

February 2003

Executive Summary

AN ECONOMIC ANALYSIS OF THE DISTRICT'S WATERWAYS IN BREVARD COUNTY

Submitted to



Florida Inland Navigation District
Jupiter, Florida



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GEC Project No. 22805105A

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Submitted by

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EXECUTIVE SUMMARY



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INTRODUCTION AND SUMMARY OF FINDINGS

The purpose of this report is twofold: (1) to identify and quantify the total economic impact of the waterways operated, maintained, or within the boundaries of the Florida Inland Navigation District (the District) in Brevard County; and (2) to estimate the influence of the waterways on property values in the county. For the purpose of this report, the District's waterways include the Intracoastal Waterway and all waterways that are physically connected to them. The expected impacts to the Brevard County economy and to property values for three waterway conditions were evaluated: (1) existing conditions; (2) cessation of maintenance of the waterways (resulting in vessel draft restrictions of three feet MLW on the waterways); and (3) increased maintenance of the waterways (resulting in vessel draft restrictions of 12 feet MLW). This analysis also addresses the influence that the waterways have had on the construction of larger, more expensive homes on the waterways.

The results of the analysis are summarized below:

- Impacts of the waterways under existing conditions:
 - \$754 million in business volume
 - \$260 million in personal income
 - 7,382 jobs
 - \$1.27 billion to \$1.46 billion in property values

- Expected impacts of the waterways assuming a cessation of waterways maintenance:
 - Decrease of \$541 million in business volume
 - Decrease of \$193 million in personal income
 - Decrease of 5,153 jobs
 - Decrease of \$446.1 million in property values

- Expected impacts of the waterways assuming an increase in waterways maintenance:
 - Increase of \$27 million in business volume
 - Increase of \$9 million in personal income
 - Increase of 277 jobs
 - Increase of nearly \$2.6 million to \$6.9 million in property values

Background

With reduced federal funding, the local sponsors of the nation's inland navigation systems are being required to shoulder a larger portion of the maintenance costs. For example, studies have shown that maintenance of the Atlantic Intracoastal Waterway Project in Florida requires expenditures of \$7.8 million each year while federal funding remains at \$3.2 million per year. The District has made a decision not to allow the waterways to deteriorate by deferring maintenance projects and has elected to fund this budgetary shortfall. This investment by the District may total up to \$230 million over the 50-year planning period of the waterway. With such a large potential investment, the District needs to educate the general public as well as federal, state, and local public officials of the economic importance of expending these monies to meet the needs of the waterways.



On an average year, \$7.8 million is spent maintaining the Atlantic Intracoastal Waterway in Florida, including the dredging of ocean inlets such as Sebastian Inlet pictured above.

The Atlantic Intracoastal Waterway is a 1,391-mile federally and locally maintained channel between Trenton, New Jersey, and Miami, Florida. The Florida segment, which was completed in 1965, is 370 miles long and follows coastal rivers and lagoons past numerous tourism-oriented communities.

The waterway from the Florida/Georgia border to Miami was constructed and is maintained by the Jacksonville District Corps of Engineers in cooperation with the Florida Inland Navigation District, the local sponsor for the waterway. Continued maintenance dredging is required because the channel is subject to sedimentation from upland erosion and coastal sediment migration through ocean inlets. A Long Range Dredged Material Management Plan for meeting dredged material management requirements over the next 50 years has been developed and is presently being implemented.

The Intracoastal Waterway in Brevard County

The Intracoastal Waterway extends about 71 miles through Brevard County. The waterway enters the county from the north in the Mosquito Lagoon at Mile 864, north of the John F. Kennedy Space Center. The waterway then heads east through the one-mile Haulover Canal to the Indian River. The waterway continues south in a dredged channel in the Indian River past the communities



The Canaveral Inlet, pictured above with the Banana River in the background, is one of two inlets allowing boaters offshore access in Brevard County; the other, Sebastian Inlet, is located at the county's southern boundary.

Canaveral Inlet. The Banana River lies east of, and is connected to, the Intracoastal Waterway on its northern end through the Canaveral Barge Canal and on its southern end at its confluence with the Indian River at Dragon Point. The Sebastian Inlet, at the Brevard/Indian River counties line, is the other offshore access point for boaters in Brevard County.

of Titusville, Cocoa, Merritt Island, Melbourne and Palm Bay, to Indian River County and Sebastian Inlet. No fewer than nine bridges and/or causeways transverse the waterway, with most also serving as boating access points to the waterway. Near the City of Cocoa, the Canaveral Barge Canal

allows waterway access across Merritt Island to the Banana River, Port Canaveral, and offshore waters via the

THE ECONOMIC IMPACT OF MARINE RELATED BUSINESS IN BREVARD COUNTY

In general terms, there are two types of economic impacts or benefits associated with an inland navigation system, National Economic Development (NED) benefits and Regional Economic Development (RED) benefits. Inland waterway systems have historically been evaluated to determine economic feasibility based on NED benefits, which are economic benefits to the nation and not a particular region. The purpose of this analysis is to estimate the regional benefits generated by the waterways in Brevard County.

Regional benefits can be classified as direct, indirect, induced, and total. The direct impacts of the waterways are the goods and services purchased from marine related businesses in Brevard County. Direct impacts include the initial round of spending and employment generated by business activity that is directly dependent on the waterways. Indirect impacts consist of the goods and services purchased by marine related businesses in Brevard County. These impacts are the additional “rounds” of spending that result from the initial sales by waterway-impacted businesses. Induced impacts consist of increased household purchases of goods and services (such as food, clothing, and housing) by employees of businesses directly and indirectly impacted by the waterways. In short, navigation on the waterways results in dollars being pumped into the region that generate primary

and secondary economic benefits to the area, benefits that include increased business activity (sales), personal income (wages), and employment (jobs).

Many techniques have been developed to estimate types and levels of regional economic impacts. These models are based on the understanding of a regional economy as an interdependent entity. IMPLAN is a regional impact model that enables the evaluation of the economic impact of specific activities such as retail, wholesale, manufacturing, and service sales and the construction or operation of public works projects within an economy. IMPLAN was used in this analysis to estimate the regional economic impacts of the waterway.

Identifying and Quantifying Current Marine Related Business Volume

A database of 407 marine related businesses in Brevard County was developed from various sources. These businesses were surveyed by mail and telephone to obtain information on their marine related business patterns and practices. A total of 153 completed surveys were obtained, resulting in a response rate of 38 percent.

Characteristics of Marine Related Business

Selected findings of the marine related business survey are presented below:

- About 53 percent of the businesses are located on or adjacent to the waterway.
- 33 percent are dependent on being on or adjacent to the waterway.
- The three most prominent lines of business are manufacturing, retail trade, and services.
- 87 percent of the respondents' business volume is marine or water related.
- Most marine industry firms employ fewer than four people and have annual revenues of less than \$500,000.
- 65 percent of the firms believe their revenue would decrease if vessel drafts were restricted to three feet.
- 40 percent of the firms believe their revenue would increase if vessel drafts on the waterway were 12 feet throughout the county.



\$565 million in retail sales are generated annually by the 407 marine related businesses identified in the county

The 407 businesses in the database were aggregated to 25 similar business types, which were classified as generating a commercial benefit or a recreational benefit. Commercial business types were assumed to consist of boat charters/rentals. The remaining business types were classified as recreational.

The total marine related sales in Brevard County, as calculated from the survey responses, is estimated at \$565.8 million, of which only \$6.6 million is expected to be commercial benefits.

The \$565.8 million in business revenue was distributed by type of activity as follows:

- \$21.0 million in construction activity
- \$4.6 million in transportation activities
- \$88.1 million in retail trade
- \$10.5 million in used boat sales
- \$331.4 million in manufacturing activities
- \$33.1 million in wholesale trade
- \$3.4 million in finance activity
- \$73.3 million in service activities

The locations of the 407 businesses in the county are presented in Figure 1, color-coded by business activity. Businesses conducting more than one type of activity were classified according to their predominate activity.



In addition to purchasing items from marinas on the waterways, each year nearly \$76 million in non-marine related sales are generated by the more than 33,000 registered vessels in Brevard County.

Current Purchases of Non-Marine Related Items

To estimate the economic impacts of non-marine related items purchased from businesses not located on the waterways, 304 recreational boaters and fishermen were interviewed on the waterway throughout Brevard County. A summary of purchasing patterns of recreational boaters that were interviewed are presented below:



- Survey respondents purchased an average of \$72.37 per day of boating at establishments not located on the waterway.
- Total expenditures on non-marine items at establishments not located on the waterways include \$47.4 million for gasoline and \$28.5 million for food, drinks, and ice.

Characteristics of Recreational Boaters

Highlights of the results of the interviews of the 304 recreational boaters are presented below:

- The primary local residence of boaters:
 - Brevard County - 67 percent
 - Orange County - 17 percent
 - Seminole County - 7 percent
 - Volusia County – 2 percent
 - Lake County - 2 percent
 - Other - 5 percent
- The primary permanent residence of the boaters:
 - Florida - 98 percent
 - Other - 2 percent
- There was an average of 2.9 persons per boat; the most common occurrence was two persons per boat.
- 28 percent owned a second boat, and 5 percent owned more than two boats.
- 75 percent of boaters used an outboard boat, 14 percent used an inboard, and 8 percent used “other boat” types (namely personal watercraft).
- Of the boaters who owned more than one boat, the boats that were not being used on the day of the interview were typically outboards, followed by personal watercraft.
- The length of boats owned by the boaters ranged between 6 feet and 40 feet, with most being between 16 and 26 feet.
- 58 percent of the boaters were on half-day trips, 39 percent were on full-day trips, and 3 percent were on multiple day trips.
- Fishing was the most frequent primary purpose of the boating trip, followed by pleasure boating.

- 76 percent of the boaters intended to stay in inland waters.
- 24 percent of boaters launching in Brevard County intended to access offshore waters.
- 92 percent of all boats are stored at home on a trailer, 5 percent are stored at some type of commercial storage facility, and 2 percent are at a private wet slip.
- Boaters that store their boat at a commercial storage facility pay an average of \$1,489 per year.
- Boaters annually spend an average of \$1,064 on maintenance and \$346 on boat insurance premiums.
- 7 percent of the people interviewed had incurred damage to their boat while using the waterway in the past year.
- The most frequent type of damage was to the propeller, followed by damage to the vessel's motor or lower unit.
- The most frequent cause of damage was from an unknown source or object in the water, followed by hitting a submerged object or piling, then by running aground, and damage at the boat ramp.

Current Economic Impact of Marine Related Activities

The retail sales of the 407 marine related businesses in Brevard County generate a total of nearly \$675 million in local business volume, over \$247 million in personal income (wages), and 6,909 jobs. The greatest impacts are generated by the manufacturing activities.

The \$75.9 million in retail purchases (\$47.4 million for gasoline sales and \$28.5 million for food, drinks, and ice) by recreational boaters from establishments not located on the waterways were estimated to generate economic impacts of \$79 million in business volume, \$13 million in personal income, and 473 jobs.



The waterways contribute \$754 million in sales, over \$260 million in income, and 7,382 jobs to the Brevard County economy each year, primarily through the service of recreational boaters.

The current total economic impact of the waterways (marine related businesses and the purchase of non-marine related items) consist of \$754 million in business volume, over \$260 million in personal income, and 7,382 jobs (Table 1).

Table 1. Summary of Total Economic Impacts Attributable to the Waterways

Activity	Recreational Economic Impacts				Commercial Economic Impacts				Total Economic Impacts			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Business Volume (Millions)	535.31	96.31	112.27	743.89	6.67	1.99	1.61	10.27	\$541.98	\$98.30	\$113.88	\$754.16
Personal Income (Millions)	178.25	36.17	42.70	257.12	2.32	0.77	0.61	3.70	\$180.57	\$36.94	\$43.31	\$260.82
Employment	4,650	1,035	1,529	7,214	123	23	22	168	4,773	1,058	1,551	7,382

Economic Impact of a Cessation of Waterways Maintenance

If maintenance of the waterways in Brevard County was to cease, it is believed that shoaling would probably eventually result in an effective vessel draft limitation of three feet. This in turn would result in a reduction of marine related business generated by vessels drafting in excess of three feet.

Based on the responses of businesses surveyed for this analysis, an average of nearly 73 percent of marine related business activity would be lost if vessel drafts were limited to three feet MLW. The largest impacts are expected in the manufacturing sector, followed by the retail trade sector, then by the service sector.



Without continual maintenance of the waterways, shoaling would prevent the use of the waterways by a significant portion of the pleasure craft in the county, such as the sailboats pictured

The total economic impact expected to be generated with three-foot vessel draft restrictions on the waterways (marine related businesses and the purchases of non-marine related items) is presented in Table 2. The total impact includes \$213 million in business volume, nearly \$68 million in personal income, and 2,229 jobs.

This is a reduction of \$541 million in business volume, \$193 million in personal income, and 5,153 jobs compared to existing conditions on the waterways.

Table 2. Summary of Total Economic Impacts Attributable to the Waterways Assuming Vessel Draft Restrictions of Three Feet

Activity	Recreational Economic Impacts				Commercial Economic Impacts				Total Economic Impacts			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Business Volume (Millions)	148.72	28.57	28.45	205.74	4.86	1.50	1.16	7.52	\$153.58	\$30.07	\$29.61	\$213.26
Personal Income (Millions)	43.29	11.00	10.80	65.09	1.65	0.58	0.44	2.67	\$44.94	\$11.58	\$11.24	\$67.76
Employment	1,410	310	389	2,109	87	17	16	120	1,497	327	405	2,229

Economic Impact of an Increase in Waterways Maintenance

The full implementation of the District’s Dredge Material Management Plan would result in a higher state of maintenance of the waterways and an increase in vessel draft restrictions to 12 feet MLW. This increase in draft allowance would permit deeper draft vessels to fully utilize the waterways in Brevard County.

According to marine related businesses surveyed for this analysis, increasing vessel drafts on the waterways to 12 feet MLW would result in an overall average increase in direct business sales of 4.0 percent, from the current level of \$565.8 million to \$588.5 million (a \$22.7 million increase). The increase is expected to be distributed as:

- \$36,000 in construction activity
- \$141,000 in transportation activities
- \$5.3 million in retail trade
- \$351,000 in used boat sales
- \$5.3 million in manufacturing
- \$1.2 million in wholesale trade
- \$90,000 in finance activities
- \$10.0 million in services activities.

This higher maintenance scenario should not significantly impact the sale of non-marine related items by businesses that are not located on the waterways. These impacts should be equivalent to those under current waterways conditions.

The combined total impacts (marine related businesses and purchases of non-marine related items) under this scenario are presented in Table 3. Total impacts include \$781 million in business volume, almost \$270 million in personal income, and 7,659 jobs. *This is an increase of \$27 million in business volume, nearly \$9 million in personal income, and 277 jobs compared to existing conditions on the waterways.*

Table 3. Summary of Total Economic Impacts Attributable to the Waterways Assuming Vessel Draft Restrictions of 12 Feet

Activity	Recreational Economic Impacts				Commercial Economic Impacts				Total Economic Impacts			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Business Volume (Millions)	535.31	96.31	112.27	743.89	24.22	7.47	5.58	37.27	\$559.53	\$103.78	\$117.85	\$781.16
Personal Income (Millions)	178.25	36.17	42.70	257.12	7.88	2.80	2.10	12.78	\$186.13	\$38.97	\$44.80	\$269.90
Employment	4,650	1,035	1,529	7,214	290	79	76	445	4,940	1,114	1,605	7,659

THE IMPACT OF THE WATERWAYS ON PROPERTY VALUES IN BREVARD COUNTY

The impact of the waterways on property values is evaluated to illustrate the influence of the waterways on property valuations and property tax collections. The expected impacts to property values are evaluated for existing conditions, cessation of maintenance of the waterways, and a higher state of maintenance.

Current Impact of the Waterways on Property Values

Residential Property

The impact of the waterways in Brevard County on property values was estimated by comparing values of property located directly on the Intracoastal Waterway to values of properties located on waterways connected to the Intracoastal Waterway that have varying vessel draft restrictions and to properties that have no access to the waterways. The comparison focused on subdivisions having at least one property on the waterways.

Two methods were used to estimate the impact of the waterways on single-family residential property values in Brevard County. The first method assumes that if the waterways did not exist, waterfront property would have been developed with the same size and value characteristics as existing non-waterfront parcels. The size of riverfront properties, compared to existing non-waterfront parcels would have resulted in more parcels and houses being developed on the land currently occupied by riverfront parcels. For canal front properties, their smaller parcel size compared to non-waterfront parcels, would have led to fewer parcels and houses being developed in the same area now occupied by canal front parcels. The existing 5,519 canal front parcels in Brevard County with houses that average 2,165 square feet would have been developed as 4,001 parcels containing 1,838 square feet houses, similar to existing non-waterfront property. The current 3,002 riverfront parcels containing houses that average 2,756 square feet would have been developed as



Homes on the Intracoastal Waterway had an average market value of \$416,000, over three times more valuable than homes without waterway access.

5,725 parcels containing smaller, less expensive houses. As a result, the 5,519 canal front properties that are currently valued at \$1.423 billion would have been developed as 4,001 non-waterfront parcels valued at \$535.3 million, for a reduction of \$887.9 million. The 3,002 riverfront properties that are currently valued at \$1.249 billion would have been developed as 5,725 non-waterfront parcels valued at \$766 million, for a reduction of \$482.9 million. The total impact of the waterways on single-family residential property values is approximately \$1.37 billion.

The second methodology is based on the difference in the market value per square foot of building area (including land value) between houses on the waterways versus those removed from the waterways. It is assumed that the number and size of houses are the same as they are today, but the value of these houses, on a per-square-foot basis, would reflect the current value of non-waterway property. The current average market value is \$72.98 per square foot of building area for non-waterfront parcels, \$118.86 per square foot of building area for parcels on connecting canals (a difference of \$45.88 per square foot versus parcels without waterway access), and \$150.39 per square foot of building area for riverfront parcels (a difference of \$77.41 per square foot versus parcels without waterway access).

The impact of the waterways on residential property values can be estimated by multiplying the difference in property value per square foot of building area by the total square feet of building area of single-family waterfront residences. Under this methodology, the waterways have increased single-family residential property values in Brevard County by approximately \$1.18 billion.

Other Residential Property

Vacant Land

The influence of the waterways on vacant residential parcels was estimated by comparing the value of waterfront parcels to non-waterfront parcels in the same subdivision. In subdivisions with waterfront properties, there are 177 acres of subdivided canal front vacant land with an average value of \$135,950 per acre, 559 acres of riverfront vacant land with an average value of \$121,101 per acre, and 712 acres of vacant subdivided land removed from the waterway with an average value of \$35,058 per acre. Applying the difference between the current value of waterfront vacant land and non-waterfront vacant land to the identified waterfront acres of vacant land results in a total impact of \$65.9 million.

Vacant subdivided land is only a portion of the vacant land in the county that may eventually be developed for residential use. There are large tracts of privately owned agricultural land that are coded as riverfront or canal front property comprising a total of 1,079 acres. The influence of the waterways on this property value cannot be estimated with currently available data. These

agricultural lands may eventually be developed and subdivided into waterfront residential land. However, the nature and cost of such future development is unknown; therefore, an estimate of the impact of the waterways on the future use and value of these properties cannot be made.

Condominiums

The impact of the waterways on condominium values is not expected to be as pronounced as on single family residences. Single family waterfront residences usually have a boat dock that provides boating access to the waterways, which is a primary reason premiums are paid for waterfront parcels. However, condominium owners are not provided boating access unless they secure a separate boat dock, which may not be conveniently located near the condominium.

The current impact of the waterways on condominium values was estimated by assuming that the value per square foot of condominiums on the waterways would equal those of existing condominiums without waterway access. The current average market value is \$54.26 per square foot of building area for non-waterfront parcels, \$63.47 per square foot of building area for parcels on connecting canals (a difference of \$9.21 per square foot versus parcels without waterway access), and \$65.18 per square foot of building area for riverfront parcels (a difference of \$10.92 per square foot).

The impact of the waterways on condominium values can be estimated by applying the difference in property value per square foot of building area to the total square feet of building area of waterfront condominiums. Under this methodology, the waterways have increased condominium values by approximately \$24.0 million.

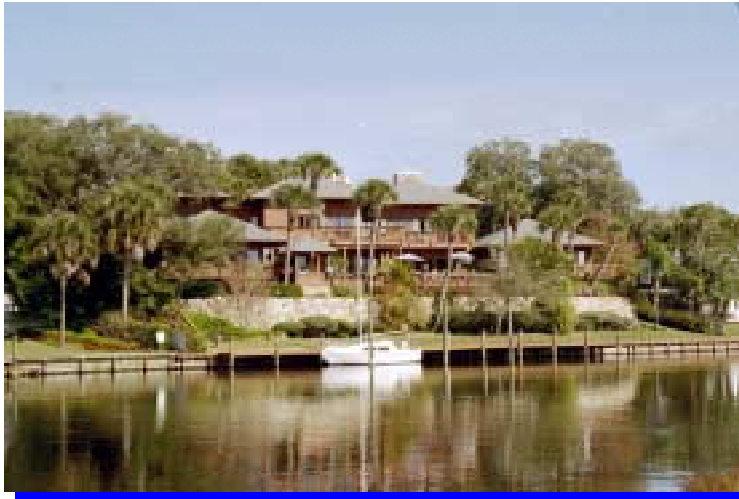
Commercial Property

The business income of the marinas and boatyard is totally dependent on the existence of the waterways. Without the waterways, the land used by these facilities would have been developed for other uses, most probably residential use. Therefore, to determine the difference in property values because of a change in use, the value of these properties was compared to the value of non-waterfront single family residences near the waterway. The total appraised value of the 28 marinas in the county is \$22.79 million or \$224,095 per acre, including land and buildings. A yacht manufacturing facility is located on Merritt Island adjacent to the Canaveral Barge Canal. The facility, which builds and conducts sea trials of yachts up to 60 feet in length is dependent on the District's waterways and has an appraised value of \$255,800 per acre. If the waterways did not exist, it is assumed that the land currently occupied by these facilities would have been developed as residential property, with per-acre values that reflect existing residential developments near the waterways. The appraised value of developed residential non-waterfront parcels in waterfront

subdivisions is \$250,343 per acre, including land and buildings. Based on this comparison, the marinas have not significantly impacted the value of commercial property in Brevard County.

Total Current Impacts to Property Values

It is estimated that the waterways in Brevard County have resulted in a total increase in property values of between \$1.27 billion and \$1.46 billion. This total includes an increase of between \$1.18 billion and \$1.37 billion in residential property values and \$65.9 million in vacant residential land. The impact of the waterways on condominiums is estimated at \$24 million.



If the waterways did not exist, single family housing values in Brevard County would decrease from their current total value by an estimated \$1.18 to \$1.37 billion.

The impact of the waterways on commercial property appears to be minimal, with property values increasing slightly assuming that the land currently occupied by commercial property would have been developed as residential land. However, because of the small value of commercial property compared with the total appraised value of residential property, any impact to commercial property value would be insignificant compared to the

overall impact to residential property.

Changes in Property Values Due to a Cessation of Waterways Maintenance

If vessel drafts were restricted to three feet MLW, the value of property on the waterways would decrease. In order to estimate the impacts of reduced waterway depths, property values of parcels with access to waterways with varying vessel drafts must be compared to each other. For the purpose of this analysis, it is assumed that properties on the Intracoastal Waterway have access to a channel at least six feet deep. Vessel draft restrictions vary for canals connected to the Intracoastal Waterway. A comparison of the difference in property values on restricted draft waterways to property values on the Intracoastal Waterway illustrates part of the expected change in property value if vessel drafts were restricted to three feet MLW on the Intracoastal Waterway.

Residential Property

It is assumed that if vessel drafts were restricted, the amenities that influence the value of structures on waterfront parcels would not be impacted, only the amenity that influences land values, namely the location amenity, would be impacted. Therefore, any impact on property values as a result of draft restrictions would primarily be reflected in decreased land values. The value, or replacement cost, of the structure would not significantly change as a result of reducing the depth of an adjacent waterway.

In Brevard County, as in most waterway areas, there is a premium for parcels on the waterway in comparison to parcels removed from the waterway. Since only land values are expected to be significantly impacted by reduced vessel drafts, the value of the land portion of waterfront property was evaluated. The premium for developed land values is \$299,087 per acre for parcels on connecting canals and \$171,253 per acre for riverfront parcels; any decrease in land values as a result of three-foot draft restrictions would have to be less than these values because the value of property on a restricted draft waterway should be greater than property without any waterway access.

Analysis of property values in some of the District's other counties suggests that the decrease would be about half of the premium paid for parcels on navigable waterways. For the purpose of this analysis, it is assumed that the value of land on connecting canals in Brevard County would decrease by about \$149,543 per acre from its current value and riverfront land would decrease by \$85,626 per acre from its current value, or about half of the current premium paid on the land portion of waterfront property. Applying these decreases per acre to the total number of developed acres of canal front and riverfront land yields a total decrease on property values of \$444.8 million (including \$244.9 million for parcels on connecting canals and \$199.9 million for riverfront parcels).

Other Residential Property

Vacant Land

Similar to residential property, a premium is paid for vacant land on the waterway versus land removed from the waterway. This premium is estimated at \$100,892 per acre (a difference of 74 percent compared to parcels removed from the waterways) for parcels on connecting canals and \$86,043 per acre (a difference of 71 percent) for riverfront parcels. Any decrease in vacant land values as a result of three-foot draft restrictions would have to be less than 74 percent for canal front property and 71 percent for riverfront property, because all else being equal, the value of property on a restricted draft waterway should be greater than property without any waterway access.

It is assumed that the resulting decrease in property values due to reduced draft restrictions will be about half of the premium paid for parcels on navigable waterways. Therefore, the value of vacant canal front land was assumed to decrease by about 37 percent from its current value and vacant riverfront land would decrease by 35 percent, or about half of the current premium paid for waterfront land. The total adjusted market value of all vacant subdivided waterfront land in Brevard County is estimated at \$91.6 million, including \$24.0 million for land on connecting canals and \$67.6 million for riverfront land. If vessel drafts were restricted to three feet and canal front property values decreased by an estimated 37 percent and riverfront property decreased by 35 percent, the total impact to vacant land values in the county would be a decrease of \$32.4 million (including \$8.8 million for land on connecting canals and \$23.6 million for riverfront land).

Condominiums

The impact of the District's waterways on condominium values could not be estimated, but was considered minimal. Waterfront condominium values would not be impacted significantly by 3-foot draft restrictions because not all condominium owners have access to the waterway or are able to participate in boating due to the limited supply of available boat slips at the condominium complexes.

Commercial Property

If maintenance of the waterways ceased, a portion of the income of waterfront businesses would be lost because vessels drafting in excess of three feet would not be able to access their facilities. If the businesses remained open, their property values would decline because of the resulting decrease in income. Under this maintenance scenario, marina owners indicated that only 41 percent of existing business volume would be retained. The boat manufacturer believes that they would no longer be able to operate under these conditions. Since these businesses are not likely to continue operating after such a drastic reduction in income, the property would probably convert to other uses, namely residential use. If this occurred, the appraised value of these parcels would increase to the estimated value of riverfront residential parcels under this maintenance scenario. If the land currently occupied by the marinas and boatyard were redeveloped as residential property, with per-acre values that reflect estimated riverfront residential development under this scenario, the value of the land occupied by the marinas and boatyard could increase by \$31.1 million.

Since only a small portion of the income of the hotels and restaurants on the waterways is directly related to the waterways, decreasing draft restrictions should have a minimal impact on their property values.

Total Impact to Property Values of a Cessation of Waterways Maintenance

If maintenance of the waterways were to cease and vessel drafts were restricted to three feet MLW, it is estimated that property values would decrease by \$446.1 million. Residential property values along the waterways could decrease by up to \$444.8 million. The impact to vacant subdivided land is estimated at \$32.4 million and the impact on condominium values is expected to be minimal. An impact to commercial property is questionable. If business volume decreased by the amount that the business owners expect, their businesses would no longer be viable, and the land would probably be converted to residential use. If the land is converted to residential use, there may be an increase in the appraised value of the land and structures by about \$31.1 million.

Change in Property Values Due to Increased Waterways Maintenance

Residential Property

A comparison of residential riverfront parcels with deep-water access to those parcels with six feet of water depth indicates that an increase in waterway maintenance and vessel draft restrictions to 12 feet at MLW would increase property values in Brevard County. However, data does not currently exist to sufficiently estimate the impact on a county-wide basis.

Although it is not possible to estimate the impact of a higher state of maintenance based on comparison of parcels within Brevard County, this does not mean that certain property values would not increase if vessel draft restrictions were increased, but there is no method of estimating what that increase would be using the available data. However, it should be noted that although it cannot be estimated, it is assumed that the impact, if any, would not significantly increase the total value of property in the county. This assumption is based on the limited number of properties that would be impacted by deeper channels. A deeper channel would only benefit owners of mega yachts and commercial vessels. Because of the cost of these vessels, there are only a limited number of people who can afford them. People who can afford them would also tend to reside in existing prestigious, exclusive, and expensive neighborhoods in the region. There is currently not a significant amount of this type of development in Brevard County.

Other Residential Property

The same influences that preclude significant increases in residential single family property values in Brevard County also preclude vacant residential land and condominiums from realizing significant gains in property values.

Commercial Property

There are three marinas in the county with deep-water access. On a per-acre basis, these marinas are valued 36 percent higher than the other marinas in the county. It can be assumed

that if vessel drafts were increased to 12 feet throughout the county, the value of other marinas could increase by 36 percent. If so, the estimated impact of increasing waterway maintenance could be \$6.9 million, based on increasing the current appraised value of \$19.2 million of existing shallow-draft marinas by 36 percent.

Any increase in property values can also be estimated based on the increase in business income from seasonal traffic in transit between south Florida and northern destinations. Increasing the vessel draft restriction to 12 feet MLW on the waterway would allow larger vessels to access commercial facilities and may result in an increase in marina income. The survey of business owners conducted as part of this analysis indicated that marinas expect an increase of about 14 percent in revenue if vessels drafting up to 12 feet could access their facility. It was assumed that a proportional increase in property values would also occur. Marinas that have current vessel draft restrictions of less than 12 feet are appraised at \$19.2 million. An increase of 14 percent in property values resulting from an increase in business volumes would produce a \$2.6 million increase in property values.

Boat manufacturers do not expect an increase in business activity or revenue if maintenance of the waterways were increased; therefore, their property values should be unaffected. Deepening the waterways should not significantly impact the operations at the hotels and restaurants on the waterways.

Total Impact to Property Values of Increased Waterways Maintenance

If maintenance of the waterways were to increase and vessel draft restrictions were increased to 12 feet MLW, property values in the county can be expected to increase by \$2.6 million to \$6.9 million. Data is not available that would allow an estimate of the expected increase in residential, vacant land and condominium values. However, any increase in value should be minimal. Commercial property values may increase by \$2.6 million to \$6.9 million.

SUMMARY

Current Impacts

The current impacts of the waterways in Brevard County include \$267 million in business volume, \$86 million in personal income, 2,979 jobs, and \$1.27 billion to \$1.46 billion in property values. Furthermore, the waterways result in the construction of larger, more luxurious homes in the county.

Impacts of a Cessation of Waterways Maintenance

If maintenance of the waterways ceases and vessel drafts are restricted to three feet MLW, there is expected to be a reduction of \$43 million in businesses volume, \$15 million in personal income, 637 jobs, and up to \$446.1 million in property values.

Impacts of Increased Waterways Maintenance

If maintenance of the waterways increased and vessel drafts were increased to 12 feet MLW, there is expected to be an increase of \$6 million in business volume, \$2 million in personal income, 84 jobs, and \$2.6 million to \$6.9 million in property values.