

Blind Pass Inlet Management Plan
Division of Water Resource Management
Florida Department of Environmental Protection
August 2019



Final Order Adopting Blind 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 2017-18, the Department of Environmental Protection (Department) and Lee County sponsored an [inlet management study of Blind Pass](#) performed by Aptim Environmental and Infrastructure, Inc. (APTIM), which compiled new and historical data and information regarding its coastal processes and inlet and shoreline dynamics, updated its sediment budget, and developed feasible alternatives for the mechanical transfer of sand from the inlet to the beaches south of the inlet; and

WHEREAS, on August 2019, the Department developed an inlet management plan that contains corrective measures to mitigate the identified inlet erosion impacts to adjacent beaches; and

WHEREAS, Lee County is the entity responsible for dredging at Blind 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,

THEREFORE:

The Department does hereby adopt the following implementation strategies, as set forth in the attached **Blind Pass Inlet Management Plan**. Future inlet management activities conducted by Lee County shall be consistent with the following six 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. Along with topographic and hydrographic surveys of the inlet system and adjoining beaches, hydraulic monitoring may be conducted to enhance future modeling input data for investigations of inlet management alternatives.
- 2) **Sand bypassing shall be performed from the Blind Pass channel to the adjacent gulf-fronting beaches to the south of the inlet between DEP Reference Monuments R110.5 and R116.** The quantity of material to be bypassed shall be based on available channel deposition quantities documented through the monitoring protocol of Strategy #1.
- 3) **On an average annual basis, the initial target inlet sand bypassing quantity shall be 21,000 cubic yards per year.** This target quantity may be modified or updated based on a minimum of four years or more of monitoring data indicating a change in the sediment budget. In the interim, should the volume of sand accumulating in the Blind Pass channel exceed these quantities, the additional sand may be dredged and placed on the adjacent beaches south of R110.5. Acceptable beach quality sand may also be obtained from inland sand mines or offshore sources to supplement the target sand bypassing quantities.
- 4) **The source of sediment for meeting the target sand bypassing quantities in Strategy #3 shall be the Blind Pass channel authorized by Joint Coastal Permit No. 0265943-003-JM.** However, the dredging template should be modified by truncating the seaward end to limit intrusion into the natural sand bypassing bar. The monitoring data of Strategy #1 shall be evaluated to determine the effects of modifying the dredge template and to guide future dredging practices.

- 5) Tidal connections to Pine Island Sound through a Wulfert Channel extension and a Sunset Bay connection have been shown to improve inlet stability and natural sand bypassing. Engineering design and permitting will be required to develop an environmentally acceptable project.** Physical monitoring shall include hydraulic data acquisition to evaluate project performance.

- 6) Preliminary modeling has shown the potential benefit of constructing a shore-parallel spur for the terminal groin at the south end of Captiva Island. A detailed feasibility and engineering investigation will be required to further evaluate and design a structural alternative that will enhance natural sand bypassing to reduce erosion along northern Sanibel Island.**

Inlet management actions conducted by Lee County 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 of a funding request 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 Blind Pass and the adjacent beaches.

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, F.S., receipt of which is hereby acknowledged.



Deputy Clerk

August 23, 2019

Date

Notice of Rights

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the hearing process may result in a modification of the agency action or even denial of the request for a variance or waiver.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57, F.S. Pursuant to Rule 28-106.201, F.A.C., a petition for an administrative hearing 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, telephone number, and any e-mail address of the petitioner; the name, address, telephone number, and any e-mail address 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, including an explanation of how the alleged facts relate to the specific rules or statutes; 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.

The petition 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. A copy of the petition shall also be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing must be filed within 21 days of receipt of this written notice. The failure to file a petition 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, F.S., 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, F.A.C.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. 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.

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Introduction

Pursuant to subsection 161.101(2), Florida Statutes, the Florida Department of Environmental Protection (Department or DEP) 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 Blind Pass in Lee County, Florida.

Blind Pass Inlet Management Plan updates strategies for Blind Pass that were adopted in the *Strategic Beach Management Plan* (DEP, 2018) to be consistent with current statutes and observed erosion¹ conditions. The *Strategic Beach Management Plan* (DEP, 2018) called for an update inlet sediment budget and adoption of an inlet management plan. The Department and Lee County sponsored an update inlet management study of Blind Pass in 2017-18 that was performed by APTIM, Inc.

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.”

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

History of Blind Pass

Blind Pass is located in Lee County on the southwestern coast of Florida connecting the Gulf of Mexico with Pine Island Sound (*Figure 1*). The inlet separates Captiva Island to the north and Sanibel Island to the south. Lee County maintains Turner Beach Park, immediately north of Blind Pass on Captiva Island, and a bridge crossing Blind Pass, which provides the only vehicular access to Captiva Island from Sanibel Island and the mainland (*Figure 2*).

It is important to understand the history of Blind Pass, its 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. Blind Pass has had one of the most complicated geomorphological histories of any Florida inlet, and has seen multiple closures and openings over time. Coastal Planning & Engineering, Inc. (CP&E, 1993) cites information by different researchers that suggest an inlet existed in the vicinity of Blind Pass as early as A.D. 1000. The earliest available government survey dated 1859, indicated that Blind Pass was open nearly 2,000 feet south of the existing entrance at the end of a long shore-parallel channel alignment. The next available survey in 1883 indicates the inlet broke through the southward trending spit at a location near the current entrance.

The hurricane of 1921, which made landfall on the southwestern coast of Florida, breached Captiva Island about five miles north of Blind Pass. This breach was the origin of Redfish Pass, which separates North Captiva Island from Captiva Island. Prior to the formation of Redfish Pass, Blind Pass was a larger inlet conveying a greater tidal prism. After Redfish Pass captured a significant portion of the Pine Island Sound tidal prism, Blind Pass conveyed a substantially smaller tidal prism and became less

hydraulically stable. The next available survey in 1928 indicates the spit grew southward again from Captiva Island causing the channel to migrate over 3,500 feet to the south. The inlet shoaled and eventually closed. Around 1941, the inlet reopened again to the north and the truncated spit attached to northern Sanibel Island.



Figure 1. Blind Pass between Captiva Island and Sanibel Island, 2017 (Aerial photo: Google Earth images).



Figure 2. Blind Pass between Captiva and Sanibel Islands (APTIM [2018] - Aerial photo, 2016).

The cycle of spit growth, inlet closure, and new breaching occurred again after 1941. Hurricane Donna caused a new breach in 1960. However, in 1961, this breach closed and a new inlet opened further to the south. By 1964, the spit migrated to the south again and closed the inlet. In 1972, Hurricane Agnes caused substantial deflation of the spit between the present inlet location and Clam Bayou to the south. A new breach was opened at Clam Bayou. To protect the bridge crossing Blind Pass and the road, the county constructed a boulder mound terminal groin at Turner Beach Park in 1972.

Blind Pass remained open between 1972 and 1975. A subtropical storm in June 1974 impacted southwestern Florida with northward longshore transport causing severe erosion to Turner Beach Park

north of Blind Pass and substantial shoaling into the inlet off northern Sanibel Island. The deposition of sand east of the bridge substantially reduced the flow of water through the inlet leading to eventual closure in 1977. Aerial photography in 1978 shows the inlet closed, but a former channel called Old Blind Pass had become open a few thousand feet to the south. Blind Pass remained closed until another subtropical storm in June 1982 caused its reopening.

In 1988, prior to a beach nourishment project on Captiva Island, the terminal groin north of Blind Pass was extended 100 feet. To mitigate erosion along northern Sanibel Island attributed to the effects of the terminal groin, 237,100 cubic yards of sand were placed on the beach immediately south of Blind Pass in 1996. A significant quantity of the mitigative sand fill was transported to the north off northern Sanibel Island into Blind Pass, causing its closure between August 1998 and October 1999. The inlet remained closed until 2001, when 20,400 cubic yards were removed from the inlet channel seaward of the bridge. Because shoaled conditions east of the bridge continued to restrict tidal flow through the channel, Blind Pass closed. Other than minor reopenings, such as that which occurred during Hurricane Charley in 2004, Blind Pass remained substantially closed until 2009.

On June 6, 2008, the Blind Pass Maintenance Dredging Project was authorized by the Department (Joint Coastal Permit #0265943-001-JC). The project included maintenance dredging of the Blind Pass Channel and the connection to Roosevelt Channel. The channel extended from the -10 ft. NAVD contour in the Gulf of Mexico into the interior waters of Pine Island Sound (*Figure 3*). Between December 2008 and July 2009, 148,000 cubic yards of material were dredged from Blind Pass, with placement of 136,900 cubic yards of sand on the beach of northern Sanibel Island, starting approximately 2,000 feet south of the inlet. Another 11,100 cubic yards were placed on an upland disposal area. Following significant shoaling, the outer inlet channel was dredged again in September 2012, with the excavation of 63,300 cubic yards, and the inner channel was dredged in June 2013, with the excavation of 37,600 cubic yards. All material was placed along the beaches of northern Sanibel Island. In June 2017, a second maintenance project was conducted with the excavation of 89,700 cubic yards from both the exterior and interior channel segments of Blind Pass, with placement on northern Sanibel Island.

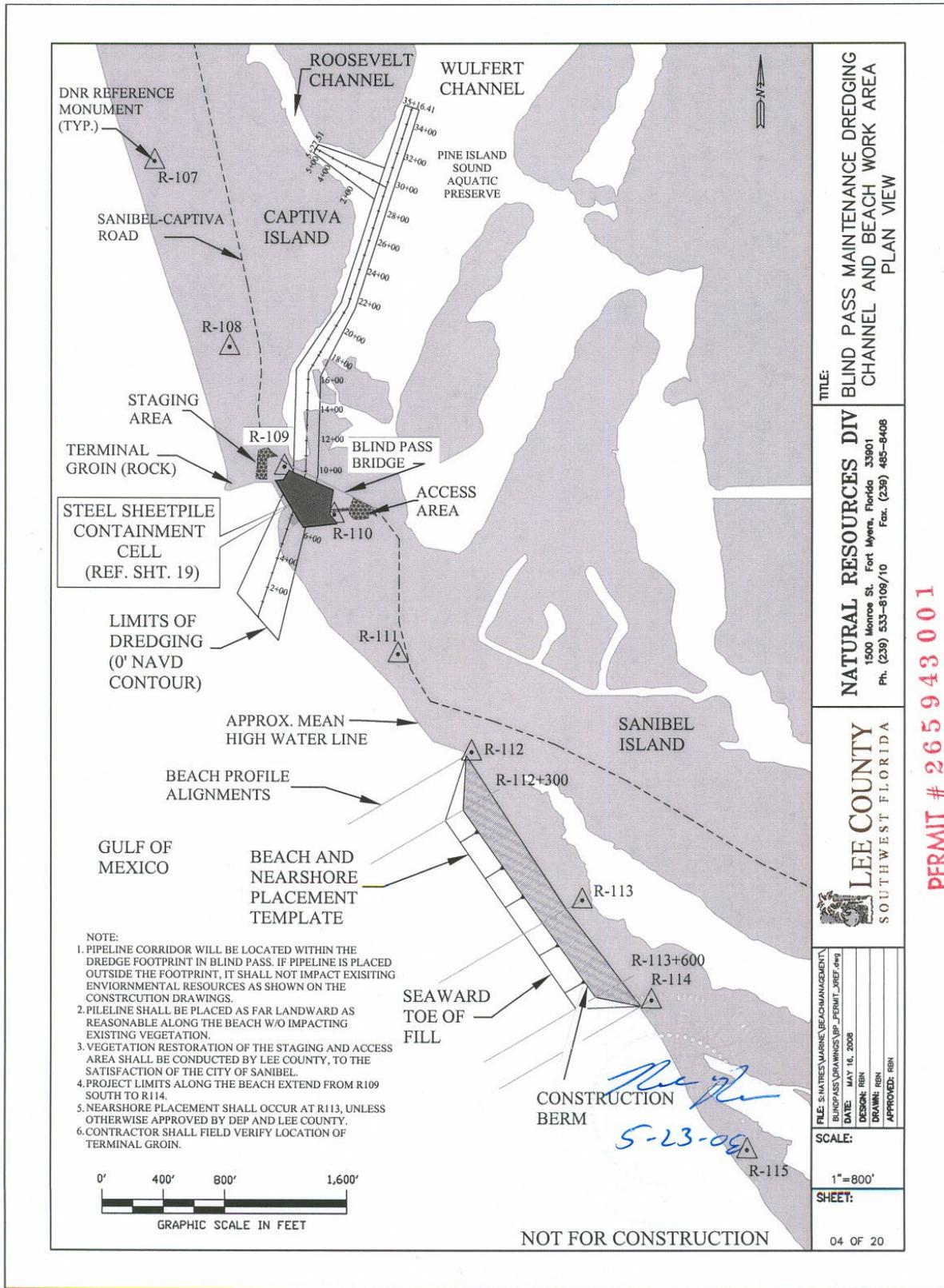


Figure 3. The authorized Blind Pass Maintenance Project (Joint Coastal Permit #0265943-001-JC).

Prior Inlet Management Studies

In 1991, the Department and the Captiva Erosion Prevention District sponsored an inlet management study conducted by CP&E. In this study, CP&E evaluated historical surveys and aerial photography, shoreline and nearshore profile changes, bathymetric data and changes, and the littoral sediment budget for different time periods. Environmental resources were surveyed, and the inlet's hydraulics and stability were evaluated.

The study evaluated 17 inlet management alternatives for addressing the critical erosion conditions to the adjoining beaches that were caused in part by Blind Pass. Two inlet closure options were considered, including removing the terminal groin on Captiva Island and removing the groin coupled with filling the inlet. Twelve inlet bypassing alternatives were considered, which included various beach fill proposals and armoring schemes for Sanibel Island, construction of a terminal groin on Sanibel Island, purchasing threatened homes, rerouting the road, and dredging the flood shoal, as well as a no-action alternative. In addition, three experimental systems were considered, including jet pumps, fluidizers, and dewatering systems. The analysis compared costs and effectiveness of each alternative, along with the technical feasibility and environmental impacts.

The recommended plan called for the initial placement of 374,000 cubic yards of sand on northern Sanibel Island to restore the shoreline, and periodic nourishment of approximately 18,000 cubic yards per year to maintain the shoreline. In addition, a feeder beach on the south end of Captiva Island would receive 17,000 cubic yards per year to increase natural inlet bypassing, which, when added to the periodic nourishment of northern Sanibel Island, would compensate for the expected erosion loss of -35,000 cubic yards per year south of Blind Pass. Other recommended alternatives included removing overwash material from Clam Bayou and Old Blind Pass to construct a barrier dune, constructing an 800-foot revetment along the most vulnerable segment of the road on Sanibel Island, and acquiring five private parcels south of the pass to create a public beach.

The Department adopted inlet management strategies for Blind Pass in the *Strategic Beach Management Plan* (2000), which were: bypass on an annual basis 37,250 cubic yards of beach compatible sand to the downdrift shoreline south of the inlet; conduct a feasibility study of using the ebb and flood shoals as a source of beach compatible sand for beach nourishment of the downdrift shoreline; and implement a comprehensive beach, inlet, and offshore monitoring program to validate or redefine the sediment budget developed in the inlet management study.

Lee County sponsored a follow-up inlet management study in 2006, resulting in the Blind Pass Ecozone Restoration and Bypassing Project (Erickson Consulting Engineers, 2006). The purpose of this project was to reopen and maintain Blind Pass as an open inlet to provide improved water circulation and resulting water quality effects within Wulfert Channel and Roosevelt Channel, as well as Clam Bayou and Dinkins Bayou. Periodic inlet maintenance dredge material was used to nourish northern Sanibel Island. Given the problem of reentry of fill placement on northern Sanibel Island, the new fill placement site was limited to 2,000 feet south of Blind Pass between R112 and R114 (Refer back to **Figure 3**).

Updated Inlet Management Study

The Department and Lee County sponsored an update inlet management study in 2017-2018, to update the inlet's sediment budget and develop improved strategies for maintaining a more stable inlet while addressing the chronic erosion conditions of northern Sanibel Island. This study included a literature review, data collection, development of an updated sediment budget, and an inlet management alternatives analysis, with advanced numerical modeling to develop feasible inlet management strategies. Conceptual designs were evaluated individually and in combination employing the numerical model Delft3D. Study guidance was provided by a technical advisory committee, made up of representatives of Lee County, the City of Sanibel Island, the Captiva Erosion Prevention District, and the Department.

A comprehensive analysis was conducted of 18 preliminary alternatives, which included various options involving beach fill, deposition basins, channel dredging, changes to the Captiva Island terminal groin, construction of various structures on northern Sanibel Island, adding a spur to the existing terminal groin, and conducting no action. Following this analysis, the most effective and feasible components of the preliminary alternatives were combined into three final alternatives for further study. These final alternatives included combinations of a truncated entrance channel dredge template, dredging connections to Pine Island Sound, placing beach fill on northern Sanibel Island, and adding a spur structure to the western end of the existing terminal groin on Captiva Island. The numerical model simulated a five-year period, as well as two storm conditions. Morphology, volumes, channel stability, and storm response were evaluated. While morphological trends were similar and benefits comparable for each final alternative, there were some differences in magnitude of changes.

The final study recommendations called for the following alternatives:

- Truncated dredge template based on Preliminary Alternative 3c with the variable dredging depth along the inner channel (**Figure 4**)
- Sanibel Island beach fill based on Preliminary Alternative 6a with the fill template between R110.5 and R112.5
- Modified connections to Pine Island Sound with a re-established connection to Sunset Bay and Wulfert Channel extension (**Combined Final Alternative 3; Figure 5**)
- Spur at Blind Pass terminal groin as a 100-foot long extension in a north-south orientation

The study further recommended a phased approach for features of the plan consistent with existing permits, performance monitoring, and other regulatory considerations. Further refinement and engineering for a design phase for new construction or excavation is recommended prior to implementation of any project.

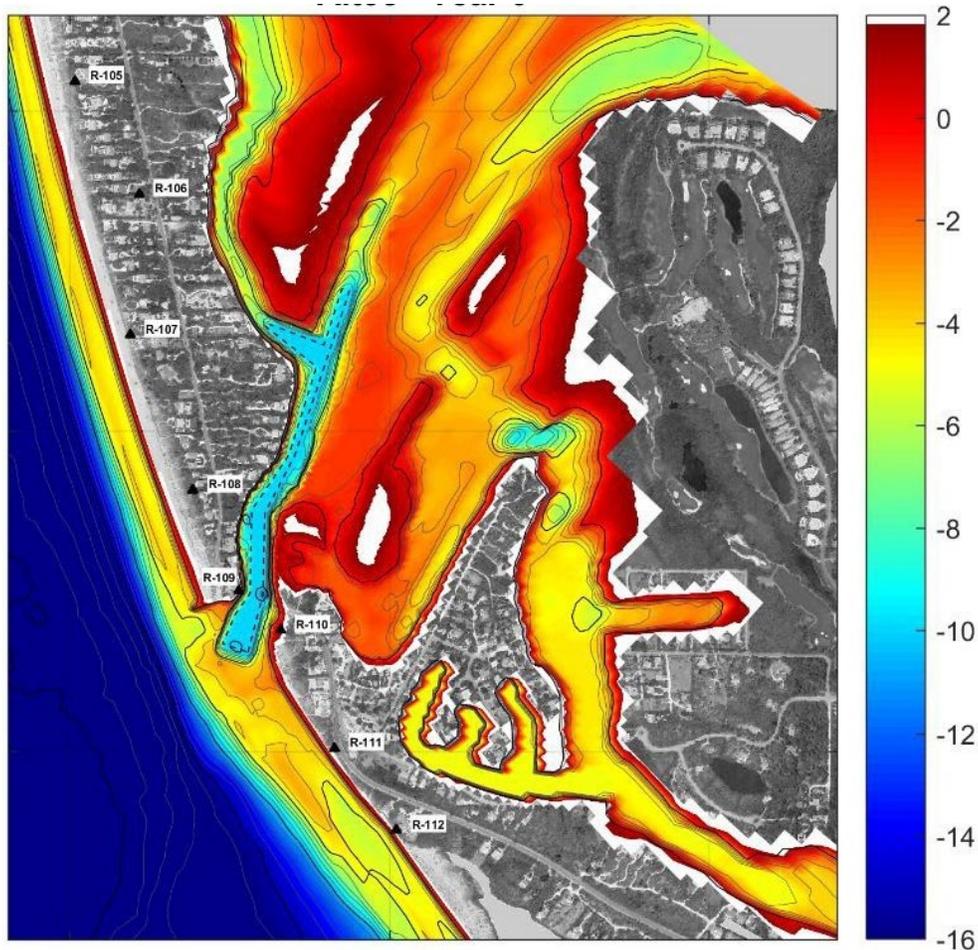


Figure 4. Preliminary Alternative 3c with truncated entrance channel to minimize encroachment into the natural bypassing bar – initial model bathymetry (feet NAVD). Reference: APTIM (2018)

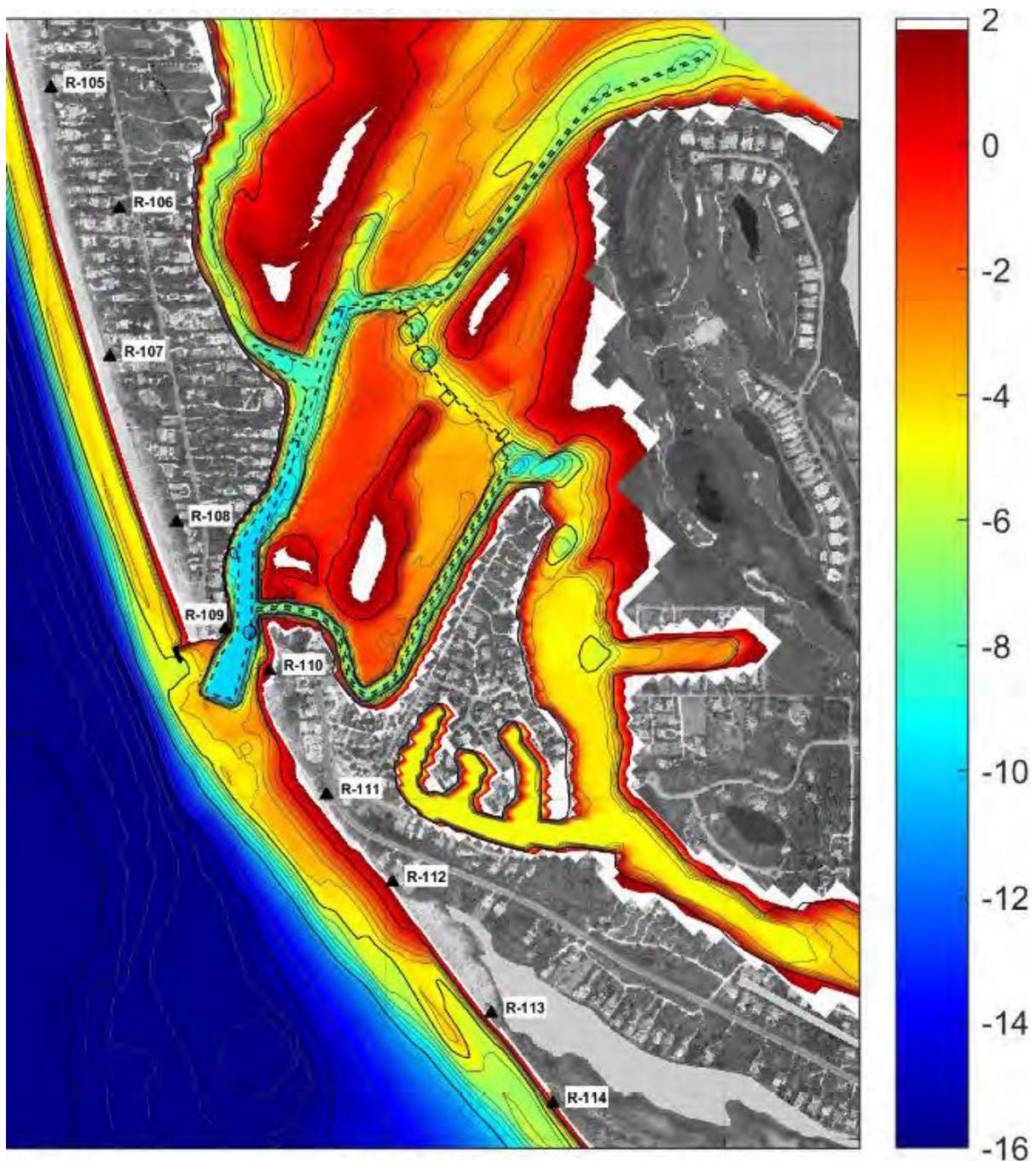


Figure 5. Final Combined Alternative 3 with truncated entrance channel, Wulfert Channel extension to Pine Island Sound, Sunset Bay connection, and a spur to the terminal groin – initial model bathymetry (feet NAVD). Reference: APTIM (2018)

Updated Sediment Budget

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 1993 inlet management study for Blind Pass developed a general sediment budget for the time periods 1941-1955, 1955-1974, 1974-1988, and 1988-1991. These sediment budgets covered a segment of coast extending from Redfish Pass at the northern end of Captiva Island to the southeastern tip of Sanibel Island. Because the 1988-1991 time period was atypical with a stronger northward transport, an estimated sediment budget was developed for more typical conditions, with longshore transport of sand southward from Captiva Island to Sanibel Island. This sediment budget projected an expected annual erosion loss on northern Sanibel Island of -35,000 cubic yards per year.

The 2018 inlet management study for Blind Pass developed an updated sediment budget covering the time period from 2009 to 2015 (***Figure 6***). Along the study area, the predominant direction of longshore sediment transport is from north to south. During the time period from 2009 to 2015, approximately 51,000 cubic yards per year of sand were transported from Captiva Island southward to Blind Pass. Northern Sanibel Island south of Blind Pass sustained an annual loss of -14,000 cubic yards of sand between R110.5 and R112, and another -58,000 cubic yards annually between R112 and R116. The sediment budget indicates that the inlet complex captures 21,000 cubic yards of sand per year.

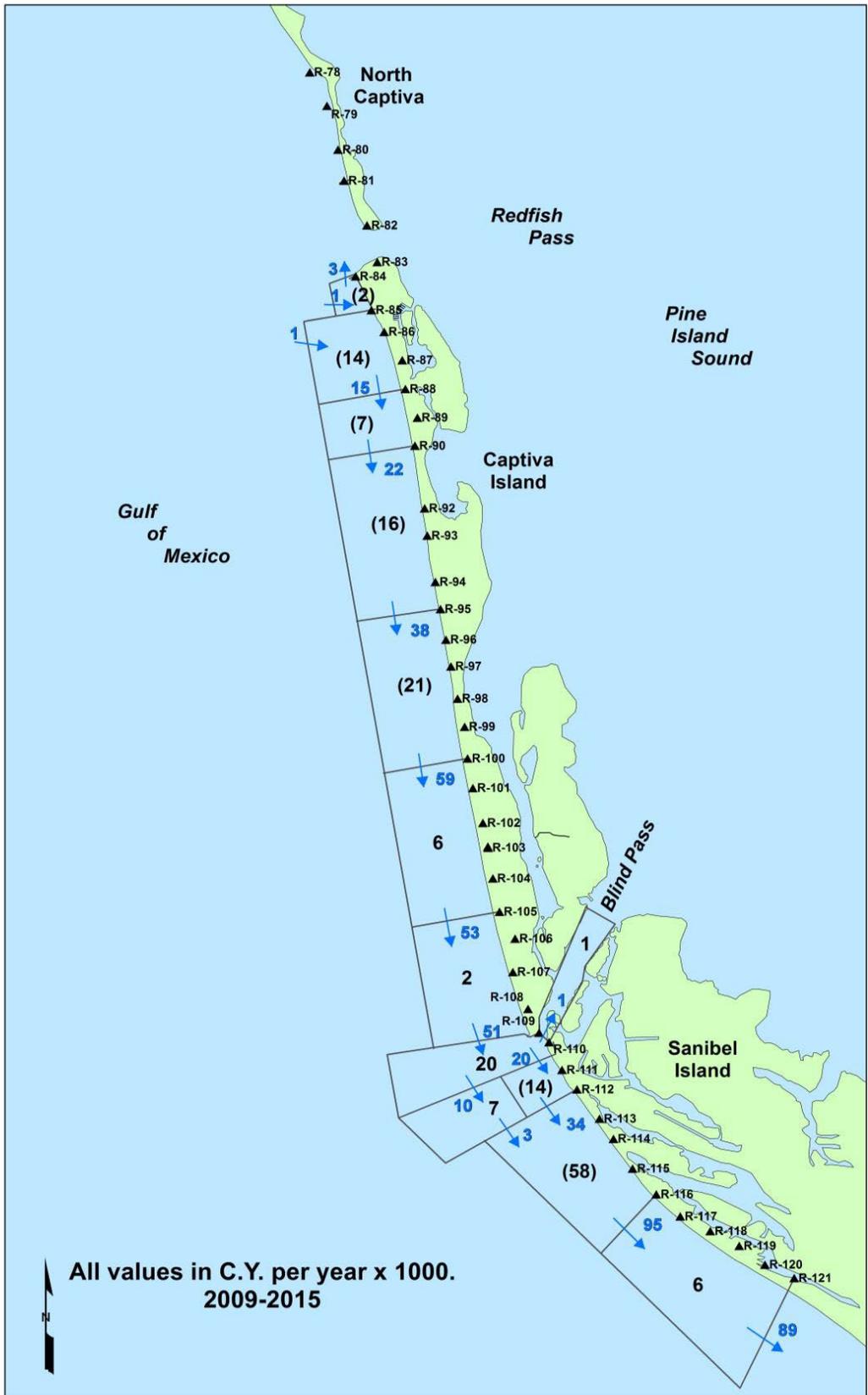


Figure 6. Update sediment budget for Blind Pass (2009-2015). Blue numbers represent net sediment transport into and out of littoral cells. The black numbers represent the net gain or loss within a littoral cell. Reference: APTIM (2018)

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.

- 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.** Along with topographic and hydrographic surveys of the inlet system and adjoining beaches, hydraulic monitoring may be conducted to enhance future modeling input data for investigations of inlet management alternatives.

Discussion – A comprehensive beach and inlet hydrographic monitoring program is the most important element to manage the sediment at Blind 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 beach and inlet monitoring program conducted by Lee County and the Captiva Erosion Prevention District provides excellent monitoring data. Hydraulic monitoring will provide the data necessary to evaluate the performance of the following strategies, as well as refine and design a spur to the terminal groin.

- 2) **Sand bypassing shall be performed from the Blind Pass channel to the adjacent gulf-fronting beaches to the south of the inlet between DEP Reference Monuments R110.5 and R116.** The quantity of material to be bypassed shall be based on available channel deposition quantities documented through the monitoring protocol of Strategy #1.

Discussion – Northern Sanibel Island south of Blind Pass is the beach erosion area directly impacted by Blind Pass. The beaches 1.7 miles to the south of Blind Pass (R109-R118) are currently designated critically eroded by the Department (DEP, 2018).

- 3) **On an average annual basis, the initial target inlet sand bypassing quantity shall be 21,000 cubic yards per year.** This target quantity may be modified or updated based on a minimum of four years or more of monitoring data indicating a change in the sediment budget. In the interim, should the volume of sand accumulating in the Blind Pass channel exceed these quantities, the additional sand may be dredged and placed on the adjacent beaches south of R110.5. Acceptable beach quality

sand may also be obtained from inland sand mines or offshore sources to supplement the target sand bypassing quantities.

Discussion – The sediment budget indicates a need to place an annual quantity of 21,000 cubic yards of sand per year on the eroded beaches south of the inlet to account for the inlet’s impact on northern Sanibel Island. To mitigate sand losses on northern Sanibel Island that are not attributed to Blind Pass, or to supplement the target bypassing quantity when there is insufficient sand available in the channel, additional sand may be placed that is obtained from acceptable offshore sources or inland sand mines.

- 4) **The source of sediment for meeting the target sand bypassing quantities in Strategy #3 shall be the Blind Pass channel authorized by Joint Coastal Permit No. 0265943-003-JM. However, the dredging template should be modified by truncating the seaward end to limit intrusion into the natural sand bypassing bar.** The monitoring data of Strategy # 1 shall be evaluated to determine the effects of modifying the dredge template and to guide future dredging practices.

Discussion – The area dredged for sand bypassing is the authorized Blind Pass channel. Alternative 3c was shown in the study to facilitate natural sand bypassing. By limiting the extent of channel dredging into the sand bypassing bar, a greater quantity of sand is expected to naturally nourish the critically eroded northern Sanibel Island beaches.

- 5) **Tidal connections to Pine Island Sound through a Wulfert Channel extension and a Sunset Bay connection have been shown to improve inlet stability and natural sand bypassing. Engineering design and permitting will be required to develop an environmentally acceptable project.** Physical monitoring shall include hydraulic data acquisition to evaluate project performance.

Discussion – The final combined Alternative 3 showed the increased inlet flow developed from the Sunset Bay connection and the Wulfert Channel extension would lessen sand entrapment and help flush sediment out of the inlet with the ebb tidal cycle. The resulting increased tidal prism will make the inlet more hydraulically efficient and would improve natural sand bypassing.

- 6) **Preliminary modeling has shown the potential benefit of constructing a shore-parallel spur for the terminal groin at the south end of Captiva Island. A detailed feasibility and engineering investigation will be required to further evaluate and design a structural alternative that will enhance natural sand bypassing to reduce erosion along northern Sanibel Island.**

Discussion – Strategies 2 through 5 are anticipated to be implemented in a phased approach. With implementation of each strategy, performance may be evaluated utilizing the data obtained in Strategy 1. Implementation of Strategy 6 would require a greater design and impact analysis than was considered in the preliminary alternative’s analysis of the inlet management study. Implementation of Strategies 2 through 5 should be completed and evaluated prior to initiating Strategy 6.

References

- Aptim Environmental & Infrastructure, Inc., 2018. [*Blind Pass Inlet Management Study 2018 Update*](#), 57 p. plus appendices.
- Coastal Planning & Engineering, Inc., Dean, R.G., and Mehta, A.J., 1993. *Blind Pass Inlet Management Plan*, 144 p. plus appendices.
- Erickson Consulting Engineers, Inc., 2006. *Blind Pass Restoration Project Design Report*.
- Florida Department of Environmental Protection, 2018. *Critically Eroded Beaches in Florida*, Division of Water Resource Management, 89 p.
- Florida Department of Environmental Protection, 2000. *Strategic Beach Management Plan*, Bureau of Beaches and Coastal Systems.
- Florida Department of Environmental Protection, 2018. *Strategic Beach Management Plan*, Division of Water Resource Management, 365 p.