The Value of Beach Nourishment in Lee County
Lee County

- Beach Nourishment Performance
- Importance of Tourism
- Value of Beach Nourishment

Ft Myers Beach
Lee County, Florida

Most shoreline breaks (inlets) of any Florida county with nourished beaches

Pass = Inlet
Shoreline Change Before Beach Nourishment
1859 - 1980

Shoreline breaks cause shoreline recession.
Five Beach Nourishment Projects

Gasparilla Island
Captiva Island
Gulf Pines
Sanibel Island
Ft Myers Beach
Bonita Beach
Gasparilla Island, Nourishments 2007, 2013
Before Nourishment, 1860 - 2006

- 500 ft recession
- 3.4 ft/yr
After Nourishment, 2007 - 2020

1860-2006
500 ft recession
3.4 ft/yr

250 ft Shoreline Advance
Captiva Island

- Five nourishments over a period of 40 years (1981 – 2020)
- 2012 Best Restored Beach Award (American Shore and Beach Preservation Association)
Before Nourishment, 1859 - 1980

- Receded 950 ft
- (7.8 ft/yr)
Beach Nourishments Starting in 1981

150 ft wider and stable for ~ 40 yrs (1980-2020)
Gulf Pines, Sanibel Island
Gulf Shores, Sanibel Island

1995-2018
After Hurricane Irma

1995-2017
Before Hurricane Irma

Average shoreline gain of 135 ft, 1995-2018
Ft Myers Beach – 2011 Nourishment
403,000 yd$^3$ (1.3 mi)

Pre-Nourishment 2011

2020
Ft Myers Beach – 2011 Nourishment

Consultant’s report says average recession of about 100 ft
Design Beach Width ≠ Initial Width

- Initial beach width
- Initial construction
- Existing beach profile
- Beach adjustment
- 3-6 months after construction
- Design beach width
- Design profile
- 1-2 years after construction
Ft Myers Beach

Beach 125 ft wider on average after 8 years

Terminal Groin

2011 Pre-Nourishment

Net Transport

Shoreline Position, ft

Monument Number
Bonita Beach

- Beach nourishments 1995, 2004, 2014 (over 25 years)
- Total volume placed 501,000 yd$^3$

- Terminal Groin
- Shoreline Nourished
- Sand spread from nourished beach
Sand Movement, 25 yrs

- Sand volume down to closure depth for average shoreline advance of $X$ is $V = X \times [(h_\ast + B) \times L]$ (Dean and Charles, 1994)

- $V = 494,000 \text{ yd}^3$

- Beach nourishment placed $501,000 \text{ yd}^3$, 1995 - 2020
Lovers Key and Big Hickory Island

Lovers Key
Nourished 2004, 2014
90 ft wider after 16 years

Big Hickory Island
Nourished 2013
105 ft wider after 6 years
Lee County Beach Nourishment
Very Successful

- The 47-mi shoreline receded 45 ft on average, 1859-1980
- It advanced 110 ft on average, 1980-2020
- Therefore, the shoreline has advanced 65 ft on average over the past 160 years despite sea level rise of about 1 ft (Houston, 2015)

The Power of Beach Nourishment
Let’s Talk Economics
Lee County has a Goose that Lays Golden Eggs

Tourism
The Golden Eggs

- “Tourism is the backbone of our economy” (Lee County, 2020)
- It has an economic impact in the County of $5.3 billion/yr
- It is the largest employer
- Lee County had the greatest business growth in 2019 of Florida’s 10 counties with the largest GDPs

$5.3 billion, Jobs, Economic Growth

(Lee County Tourism & Convention Bureau, 2020; SmartAsset, 2020)
Beaches Are Key to County Tourism

• “Lee County's beaches are its No. 1 economic and environmental asset” (Lee County, 2020)

• 90% of Lee County tourists visit its beaches

• 93% give high experience ratings to beaches
How Important Are Beaches to Tourism?

Does being on the ocean make a difference?
Dixie County, is on the ocean, but has few beaches
1% of GDP of Lee County

Beaches make all the difference in the world

Does the weather make a difference?
Hendry County adjacent to Lee, same weather, no beaches
Highest unemployment rate of Florida’s 67 counties
Tourist Day Visits

More day visits than to the 12 most visited National Parks

## Annual Tax Income from Lee County Tourism

<table>
<thead>
<tr>
<th>Government</th>
<th>Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>$184 million</td>
</tr>
<tr>
<td>State</td>
<td>$349 million</td>
</tr>
<tr>
<td>Federal</td>
<td>$495 million</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1.03 billion</strong></td>
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</table>

*(Lee County Visitor & Convention Center, 2019)*
A Little of the Gold Must be Spent to Feed the Goose that Lays the Golden Eggs
Beach Nourishment is the Food for Tourism in Lee County
Annual Tax Income from Lee County Tourists Versus Nourishment Costs

$1.03 billion

$10.5 million
Share of Tax Income Versus Nourishment Spending

% Share of Tourism Tax Income
- Federal: 48%
- State: 34%
- Local: 18%

% Share of Beach Nourishment Spending
- Local: 63%
- State: 29%
- Federal: 8%
Both National Parks and Lee County Beaches Are National Treasures

Per Day Trip

<table>
<thead>
<tr>
<th></th>
<th>Dollars Per Visitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Parks</td>
<td>$10.23</td>
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<tr>
<td>Lee County Beaches</td>
<td>$8.68</td>
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<tr>
<td>Federal Tax Income</td>
<td>$0.01</td>
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</tbody>
</table>

National Park Service (2019), Lee County Visitor & Con Bureau (2019)
State Parks and Lee County Beaches Are State Treasures

• There are almost twice as many day trips to Lee County beaches than to all Florida parks
• However, the State spends 27 times more on parks

Lee County Visitor & Convention Bureau (2019)
Florida State Parks (2020)
Tax Dollars Received From Lee County Tourism For Each $1 Spent on Nourishment

Tremendous Return on Investment

<table>
<thead>
<tr>
<th>Type</th>
<th>Dollars</th>
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</thead>
<tbody>
<tr>
<td>Federal</td>
<td>$590</td>
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<tr>
<td>State</td>
<td>$115</td>
</tr>
<tr>
<td>Local</td>
<td>$28</td>
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</table>
Lee County Beaches Are National Treasures

Arthur Frommer (Frommer’s Travel Guides) named Sanibel Island as his personal favorite place in the world (Bali, Indonesia #2 and Paris, France #3)
Conclusions

- Beaches are critical to the economy of Lee County
- There is a return of $100 taxes to all levels of government for each $1 invested in Lee County beach nourishment
- Like parks, beaches should be considered state and national treasures and maintained accordingly
The End