

Wiggins Pass - Inlet Management Plan

Division of Water Resource Management

Florida Department of Environmental Protection

April 2018



***Final Order Adopting
Wiggins Pass - Inlet Management Plan***

WHEREAS in 2008, the Florida Legislature amended section 161.142, Florida Statutes, finding, “The Legislature recognizes the need for maintaining navigation inlets to promote commercial and recreational uses of our coastal waters and their resources. The Legislature further recognizes that inlets interrupt or alter the natural drift of beach-quality sand resources, which often results in these sand resources being deposited in nearshore areas or in the inlet channel, or in the inland waterway adjacent to the inlet, instead of providing natural nourishment to the adjacent eroding beaches. Accordingly, the Legislature finds it is in the public interest to replicate the natural drift of sand which is interrupted or altered by inlets to be replaced and for each level of government to undertake all reasonable efforts to maximize inlet sand bypassing to ensure that beach-quality sand is placed on adjacent eroding beaches. Such activities cannot make up for the historical sand deficits caused by inlets but shall be designed to balance the sediment budget of the inlet and adjacent beaches and extend the life of proximate beach-restoration projects so that periodic nourishment is needed less frequently;” and

WHEREAS in 2011, Collier County Coastal Zone Management sponsored an inlet management study of Wiggins Pass performed by Coastal Planning & Engineering, Inc. (CP&E) to compile new and historical data and information regarding its coastal processes and inlet and shoreline dynamics and update its sediment budget; and

WHEREAS in 2012, CP&E completed the inlet management study for Wiggins Pass, which included recommendations for inlet management alternatives; and

WHEREAS, in April 2018, the Department developed an inlet management plan that contains corrective measures to mitigate the identified inlet erosion impacts to adjacent beaches; and

WHEREAS, Collier County (County) is the entity responsible for dredging at Wiggins Pass, and therefore, responsible for implementation of the inlet management plan; and

WHEREAS, this inlet management plan (attached) is consistent with the Department’s program objectives under Chapter 161, Florida Statutes; and

THEREFORE:

The Department does hereby adopt the following implementation strategies as set forth in the attached “Wiggins Pass Inlet Management Plan – 2018.” Future inlet management activities shall be consistent with the following four strategies:

- 1) **A comprehensive beach and inlet hydrographic monitoring program** shall be conducted to evaluate the performance and impact of existing sand bypassing and nourishment projects and to periodically update the inlet sediment budget.
- 2) **Sand bypassing shall be performed from the Wiggins Pass navigation channel to the adjacent gulf-fronting beaches both to the north and to the south of the inlet between DEP Reference Monuments R12 and R20.** Priority for placement shall be existing designated critically eroded beach areas. The quantity of fill to be placed in each area shall be based on observed beach erosion patterns and quantities documented through the monitoring protocol of Strategy #1 above.
- 3) **On an average annual basis, the initial target inlet sand bypassing quantity shall be 20,600 cubic yards per year, with approximately one-third placed to the south of the inlet and approximately two-thirds placed to the north.** The sediment budget may be updated periodically using the most recent time span of four years or more of monitoring data. The target bypassing quantities may be modified based upon the updated sediment budget. Should the volume of sand accumulating in the Wiggins Pass navigation channel exceed the target quantities, the additional sand may be dredged during the County’s next periodic maintenance of the channel, including the tributary channels, and placed on the adjacent beaches or the ebb shoal.
- 4) **The source of sediment for meeting the target sand bypassing quantity in Strategy #3 above shall be the Wiggins Pass navigation channel.**

Inlet management actions that implement the strategies contained in this plan are subject to further evaluation, and subsequent authorization or denial, as part of the Department's permitting process. Activities that implement these adopted strategies shall be eligible for state financial participation, pursuant to section 161.143, Florida Statutes, subject to Department approval and an appropriation from the Florida Legislature. The level of state funding shall be determined based on the activity being conducted and the Department's rules. The Department may choose not to participate financially if the proposed method of implementation is not cost effective or fails to meet the intent of section 161.142, Florida Statutes, and this Final Order. Nothing in this plan precludes the evaluation and potential adoption of other strategies for the effective management of Wiggins Pass and the adjacent beaches.

Execution of this Final Order constitutes agency action. Any Florida corporation not-for-profit which meets the requirements of subsection 403.412(6), Florida Statutes, and any person whose substantial interests will be determined or affected by the Final Order may petition the Department for a formal or informal administrative hearing, pursuant to section 120.569 or 120.57, Florida Statutes, as set forth in the attached Notice of Rights, to challenge the provisions of this Final Order.

If the Department proposes to issue a permit that implements the strategies in this Final Order, any Florida corporation not-for-profit which meets the requirements of subsection 403.412(6), Florida Statutes, and any person whose substantial interests will be determined or affected by the proposed permit may petition the Department for a formal or informal administrative hearing pursuant to section 120.569 or 120.57, Florida Statutes, as set forth in the Notice of Rights attached to the permit. The scope of a challenge to a permit approval or denial is limited to whether the agency action complies with the permitting criteria. Agency action previously subject to challenge or administrative review will not be subject to challenge at the time of permit approval or denial.

Approval of Adoption



Alex Reed
Director, Division of Water Resource Management
Florida Department of Environmental Protection

Filing and Acknowledgement

FILED, on this date with the designated Department Clerk, pursuant to section 120.52, Florida Statutes, receipt of which is hereby acknowledged.



Deputy Clerk

04/23/2018

Date

Notice of Rights

The Department's proposed agency action shall become final unless a timely petition for an administrative hearing is filed under sections 120.569 and 120.57, Florida Statutes, before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the Department's proposed action decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. Petitions must be filed within twenty-one days of receipt of this written notice.

Under Rule 62-110.106(4), Florida Administrative Code, a person whose substantial interests are affected by the Department's action may request an extension of time to file a petition for an administrative hearing. Requests for extension of time must be filed (received by the clerk) with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the end of the time period for filing a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Petitions filed by any persons other than those entitled to written notice under section 120.60(3), Florida Statutes, must be filed within twenty-one days of publication of the notice or within twenty-one days of receipt of the written notice, whichever occurs first. Under section 120.60(3), Florida Statutes, however, any person who asked the Department for notice of agency action may file a petition within twenty-one days of receipt of such notice, regardless of the date of publication.

The failure of any person to file a petition or request for extension of time within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57, Florida Statutes, or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding

initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
- (c) A statement of when and how the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
- (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute, and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, Florida Administrative Code.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation under section 120.573, Florida Statutes, is not available.

Once this decision becomes final, any party to the final agency action has the right to seek judicial review of it under section 120.68, Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this decision is filed with the Clerk of the Department.

Wiggins Pass – Inlet Management Plan



Photograph taken January 24, 2017

2017 aerial photo of Wiggins Pass in Collier County, Florida. Photo courtesy of Brett Moore, P.E.

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Introduction

Pursuant to subsection 161.101(2), Florida Statutes, the Florida Department of Environmental Protection (Department) is the beach and shore preservation authority for the State of Florida. As part of the Department's statewide beach management plan adopted pursuant to section 161.161, Florida Statutes, the Department is adopting this inlet management plan for Wiggins Pass in Collier County, Florida. This plan updates strategies for Wiggins Pass adopted in the *Strategic Beach Management Plan* (DEP, 2018) to be consistent with current statutes and observed erosion¹ conditions. As a first step towards adoption of this inlet management plan, in 2012, the Department and Collier County sponsored a study of Wiggins Pass performed by CBI – CP&E to compile new and historical data and information regarding beach and inlet changes and the dynamic coastal littoral processes in this area, and develop an updated sediment budget.

Program Objectives and Statutory Responsibilities for Inlet Management

In 2008, the Florida Legislature amended section 161.142, Florida Statutes, finding:

“The Legislature recognizes the need for maintaining navigation inlets to promote commercial and recreational uses of our coastal waters and their resources. The Legislature further recognizes that inlets interrupt or alter the natural drift of beach-quality sand resources, which often results in these sand resources being deposited in nearshore areas or in the inlet channel, or in the inland waterway adjacent to the inlet, instead of providing natural nourishment to the adjacent eroding beaches. Accordingly, the Legislature finds it is in the public interest to replicate the natural drift of sand which is interrupted or altered by inlets to be replaced and for each level of government to undertake all reasonable efforts to maximize inlet sand bypassing to ensure that beach-quality sand is placed on adjacent eroding beaches. Such activities cannot make up for the historical sand deficits caused by inlets but shall be designed to balance the sediment budget of the inlet and adjacent beaches and extend the life of proximate beach restoration projects so that periodic nourishment is needed less frequently.”

¹ As used in this document, the term “erosion” means wearing away of land or the removal of consolidated or unconsolidated material from the coastal system by wind or wave action, storm surge, tidal or littoral currents or surface water runoff. As used in this document, the term “accretion” means the buildup of land or accumulation of unconsolidated material within the coastal system caused by wind and wave action, storm surge, or tidal or littoral currents. The descriptions of coastal processes in this document are not intended to affect title to real property or real property boundaries.

Pursuant to section 161.143, Florida Statutes:

“Studies, projects and activities for the purpose of mitigating the erosive effects of inlets and balancing the sediment budget on the inlet and adjacent beaches must be supported by separately approved inlet management plans or inlet components of the statewide comprehensive beach management plan.”

Collier County has been the entity responsible for maintenance dredging Wiggins Pass and consequently, mitigating the extent of beach erosion caused by the inlet, as specified in subsection 161.142 (6), Florida Statutes.

History of Wiggins Pass

(CEC, 1987; CP&E, 1995, 2012; H&M, 2007, 2017; USACE, 1980)

Wiggins Pass is in Collier County on the southwestern coast of Florida connecting the Gulf of Mexico with a river and several embayments along three interior channels (*Figure 1*). The northern channel connects to a lagoon between Little Hickory Island and the mainland, the eastern channel connects to the Cocohatchee River, and the southern channel connects to Water Turkey Bay and Vanderbilt Lagoon. Wiggins Pass is bounded on the north by Barefoot Beach Park and on the south by Delnor-Wiggins Pass State Park. It is important to understand the history of Wiggins Pass, its geomorphological evolution and prior inlet management activities, and beach erosion control activities along the adjacent beaches, to gain a perspective on the inlet’s dynamics and the need to change inlet management strategies over time.

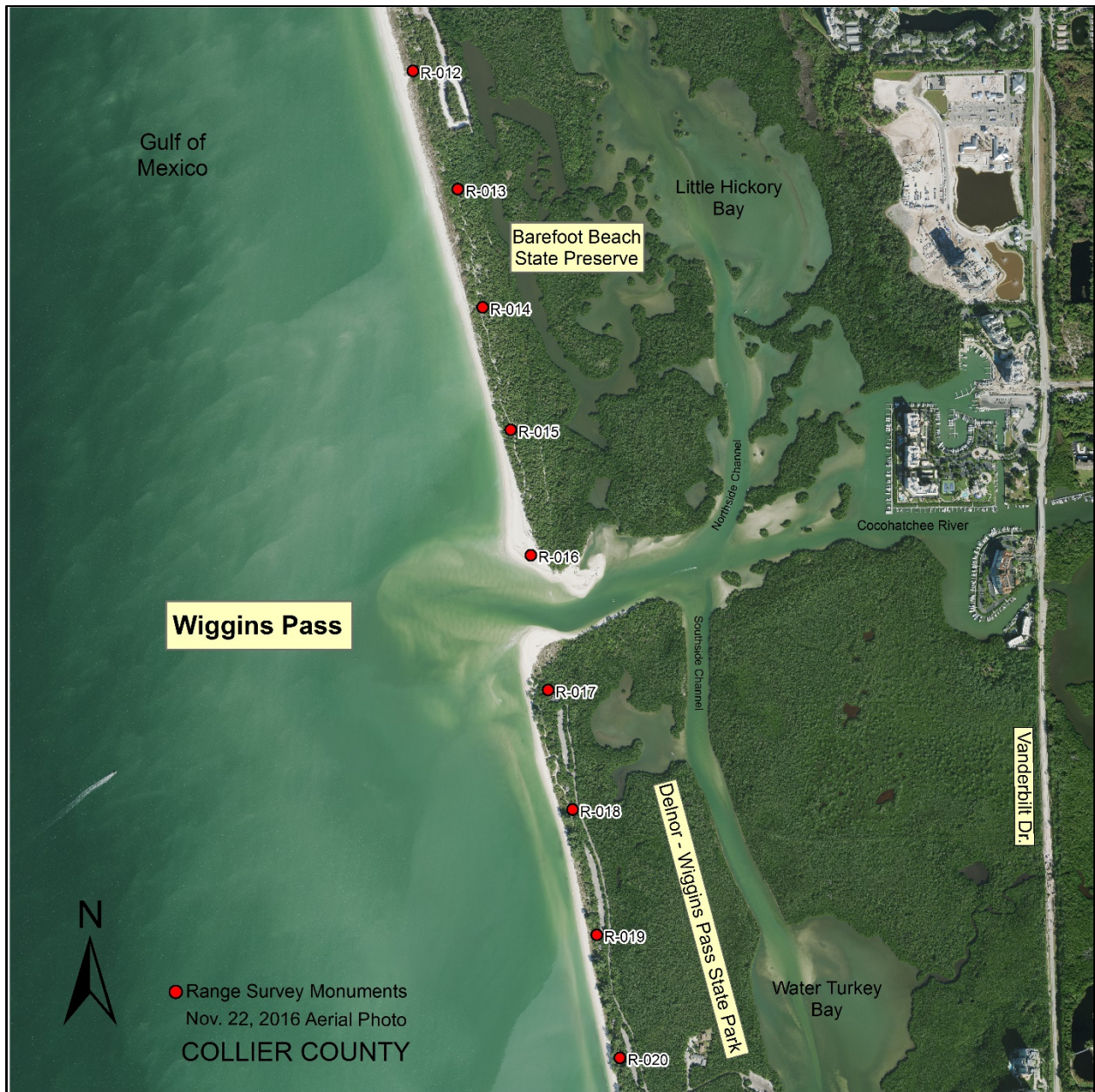


Figure 1. Wiggins Pass in Collier County, FL. from 2016 aerial photo. (Collier County photo)

Historical records indicate Wiggins Pass has existed since at least 1885 as a natural inlet that has been altered, modified, and improved for navigation. Survey records indicate a minor northward migration of 250 feet between 1885 and 1927, with a stable location since 1927. The inlet is reported to have experienced periodic closures prior to 1952 before a southern channel was dredged to connect with Water Turkey Bay and Vanderbilt Lagoon. Another channel was subsequently dredged northward from Wiggins Pass to Little Hickory Bay. Both the northern and southern channels would have significantly increased the tidal prism for Wiggins Pass, resulting in greater flow rates and hydraulic efficiency. In the late 1950s, another small inlet called Little Hickory Pass, located about two miles north of Wiggins

Pass, closed permanently, as it likely lost part of its tidal prism to Wiggins Pass through the northern channel connection to Little Hickory Bay.

Over the past century and a half, Wiggins Pass has experienced different inlet management approaches. From the 19th century to 1952, there was a general lack of management, as nature was allowed to take its course. Between 1952 and 1984, the excavation of connecting channels and interior marina development comprised the inlet’s management activities. From 1984 to 2009, excavation of sediment from the inlet’s entrance channel and placement of the dredged material along the adjacent beaches has been the principle management activity.

In 1978, the U. S. Army Corps of Engineers (ACOE) initiated a feasibility study for small craft navigation improvements at Wiggins Pass. The study was completed in 1980 describing conditions as hazardous for small boats, and recommended a 1,300-foot-long by 150-foot-wide by 9-foot-deep exterior channel with a 100-foot-wide deposition basin north of the exterior channel. The plan was not implemented due to differences in the project scope between the ACOE and Collier County. In 1982, Coastal Engineering Consultants, Inc., conducted a hydraulic study of Wiggins Pass for the county, which recommended a 1,050-foot-long by 200-foot-wide by 9-foot-deep channel through the Wiggins Pass ebb shoal. In March 1984, the county dredged 52,400 cubic yards of sand from the ebb shoal and placed the material on the beach south of the inlet. Due to spit growth into the inlet from the south, the 1990 and 1991 maintenance dredge events deviated from the 1984 channel alignment and reduced the width to 150 feet at the inlet mouth.

From 1984 to date, Wiggins Pass has been dredged on numerous occasions and the sand has been placed on both Barefoot Beach to the north and on Delnor-Wiggins Pass State Park to the south. Table 1 provides a list of the recent dredging projects at Wiggins Pass.

Table 1. *Wiggins Pass Dredging History from 1984 to 2016.*

Year	Volume, cubic yards (cy)	Sand Source	Placement Volume to the North (cy)	Placement Volume to the South (cy)	Placement Location by Range Survey Monument
1984	52,400	ebb shoal	0	52,400	unknown
1990	33,000	ebb shoal	33,000	0	R13-R14
1991	34,000	ebb shoal	34,000	0	R13.3-R15

Year	Volume, cubic yards (cy)	Sand Source	Placement Volume to the North (cy)	Placement Volume to the South (cy)	Placement Location by Range Survey Monument
1993	34,000	ebb shoal	0	34,000	unknown
1995	33,000	ebb shoal	16,500	16,500	unknown
1998	11,980	ebb shoal	11,980	0	R12.5-R13.5
2000	26,460	ebb shoal	26,460	0	R12-R15
2000	16,960	ebb shoal	0	16,960	R18-R21
March 2002	53,000	ebb shoal	0	53,000	R17.5-R20.5
December 2002	41,000	ebb shoal	41,000	0	R11-R14
2005	68,500	ebb shoal	68,500	0	R11-R14 (nearshore)
2007	48,400	ebb shoal	0	48,400	R18-R19.5
2007	6,800	interior channel	6,800	0	R12
2009	51,300	ebb shoal	38,927	12,373	R11.5-R14 and R18-R20.5
2011	49,900	ebb shoal	49,900	0	R12-R14.2
2013-2014	66,064	ebb shoal	66,064	0	R12-R16
2013-2014	34,635	unknown	0	0	flood shoal
2013-2014	6,670	interior channel	0	0	offshore disposal
2015-2016	9,400	ebb shoal & interior channel	9,400	0	R15.5-R16

In 2013, the Department authorized a project to straighten and expand the Wiggins Pass navigation channel (Figure 2). Between March and July 2013, Collier County realigned the navigation channel by filling the existing northern channel meander within the flood shoal to create a straight channel alignment. Approximately 107,370 cubic yards were dredged from the modified dredge template and placed north of the inlet on Barefoot Beach (66,064 cubic yards), within the inlet north channel meander (34,635 cubic yards), and offshore for non-beach compatible sand (6,670 cubic yards). In the winter of 2015-2016, a maintenance dredging project excavated 9,400 cubic yards from the inlet entrance channel and the connecting south channel. Material was placed in three sites – one on the ebb shoal north of the channel and two within the flood shoal north of the channel.

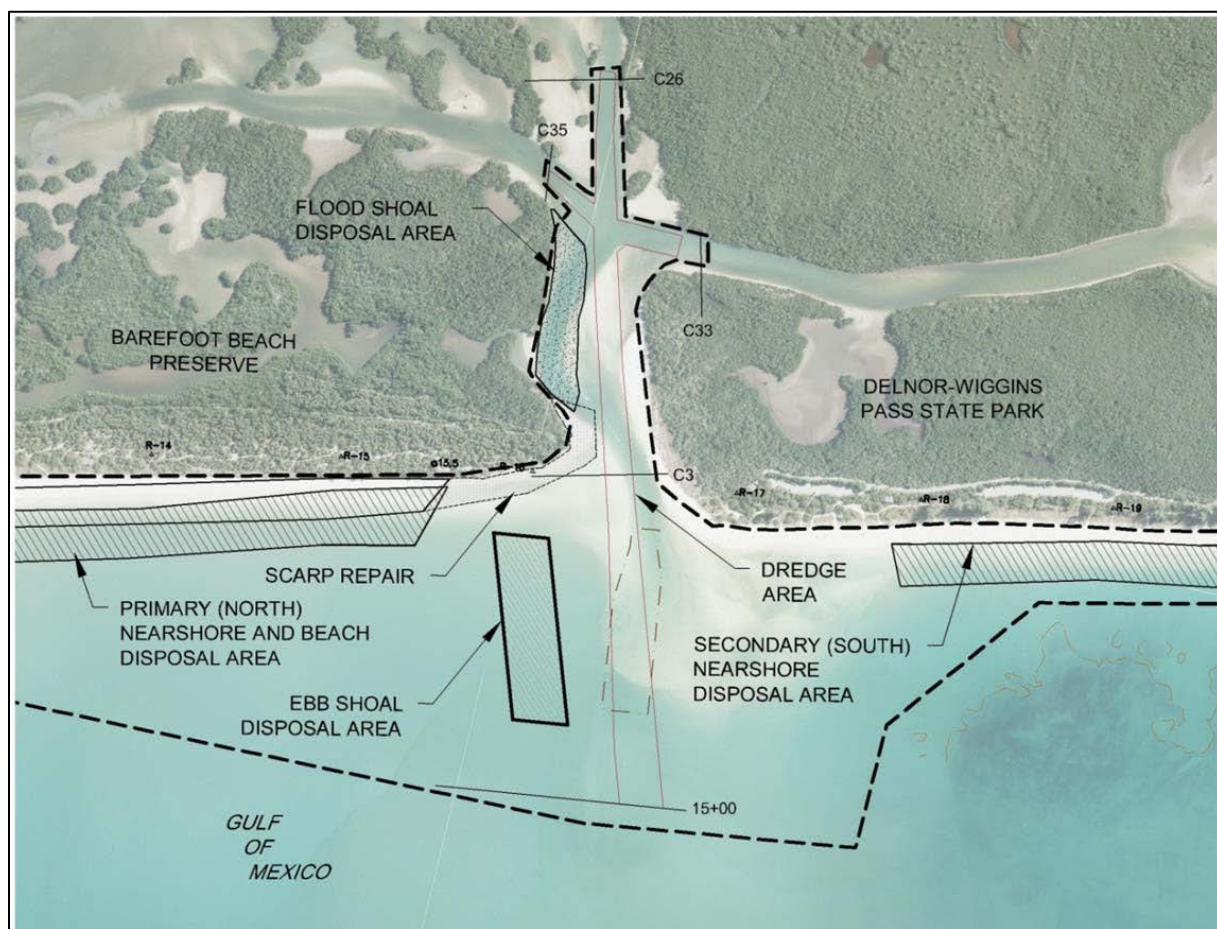


Figure 2. The 2013 Wiggins Pass channel straightening project. (CBI – CP&E, 2012)

In summary, between 1984 and 2016, over 677,000 cubic yards of material was dredged from Wiggins Pass (Table 2). Through 2000, the fill placement was evenly split between the beaches north and south of the inlet. However, since 2001 the volume of fill placement to the north has been nearly twice the fill placement to the south.

Table 2. Wiggins Pass Dredging Summary from 1984 to 2016.

Summary of Years:	Placement Volume (cy)	Placement Volume to the North (cy)	Placement Volume to the South (cy)
1984-2001	241,800	121,940	119,860
2001-2016	435,669	280,591	113,773
Total	677,469	402,531	233,633

Inlet Management Studies

In 1995, CP&E completed an inlet management plan study for Wiggins Pass. Several alternatives for channel maintenance were evaluated. CP&E recommended channel modifications that included widening the channel by 50 feet in the Gulf and deepening the channel by four feet to -12 feet MLW (-13.68 NAVD). These modifications would increase the interval between dredging events. Also recommended was the placement of dredge material both north and south of the inlet, depending upon which beach segment had the greatest need for erosion mitigation as determined from annual monitoring surveys.

In 2004, Humiston & Moore, Inc. (H&M) conducted a feasibility study of Wiggins Pass evaluating inlet channel dredging and the erosion impact to Barefoot Beach. This study recommended a reduction in the channel dimensions. Also recommended was an investigation of erosion control structures to mitigate critical erosion at Barefoot Beach.

In 2007, H&M conducted a hydrodynamic study, which evaluated erosion control structures to mitigate erosion on Barefoot Beach. H&M set up, calibrated and verified a Coastal Modelling System (CMS) model of Wiggins Pass and the surrounding aquatic systems. In addition, an ADCIRC tidal flow model was employed. The study recommended the channel be realigned to the southwest for hydraulic efficiency and to reduce dredging costs. Also recommended was extending the channel across the flood shoal inside the inlet.

In 2009, CP&E conducted an update study using a Delft3D numerical model to evaluate the effects of different channel configurations and dredge disposal activities. Alternatives included channel realignment, channel depth and width changes, flood shoal dredging, northern and southern channel connections, and interior sand dikes. The study concluded that a channel configuration following the ebb tide jet out the inlet to the southwest was more efficient than the current dredging template.

Improvements were recommended for dredging through the interior flood shoal on a straight alignment and plugging the existing channel meander with temporary sand dikes. An optimum dredge material placement area was determined to be between R13 and R15, without negative effects on channel maintenance.

In 2012, CP&E completed an updated inlet management study to support the authorization of a major inlet channel realignment. This study updated the inlet's sediment budget and provides the necessary data and information for the Department to adopt an inlet management plan for Wiggins Pass.

Updated Sediment Budget
(CBI - CP&E, 2012; H&M, 2017)

Pursuant to section 161.142, Florida Statutes, dredging within an inlet system, including its shoals, should result in the placement of all beach quality sand on adjacent eroding beaches to balance the sediment budget between the inlet and adjacent beaches. A sediment budget is a balance of the volumes (or volume rate of change) for sediments entering and leaving a tidal inlet system and its adjacent beaches. A sediment budget quantifies the natural longshore sediment transport by waves and tides to and from the inlet, the entrapment of longshore sediment by the inlet channel and the ebb and flood shoals, and the mechanical “bypassing” of sediment, typically by a hydraulic dredge, from the inlet to the adjacent beaches or nearshore. Sediment transport volumes and pathways are unique to each inlet as influenced by regional geology, morphological characteristics, wave and tide conditions, and sediment characteristics and supply. A sediment budget is determined by comparing two or more surveys of an inlet system, including its channel, ebb and flood shoals, and the adjacent beaches. The 2012 inlet management study for Wiggins Pass used an updated survey in 2009 of the inlet system to compare with a prior survey in 1992 (Figure 3). The sediment budget for the period 1992 to 2009 covers a segment of coast extending approximately one mile north and south of the inlet.

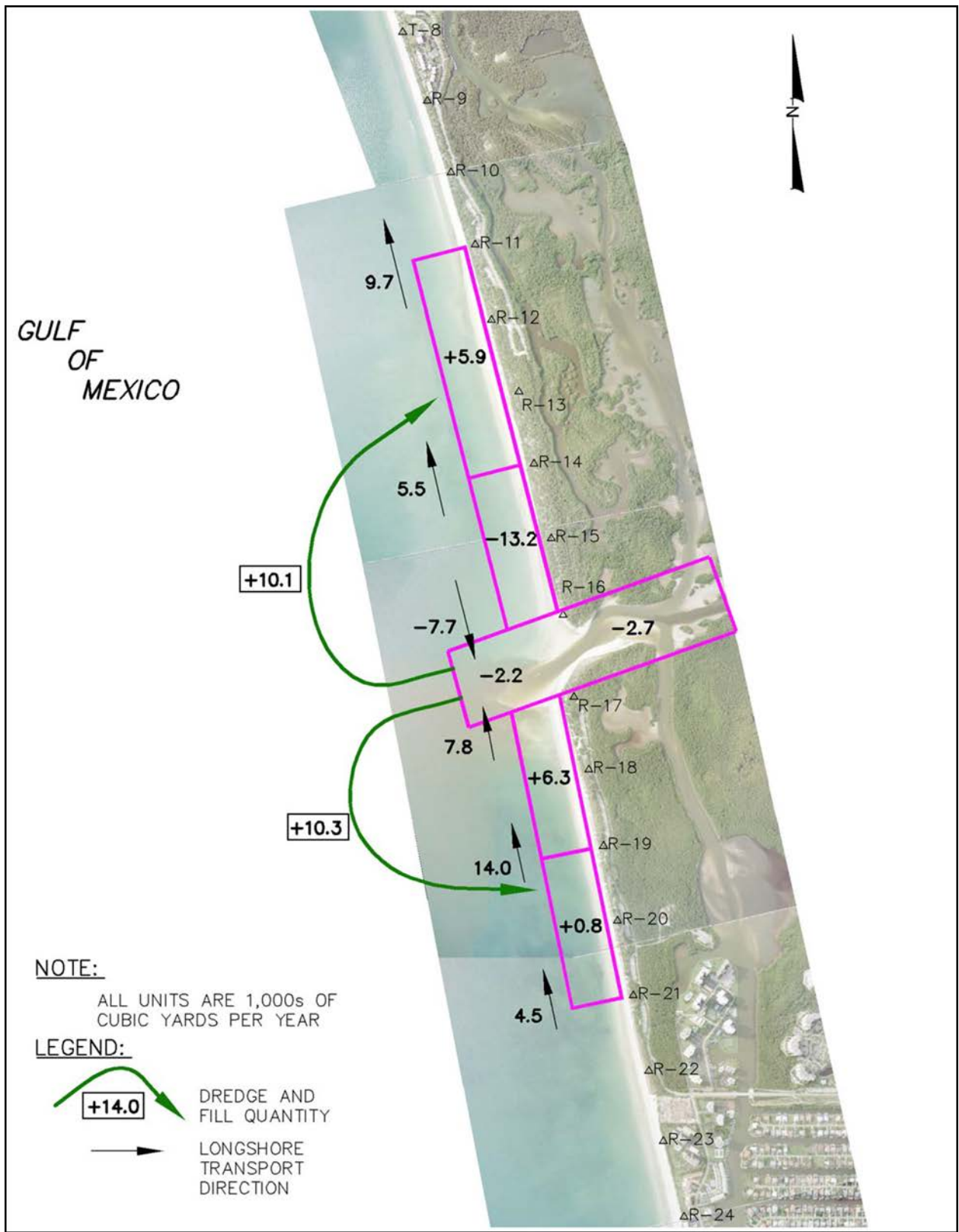


Figure 3. Wiggins Pass sediment budget from 1992 to 2009. (CBI - CP&E, 2012)

Wiggins Pass is somewhat sheltered from northwest wave energy by Sanibel Island located to the northwest. This has led to annual drift reversals and long periods where the net drift is to the north, counter to the rest of Collier County where the average net transport is to the south. A drift divide is seen north of Wiggins Pass near R14, where the net direction to the north is northward away from the inlet. South of R14, the transport is southward toward and into Wiggins Pass. This results in a longshore loss of sediment into the inlet from the beach between R14 and R16. Inlet dredge records for the period indicate 20,400 cubic yards per year of material were transferred to the beaches in nearly an even split to the north and south. Another 200 cubic yards per year of bypassing would have totally mitigated the volumetric loss to the beach between R11 and R21. For this reason, and based upon this sediment budget, a target bypassing quantity of 20,600 cubic yards per year is recommended (see Strategy 3).

Following the channel re-alignment project in 2013, Collier County has conducted physical monitoring of the beach and inlet system. Humiston and Moore (2017) analyses project performance by comparing a survey obtained in February 2017, with a post-construction survey obtained in September 2013. There was an average loss of beach width north of the inlet (R10-R16) of -25 feet and south of the inlet (R17-R21) of -35 feet. Volumetrically, the beach to the north lost -12,290 cubic yards per year, while the beach to the south lost -7,740 cubic yards per year. That represents an erosion split of 61% to the north and 39% to the south. The total beach erosion volume totaled -20,030 cubic yards per year. When the 2017 survey data was compared to the 2001 survey, an erosion split of 66% to the north and 34% to the south was calculated. Based on the sediment budget developed prior to the channel realignment (CBI – CP&E, 2012), a draft bypassing strategy has been developed calling for a beach placement split of two-thirds (67%) to the north and one-third (33%) to the south (Strategy 3). The erosion data between the 2013 and 2017 surveys is consistent with the pre-project sediment budget for the longer time period, suggesting that the proposed bypassing strategies are reasonable.

Recommended Inlet Management Plan Strategies

The Department staff recommends the following inlet management strategies be adopted to meet the requirements of Chapter 161, Florida Statutes. Future inlet management activities shall be consistent with the following four strategies.

- 1) A comprehensive beach and inlet hydrographic monitoring program shall be conducted** to evaluate the performance and impact of existing sand bypassing and nourishment projects and to periodically update the inlet sediment budget.

Discussion – A comprehensive beach and inlet hydrographic monitoring program is the most important element to manage the sediment at Wiggins Pass. Topographic and bathymetric surveys provide reliable data to estimate the volumetric impact of the inlet on adjacent beaches and to establish a sand placement protocol that complies with section 161.142, Florida Statutes. The current approved inlet monitoring program conducted by Collier County provides sufficient monitoring data.

- 2) Sand bypassing shall be performed from the Wiggins Pass navigation channel to the adjacent Gulf-fronting beaches both to the north and to the south of the inlet between DEP Reference Monuments R12 and R20.** Priority for placement shall be existing designated critically eroded beach areas. The quantity of fill to be placed in each area shall be based on observed beach erosion patterns and quantities documented through the monitoring protocol of Strategy #1 above.

Discussion – The Barefoot Beach Park (R12-R15.5) north of Wiggins Pass and the Delnor-Wiggins Pass State Park (R18-R20) south of Wiggins Pass are the beach erosion areas directly impacted by Wiggins Pass. Barefoot Beach (R13-R15) to the north of Wiggins Pass and Delnor-Wiggins Pass State Park to the south (R16.8-R17.3) are currently designated a critically eroded beach segment (DEP, 2017).

- 3) On an average annual basis, the initial target inlet sand bypassing quantity shall be 20,600 cubic yards per year, with approximately one-third placed to the south of the inlet and approximately two-thirds placed to the north.** The sediment budget may be updated periodically using the most recent time span of four years or more of monitoring data. The target bypassing quantities may be modified based upon the updated sediment budget. Should the volume of sand accumulating in the Wiggins Pass navigation channel exceed the target quantities, the additional sand may be dredged during the County's next periodic maintenance of

the channel, including the tributary channels, and placed on the adjacent beaches or the ebb shoal.

Discussion – In an analysis of historic sand fill placements, it has been determined that the north beaches need approximately 2.65 times the quantity of material placed on the south beaches to remain stable. Post-project monitoring following channel re-alignment documents a continuance of the need to place two-thirds of the material to the north and one-third to the south. The sediment budget indicates a need to place a total of 20,600 cubic yards per year on the eroded beaches north and south of the inlet. Due to channel migration across the ebb shoal, it is sometimes necessary to place dredge material within the meandered channel alignment.

- 4) The source of sediment for meeting the target sand bypassing quantity in Strategy #3 above shall be the Wiggins Pass navigation channel.**

Discussion – The area typically dredged for sand bypassing is the Wiggins Pass navigation channel.

References

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