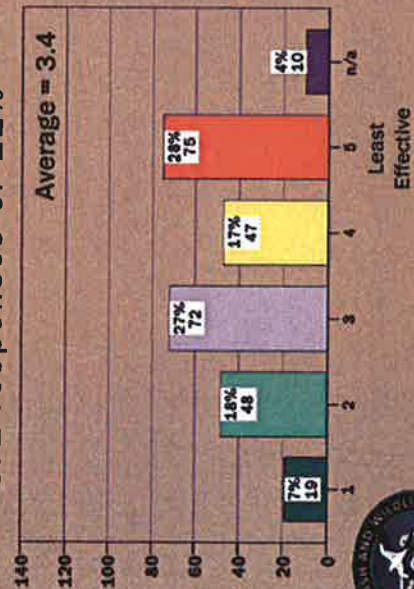
**Key West**  
263 responses or 11%



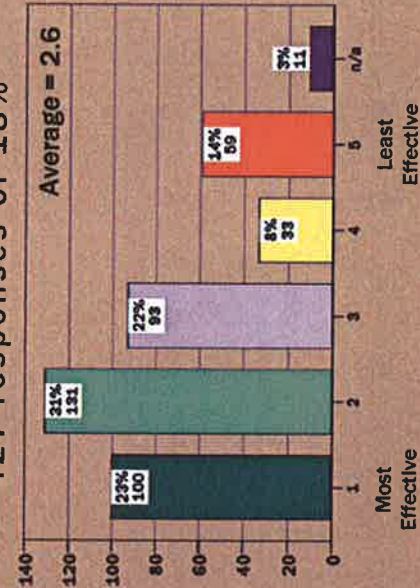
**St. Augustine**  
394 responses or 17%



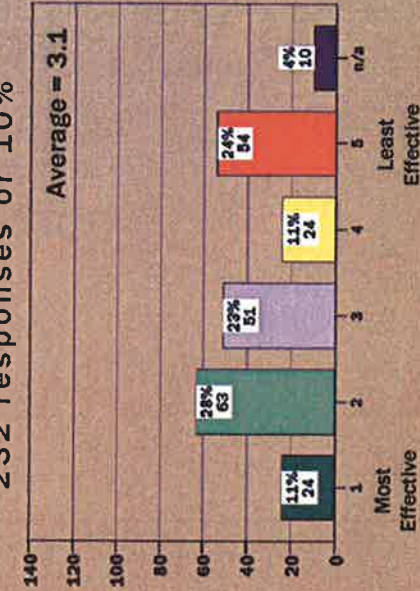
**Sarasota**  
271 responses or 11%



**Marathon**  
427 responses or 18%



**Stuart & Martin**  
232 responses or 10%





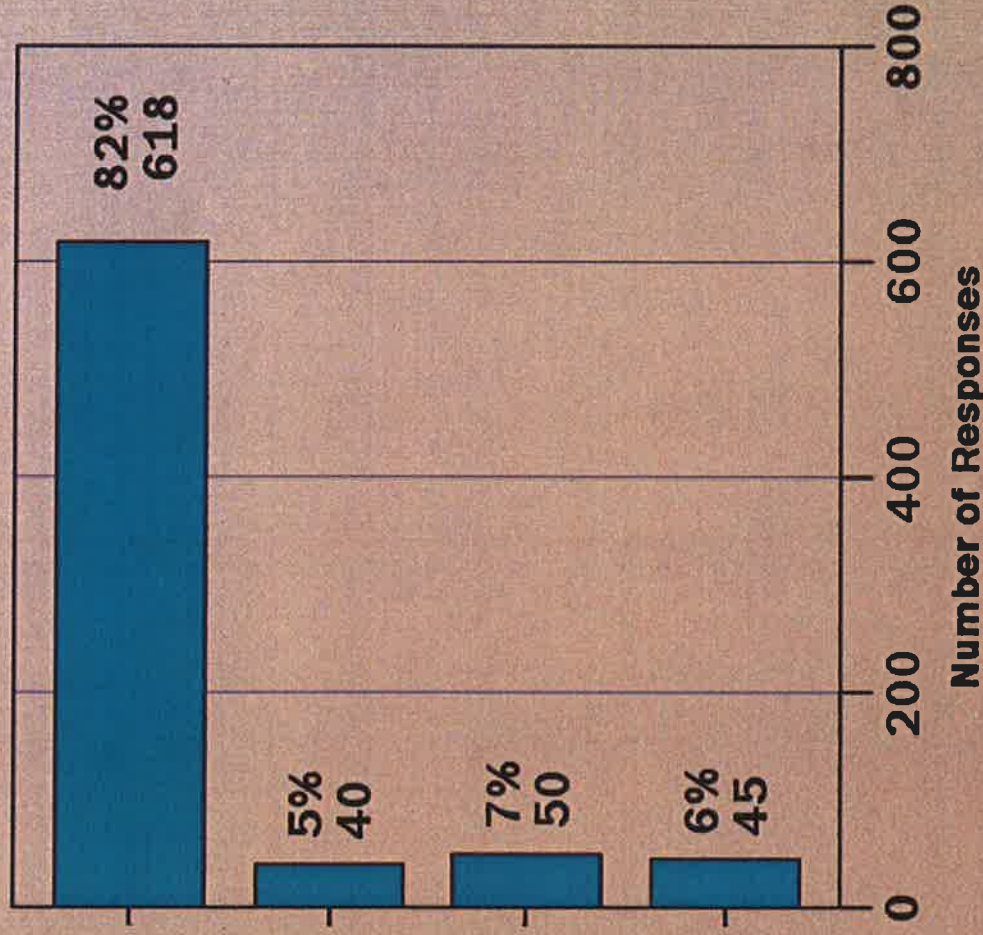
**Has the distance that boats anchor from your shoreline or property changed during the Pilot Program?**

**No, I have not observed a change**

**Boats no longer anchor in the vicinity of my property**

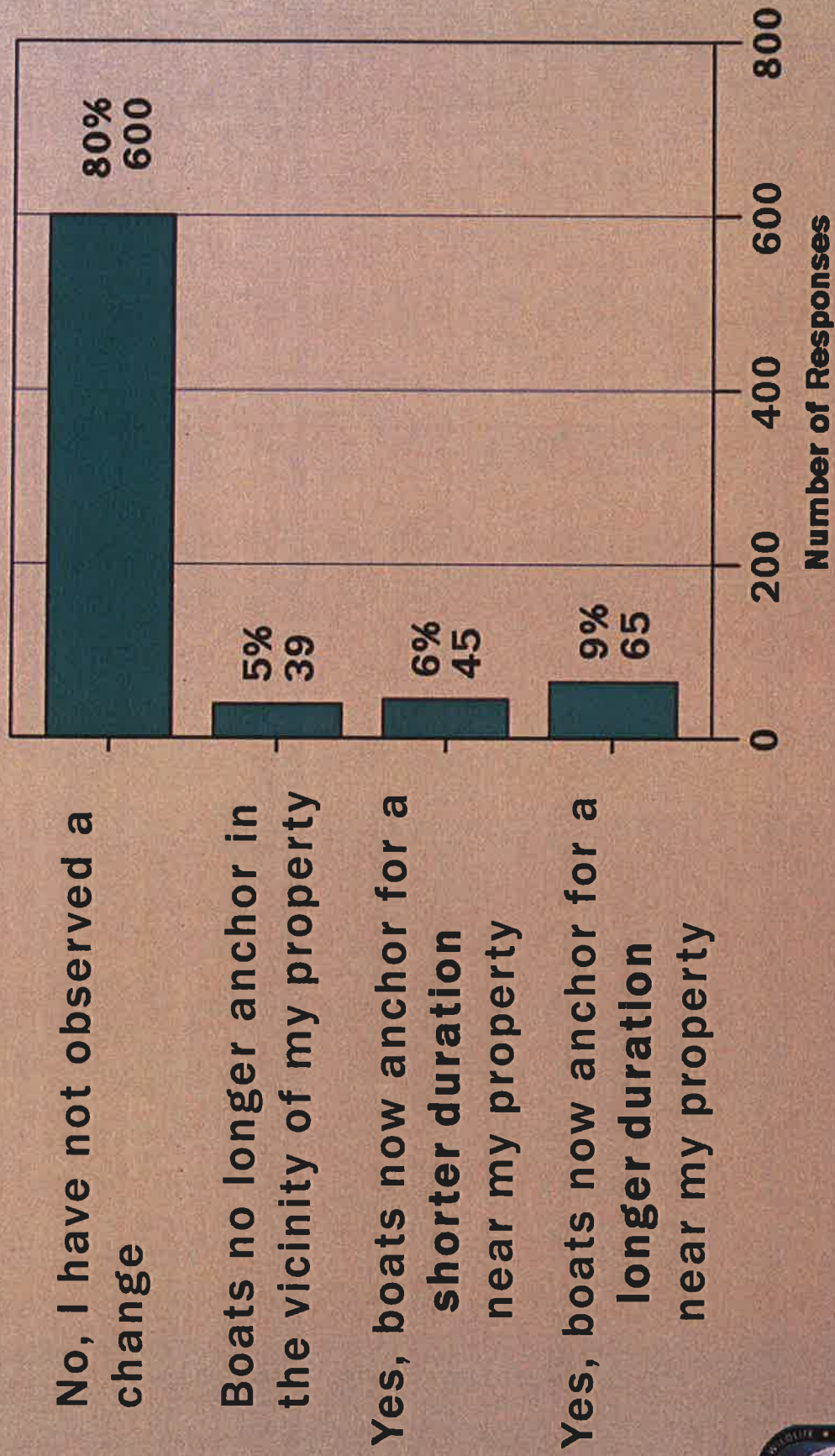
**Yes, boats now anchor further from my property**

**Yes, boats now anchor closer to my property**





# Has the duration that boats anchor in vicinity to your property changed during the Pilot Program?





*Thank you for your interest  
and assistance.*





## Welcome to Florida

Home / Find an Agency / Contact Us / 411 / Site Map / Help

Monday - November 4, 2013

Search

-  **Visitor**
-  **Floridian**
-  **Business**
-  **Government**
-  **Get Answers**

### Fish & Wildlife Conservation

**Nick Wiley, Executive Director**

The Fish and Wildlife Conservation Commission, simply known as the FWC, is responsible for managing fish and wildlife resources for their long-term well-being and the benefit of people.

The FWC creates the rules for protecting Florida's fish and wildlife. It consists of an unpaid seven-member board of commissioners. Commissioners are appointed by the governor and approved by the senate. They are advised and guided in their decision-making by scientists, law enforcement officers, and other experts, who are among the more than 1,800 employees of the FWC.

The FWC came into existence on July 1, 1999. It was created by Constitutional Amendment 5, which was approved by Florida voters during the 1998 general election. The agency is a combination of employees from the former Game and Fresh Water Fish Commission and Marine Fisheries Commission, and elements of the Florida Department of Environmental Protection, including the former Florida Marine Patrol.

The FWC is headquartered in Tallahassee, with five regional offices located throughout the state to serve its citizens.



**Website:** <http://MyFWC.com>

**Address:** 620 South Meridian Street

Tallahassee, FL  
32399-1600


**Email:** [email.fwc@MyFWC.com](mailto:email.fwc@MyFWC.com)

**Phone:** 850-488-4676

**Fax:** 850-488-1961

### e-Government Services Provided

- ▶ [AskFWC](#)
- ▶ [Comments to Florida Fish and Wildlife Conservation Commission](#)
- ▶ [Commercial Salt Water License Status Check](#)
- ▶ [Duplicate Hunter Education Cards and Class Registration Lookup](#)
- ▶ [Fishing Licenses and Permits Online Purchase](#)
- ▶ [Hunter Safety Course Schedules](#)
- ▶ [Recreational Hunting or Fishing Licenses Purchase Information](#)

 Denotes a site that is not controlled by the State of Florida. Please see the external link [disclaimer](#) for more information.

E-mail Disclaimer: Under Florida law, e-mail addresses are public records. If you do not want your e-mail address released in response to a public records request, do not send electronic mail to this entity. Instead, contact this office by phone or in writing.



**ALCALDE & FAY**

GOVERNMENT &amp; PUBLIC AFFAIRS CONSULTANTS

November 1, 2013

**MEMORANDUM****TO:** Mark Crosley, Executive Director**FROM:** Jim Davenport**SUBJECT:** Federal Legislative Report**WATER RESOURCES AND REFORM DEVELOPMENT ACT**

On October 23<sup>rd</sup>, the House of Representatives passed, by a vote of 417-3, H.R. 3080, the 2013 Water Resources Reform and Development Act (WRRDA). The bill authorizes new projects and programs to be carried out by the U.S. Army Corps of Engineers (USACE). As you know from our last report, it includes a section assessing the needs of the Atlantic Intracoastal Waterway, and adopts several of the concepts we offered to the House Transportation and Infrastructure Committee on behalf of FIND and supported by the Atlantic Intracoastal Waterway Association.

The Senate passed its WRDA (S. 601) in May. The next step is for the House and Senate to appoint conferees to work out differences between H.R. 3080 and S. 601, and produce a WRDA conference report. Prior to that time, we plan to work with the Senate Environment and Public Works Committee and Senator Bill Nelson to maintain Sec. 218 in the final WRDA.

**FISCAL YEAR 2014 APPROPRIATIONS**

Members of a House-Senate budget conference committee met this week to begin discussing a budget blueprint for fiscal year (FY) 2014, which would hopefully lead to the passage of FY 2014 appropriations legislation, which is already one month overdue.

The Federal government is currently operating under a continuing resolution (CR) until January 15, 2014, and we are hopeful that the House and the Senate can work out a budget agreement that would include some sequester relief. Without any changes, about \$20 billion in automatic, across-the-board cuts would kick in by January 15<sup>th</sup>.

Likewise, we would like to see an omnibus appropriations bill passed, as opposed to a year-long CR, that would include funding for inland waterways.

We will continue working on FIND's objectives as congress continues to discuss and debate FY 2014 appropriations legislation.