Volusia County
FLORIDA

TAYLOR ENGINEERING, INC.

Volusia County

Countywide Beach Profile Survey 2025

February 2026

Volusia County Countywide Beach Profile Survey 2025

Volusia County, FL

Prepared for

Volusia County

Task Assignment No. 45, PC-4065, RSQ No. 20-SQ-175IF

by

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1 INTRODUCTION

This report presents the results of a countywide beach profile survey conducted in August 2025 to characterize the evolution of Volusia County's (County) beaches. This study is a part of the County's annual monitoring effort, which began in 2019. Since 2019, the County has taken a proactive role in monitoring and managing their beaches and inlet through a comprehensive beach and inlet hydrographic monitoring program; the monitoring provides critical data for documenting beach and inlet condition changes and assists in the management of these valuable resources.

This report, prepared for the County, presents the 2025 countywide beach profiles and compares them to the 2019 baseline condition, the summer 2024 condition, and the 2024 post- Hurricane Milton condition. The 2019 survey collected data countywide to establish a baseline condition for future beach assessments and monitoring. The County created a plan to collect countywide profiles every five years and interim surveys annually between; as such, the summer of 2024 was a planned countywide collection effort. Hurricane Milton impacted the shoreline in October 2024 and the U.S. Army Corps of Engineers (USACE) collected post-storm LiDAR. To monitor the impacts of Hurricane Milton and their ongoing coastal projects, the County decided to collect data at every R-monument countywide in summer 2025. Interim data collection efforts (2020, 2021, and 2022) surveyed beach profiles at all monuments in the Ponce de Leon Inlet area of influence (R-120 to R-170) and every third monument elsewhere throughout the County— this report does not include comparisons to any of the interim data collection efforts.

Notably, in 2024, the County began a study to assess the current risks to the County's shoreline and evaluate the feasibility of different management strategies, which is scheduled for completion in 2026. Beginning in 2025, the County initiated two sand placement projects, one north of the inlet and one south of the inlet, further detailed in Sections 2.1, 3.2, and 3.3 Of note, USACE authorized a federal feasibility study in 2006 for the Volusia County Shore Protection Project, although it has yet to be funded.

1.1 REPORT ORGANIZATION

Following this introduction, Section 2 provides an overview of the County, reviews the nourishment history, provides details (e.g., date and location) of available beach surveys, and presents the Florida Department of Environmental Protection (FDEP) defined tidal datums for the County. Section 3 presents the results of the Mean High Water (MHW) shoreline change and volume change analyses by community and project area. Section 4 summarizes this study, and a list of references completes the report.

Appendix A contains beach profile plots for the surveys included within this assessment. Appendix B presents a table of the FDEP reference monument coordinates, elevation, and associated profile azimuth, along with the survey extent of the 2024 post-Milton LiDAR data. Appendix C contains 2024 aerial photos overlaid with surveyed MHW contours for 2019, 2024, 2024 post-Milton, and 2025 data. Appendix D provides the MHW shoreline positions and changes in tabular formats, while Appendix E illustrates volume changes in tabular and graphical formats. Finally, Appendix F presents the 2025 monitoring photographs.

2 SITE BACKGROUND AND HISTORY

Volusia County is located south of Flagler County and north of Brevard County along the central-east coast of Florida. The County encompasses 42 miles of Atlantic Ocean shoreline, with just under three miles in North Peninsula State Park, located at the northern County extent and managed by FDEP, and just under five miles encompassed by the Canaveral National Seashore and managed by U.S. National Park Service at the southern County border.

FDEP, pursuant to rule 62B-36.002(5), Florida Administrative Code (F.A.C.), defines a critically eroded shoreline as:

> *A segment of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critically eroded shorelines may also include peripheral segments or gaps between identified critically eroded areas which, although they may be stable or slightly erosional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects.*

As of 2025, FDEP defined 27.2 miles of the County's shoreline as critically eroded, 2 miles as non-critically eroded, and 0.6 miles of critically eroded inlet shoreline. Critically eroded shorelines encompass FDEP reference monuments R-0 to R-4, R-24 to R-33, R-51 to R-143, R-148 to R-149 (inlet north bank), and R-160.8 to R-207.8. FDEP lists R-143 to R-148.2 and portions of Canaveral National Seashore as non-critically eroded (FDEP, 2025).

Historically, the most erosive events within the County include Hurricane Dora (1964); the November and December Nor'easters of 1981; the Thanksgiving Day Storm of 1984; Hurricanes Floyd and Irene (1999); Tropical Storm Gabrielle (2001); Hurricanes Charley, Frances, and Jeanne (2004); Hurricanes Ophelia and Wilma (2005); Subtropical Storm Andrea, the October Nor'easters, and Tropical Storm Noel (2007); Hurricane Matthew (2016); Hurricane Irma (2017); Hurricane Dorian (2019); numerous Nor'easters in 2020/2021, 2022; Hurricanes Ian and Nicole (2022); and Hurricane Milton (2024) (FDEP, 2023, Taylor Engineering, 2025). Notably, in the past year, no major Hurricane events impacted the County's shoreline; however, a series of Nor'easters in the fall and winter of 2025 caused significant shoreline impacts including to the newly placed North Beach Project.

Figure 2.1 and Table 2.1 present an overview of the County and its coastal municipalities—this breakdown of the coast is consistent with past reports, with one exception. The ongoing feasibility study identified distinct differences in infrastructure, shoreline orientation, and shoreline change trends within the New Smyrna Beach community, and in coordination with the County, the team divided the New Smyrna Beach community into two separate segments—New Smyrna Beach North (R-149 to R-160) and New Smyrna Beach South (R-160 to R-185). These updated segments are incorporated into this annual monitoring report. Notably, maintaining consistent segments across annual reports assists in presenting community trends and allows for comparisons to previous monitoring activities. It should be noted that the community trends could be defined based on coastal processes, but these boundaries would be dynamic and could change from year to year, making comparisons challenging.

During this annual assessment, the County was actively preparing for and constructing two sand placement projects, the North Sand Placement Project and the South Sand Placement Project, further

detailed in Section 2.1. Notably, during the 2025 data collection efforts, the County was constructing the North Sand Placement Project, while the South Sand Placement Project had not yet commenced. To monitor the effects of these placement activities, this report includes additional sections to examine the North Beach Sand Placement Project and pre-project conditions for the South Sand Placement Project. Figure 2.1 provides an overview of the projects and Table 2.2 North and South Sand Placement Project Areas details the project areas.

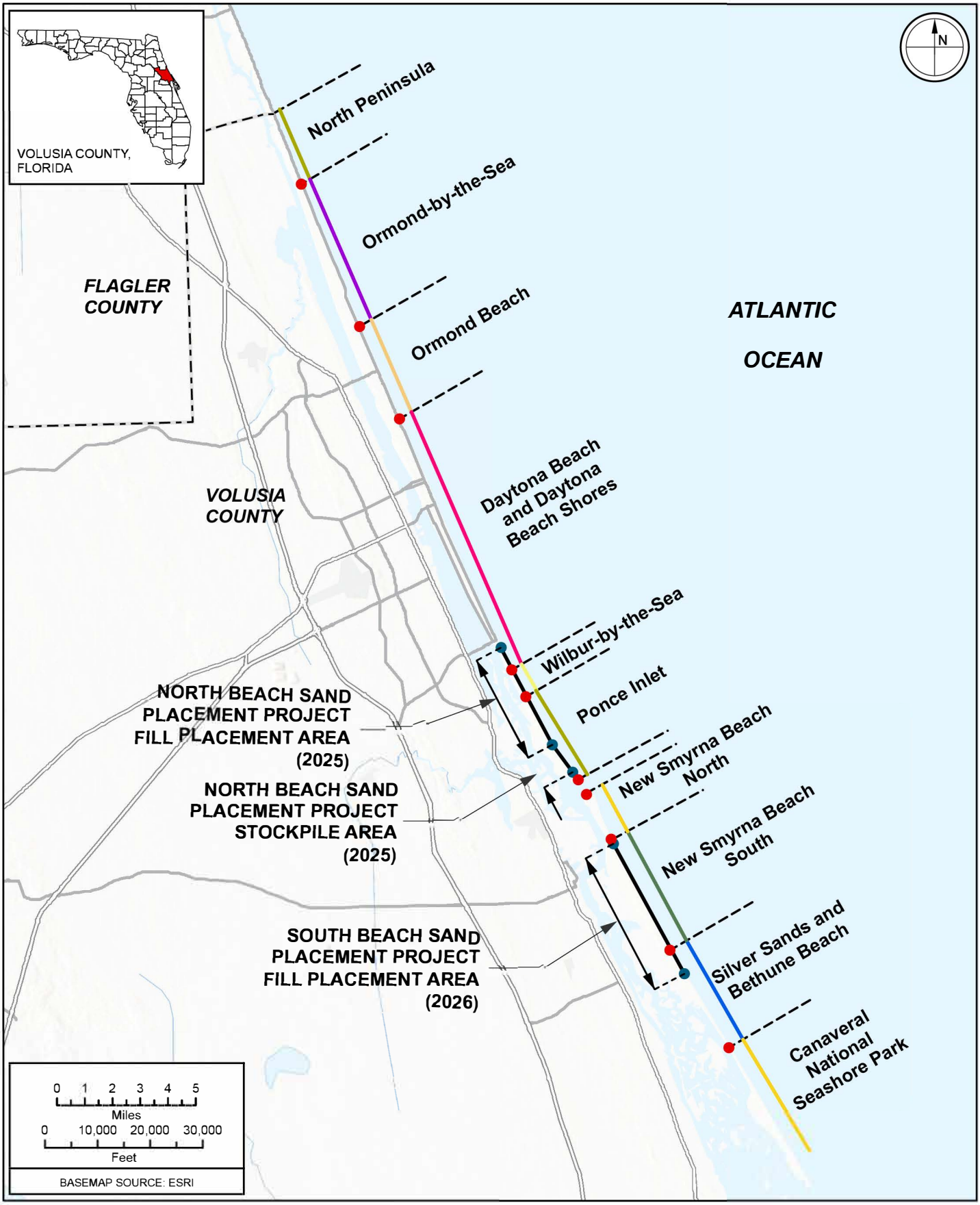
Table 2.1 Volusia County Seaside Communities

Community	Bounding R Monuments	Critically Eroded Shoreline (FDEP, 2025)
North Peninsula	R-0 to R-16	R-0 to R-4
Ormond-by-the-Sea	R-16 to R-47	R-24 to R-33
Ormond Beach	R-47 to T-67	R-51 to R-67
Daytona Beach and Daytona Beach Shores	T-67 to R-122	R-67 to R-122
Wilbur-by-the-Sea	R-122 to R-128	R-122 to R-128
Ponce Inlet	R-128 to R-148	R-128 to R-143; R-148.2 to R-148.8 (Inlet North Bank)
New Smyrna Beach North	R-149 to R-160	None
New Smyrna Beach South	R-160 to R-185	R-160.8 to R-185
Silver Sands and Bethune Beach	R-185 to T-208	R-185 to R-207.8
Canaveral National Seashore Park*	T-208 to R-234	None

*Federally managed and not included within County monitoring efforts

Table 2.2 North and South Sand Placement Project Areas for 2025/2026 Projects

Project	Project Area	Bounding R Monuments
North Sand Placement Project	North Reference Area	R-113 to R-117
North Sand Placement Project	Fill Placement Area	R-118 to R-139
North Sand Placement Project	Stockpile	R-139 to R-145
North Sand Placement Project	South Reference Area	R-146 to R-148
South Sand Placement Project	North Reference Area	R-155 to R-160
South Sand Placement Project	Fill Placement Area	R-161 to R-191
South Sand Placement Project	South Reference Area	R-192 to R-196



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VOLUSIA COUNTY BEACH AND INLET MONITORING

FIGURE 2.1
VOLUSIA COUNTY
LOCATION MAP

PROJECT	C2025-041
DRAWN BY	WL & PL
SHEET	1 of 1
DATE	APR 2026

S:\Projects\C2025_041_VolusiaCounty2025BeachProfiles\APRX\VolusiaCounty_Figures.aprx

2.1 NOURISHMENT HISTORY

Within the County, majority of placement events consist of bypassing efforts that beneficially re-use dredged materials from Ponce de Leon Inlet and adjacent waterways. The County, USACE, and the Florida Inland Navigation District (FIND) have conducted numerous regional sediment management (RSM) beach fill operations, placing material both north and south of Ponce de Leon Inlet in compliance with the FDEP authorized Inlet Management Plan (IMP). These placement events contribute to the proper management of the Inlet and its adjacent beaches. Table 2.3 documents the dredging and placement history since 1973. Historically, these RSM projects placed sediment on both the subaerial and subaqueous portions of the beach, and project stakeholders often selected the exact placement areas based on current conditions and active permit allowances.

In addition to these planned bypassing efforts, the County constructed projects in 2006, 2025, and 2026 to assist with hurricane recovery efforts. The Florida Department of Transportation (FDOT) also constructed a secant wall adjacent to A1A at the northern section of the County and is responsible for maintaining a dune seaward of this feature. A high-level overview of these projects is provided below, and Table 2.3 summarizes the beach and nearshore placement activities since 1973.

- **Inlet Bypassing Events (2014-2023)—** Between 2014 and 2023, all sediment bypassing events placed material in the nearshore area south of the Inlet. Recognizing the required bypassing goals, the County permitted the placement area north of the Inlet to include the nearshore and subaerial beach. The two most recent beneficial use projects occurred in 2019 and 2023—in 2019, USACE placed sediment from Ponce de Leon Inlet in the south nearshore region of R-158 to R-166, and in 2023 USACE placed sediment from the Inlet in the north nearshore region of R-125 to R-148 (FDEP, 2020; Brantley, 2023). Of note, nearshore placement may provide increased protection and indirectly nourish the beach through cross-shore sediment transport or the redistribution of sediment from the nearshore towards or onto the subaerial beach; however, although trends may indicate accretion of sediment on the subaerial beach, no one has studied the fate of the placed material and the effectiveness of this nourishment method for these sites within Volusia County.
- **2006 New Smyrna Beach Dune Restoration—** Following the 2004 hurricane season and the impacts of Hurricanes Charley, Frances, and Jeanne, the County completed a dune restoration project in 2006. This project encompassed a 5.2-mile-long segment of beach, extending from R-161 to R-189 within New Smyrna Beach. The project placed approximately 745,000 cy of sediment sourced from the FIND dredge material management area (DMMA) MSA-434 and an additional 22,000 cy of material sourced from FIND DMMA V-26 (Taylor Engineering, 2007; FDEP, 2023).
- **2025/2026 FDOT Secant Wall and Dune Restoration—** At the County's northernmost extent, the Florida Department of Transportation (FDOT) is actively constructing a secant wall and an associated dune restoration within North Peninsula State Park and Ormond Beach (R-0 to R-5 and R-25 to R-32; FDEP, 2024d). This project includes the placement of approximately 123,000 cy of sand to restore the dune to its pre-construction condition, or better with completion anticipated in early 2026. Notably, within the 2025 countywide survey, the FDOT dune is evident at R-0 through R-4.
- **2025 North Sand Placement Project—** The North Sand Placement Project is a beneficial use of dredged material project that involves pumping beach compatible material from the federal channel onto the beach to form a stockpile between R-139 and R-145 then hauling it up the beach using trucks to create a dune (FDEP, 2024b). Gator Dredging constructed the project and began

inlet dredging and stockpile creation in June 2025; they completed inlet dredging in December 2025, removing 800,698 cy of sediment from the channel (USACE, 2026). The contractor trucked sand from the stockpile along the beach, placing material between R-118 and R-145. As of January 2026, the contractor has shaped approximately 400,000 cy of sand into the dune template (personal communications, Volusia County, 2026). The beach template includes a dune feature at +10 ft-NAVD88 that varies in width and ties into existing seaward elevations at 1V:10H and landward elevations or features (escarpments, seawalls, revetments, etc.) at 1V:4H; the dune is to have a uniform shore-parallel extent (FDEP, 2024c). Notably, the 2025 countywide survey depicts the dune at profiles R-118 through R-138 and the stockpile at profiles R-139 through R-143.

- **2026 South Sand Placement Project—** The South Sand Placement Project is a beneficial use project that includes the placement of approximately 550,000 cy of sand between R-160.5 and R-191.5; the sand originates from Rattlesnake Island (FIND site MSA 434/434C South; FDEP, 2024a). The beach template includes a dune feature at +10 ft-NAVD88 that varies in width and ties into the existing seaward elevations at 1V:10H and landward elevations or features (escarpments, seawalls, revetments, etc.) at 1V:4H (Intera-GEC, 2024). Notably, the contractor, Gator Dredging, began construction of the project in January 2026; therefore, this project is not present within the 2025 monitoring survey.

Additionally, approximately 1 mile north of the Flagler County/Volusia County line, the USACE and Flagler County completed the initial nourishment of the Flagler County Coastal Storm Risk Management (CSRM) project in September 2024, placing approximately 1.7 million cy (Mcy) of sand from an offshore borrow area. The USACE plans to renourish the project on an 11-year interval (USACE, 2024). Sand from this large-scale project area may result in positive, downdrift impacts for Volusia County, and future reports should account for this project when analyzing the health of the County's beaches.

Table 2.3 Volusia County Beach Fill Placement History

Date	Volume (cubic yards)	Dredging Location	Placement Location
1973	120,204	Ponce de Leon Inlet	North Offshore
1974	433,751	Inlet/South Shoal	North Spit Breach Closure
1974	89,167	Ponce de Leon Inlet	North Beach
1975	138,009	Ponce de Leon Inlet	North Offshore
1976	12,515	Ponce de Leon Inlet	North Offshore
1976	137,936	Ponce de Leon Inlet	North Offshore
1978	40,821	Ponce de Leon Inlet	North Offshore
1978	434,558	Ponce de Leon Inlet	North Beach
1984	82,212	Ponce de Leon Inlet	North Beach
1985	899,996	Ponce de Leon Inlet	North Beach
1989	868,967	Ponce de Leon Inlet	North Beach
1994	214,700	IWW	North Beach
1999	32,000	IWW	South Beach Nearshore
2005	115,339	Ponce de Leon Inlet	North Beach
2006	766,000	DMMA (MSA 434/434C)	South Beach (dune) R-161 to R-187
2008	432,073	IWW	South Beach Nearshore
2009	137,008	Ponce de Leon Inlet	North Beach
2011	30,000	Ponce de Leon Inlet	South Beach Nearshore
2012	51,160	Ponce de Leon Inlet	North Beach Nearshore
2013	141,600	Ponce de Leon Inlet	North Beach Nearshore
2014	46,170	Ponce de Leon Inlet	South Beach Nearshore
2015	130,215	Ponce de Leon Inlet	South Beach Nearshore
2017	34,850	Ponce de Leon Inlet	South Beach Nearshore
2018	16,080	Ponce de Leon Inlet	South Beach Nearshore
2019	410,047	Ponce de Leon Inlet and IWW	South Beach Nearshore
2023	60,676	Ponce de Leon Inlet and IWW	North Beach Nearshore
2025	123,000	Upland	FDOT Secant Wall + Dune R-0 to R-5; R-25 to R-32
2025/2026	Stockpile- 800,698 Dune- 400,000	Ponce de Leon Inlet and IWW	North Beach (dune) R-118 to R-145
2026 (ongoing)	~550,000	DMMA (MSA 434/434C)	South Beach (dune) R-160.5 to R-191.5
Total (excluding ongoing projects): 5,999,054 cubic yards			

*Information derives from FDEP's Strategic Beach Management Plan and project permit documents (FDEP, 2023; FDEP, 2024b; FDEP, 2024d; USACE 2026)

2.2 SURVEY HISTORY

As previously noted, since 2019, the County has taken a proactive role in monitoring and managing its beaches and inlet through a comprehensive monitoring program; the monitoring provides critical data for documenting beach and inlet condition changes and assists in the management of these valuable resources. This study is part of the County's annual monitoring efforts. The following reports contain historic shoreline comparisons and detailed information for the 2019-2024 data: Taylor Engineering, 2019; Taylor Engineering, 2020a; Taylor Engineering, 2021; Taylor Engineering, 2022; Taylor Engineering, 2023a, Taylor Engineering, 2024. Additionally, Taylor Engineering, 2023b and Taylor Engineering, 2023c document the impacts of Hurricanes Ian and Nicole, and Taylor Engineering, 2025 documents the impacts of Hurricane Milton.

2.2.1 BEACH PROFILE SURVEYS

Volusia County, FDEP, and USACE have sponsored the collection of beach profile data throughout the County. Table 2.4 summarizes the timeline for the historical beach profile datasets available through FDEP's Beach Profile Network; it should be noted that the survey extents vary, and some surveys are limited (every third monument, wading depth, etc.). The 2019 survey acts as the baseline for this and future analyses simply due to it being the first in this annual monitoring effort. Appendix A contains beach profile plots of the 2019, 2024, 2024 post-Milton, and 2025 survey data for each monument throughout the study area. It should be noted that during the 2025 survey there were increased wave conditions due to the passing of Hurricane Erin and multiple nor'easters.

Notably, the 2024 post-Milton LiDAR data collected in November 2024 is limited due to the LiDAR's penetration below the water surface and averages -5.8 ft-NAVD88 across the examined profiles; Appendix B details the extent for each individual profile. Throughout the County, only eleven of the post-Milton profiles extend below the -15 ft-NAVD88 contour. Additionally, sharp changes in elevation are not captured well due to the resolution of the LiDAR and its grid size—an example of where this commonly occurs is at the landward extent of a profile where a seawall or pool is located.

Appendix B lists the monument locations, associated profile azimuths, and alongshore distances for each beach profile used in this study, along with the extent for each individual profile for the November 2024 post-Milton data. These monuments are part of an extensive network of survey control points that FDEP (formerly the Florida Department of Natural Resources) established and has maintained since the early 1970s. FDEP currently maintains these monuments, which serve as consistent base points to originate beach profile surveys. For consistency, the MHW shoreline position analysis references the monument locations in Appendix B.

Table 2.4 FDEP Beach Profile Survey History

Dates	Monuments
June 1972	R-1 to R-234
July 1984	R-1 to R-234
September 1987	R-1 to R-234
June 1988	R-0 to R-234
May 1989	R-1 to R-234
August 1993	R-1 to R-234
February 1997	R-57 to R-207
June 2001	R-130 to R-165
August 2003	R-1 to R-234
August 2003	R-2 to R-234
May 2004	R-161 to R-193
November 2004	R-161 to R-193
November 2005	R-155 to R-195
September 2006	R-155 to R-195
October 2007	R-149 to R-229
December 2007	R-1 to R-148
October 2011	R-1 to R-169
September 2014	R-1 to R-209
June 2016[1]	R-0 to R-234
November 2016[1]	R-0 to R-234
July 2017	R-0 to R-234
September 2017[1]	R-0 to R-234
July 2019	R-0 to R-208
July 2020[2]	R-0 to R-208
October 2021[2]	R-0 to R-208
August 2022[2]	R-0 to R-208
November 2022 (Post-Nicole)[1]	R-0 to R-208
October 2023	R-0 to R-208
August – October 2024	R-0 to R-208
November 2024 (Post-Milton)[1]	R-0 to R-208
August 2025	R-0 to R-208

[1]Extracted from LiDAR data, limited offshore extent
[2]Interim Survey- collected data at all monuments in the inlet area of influence and every 3rd monument elsewhere

2.2.2 PONCE DE LEON INLET SURVEYS

Historically, Volusia County and USACE sponsor the collection of bathymetric data at Ponce de Leon Inlet. Table 2.5 summarizes the timeline for the inlet datasets available; notably, some of the surveys only include certain inlet features. Previous inlet studies are listed below:

- **Ponce de Leon Inlet Flood Shoal Surveys Summary Report, INTERA-GEC, 2025–** This assessment included the collection and analysis of data to assess approximate horizontal and vertical limits of beach quality sand within the interior flood shoals to support beach nourishment operations. The report identified eight sites that contain a combined 2.4 Mcy of sand with approximately 1.7 Mcy available for use. Additional data collection and further refinement are required for permitting and construction.
- **Volusia County Interim Countywide Beach Profile and Inlet Survey, Taylor Engineering, 2024–** This monitoring effort analyzed the 2017, 2022, and 2024 Inlet survey data and determined that accretion continued despite multiple dredging operations.
- **Volusia County Interim Countywide Beach Profile and Inlet Survey, Taylor Engineering, 2022**– This monitoring effort analyzed the 2017 and 2022 Inlet survey data and determined significant accretion occurred in the Inlet complex during the five-year monitoring period despite two dredging operations.
- **Ponce de Leon Inlet Sediment Budget Update, Taylor Engineering, October 2019 revised July 2020 and Ponce de Leon Inlet Management Plan, Florida Department of Environmental Protection, September 2020–** Taylor Engineering completed an update for the Ponce de Leon sediment budget in 2019/2020. The study analyzed three periods: 1986/87 to 2001, 2001 to 2017, and 1986/87 to 2017. During each time period, the subaerial dry beaches to the north and south accreted, demonstrating the benefit of the Inlet's sediment back- and by-passing efforts. As a result of the updated sediment budget, FDEP published the Ponce de Leon Inlet Management Plan, which updates the Inlet's goals and strategies to accomplish them.
- **Sediment Budget Update Ponce de Leon Inlet and Adjacent Beaches, Taylor Engineering, 2003–** Taylor Engineering presented comparisons between the 1986/1987, 1994, and 2001 surveys; the report documented deficiencies in the 1993 and 1994 beach profile surveys that prohibited an accurate representation of the conditions.
- **Ponce de Leon Inlet, Florida, Site Investigation, USACE, 1999–** The USACE initiated the Coastal Inlets Research Program (CIRP) in 1993, and Ponce de Leon Inlet was the first site approved for field study. The long-term comprehensive monitoring program began in September 1995 and continued through October 1997. At the site, the CIRP collected: wave height, wave period, wave direction, water levels, current velocity, and wind velocity. The study also investigated the Inlet's bathymetry, sediment characteristics, and captured aerial imagery. The USACE, outlined additional Inlet surveys collected in May 1925, August 1943, July 1994, October 1944, September 1995, October 1996, August 1997, September 1997, and December 1997; however, the data is not currently available (King et al., 1999).
- **Ponce de Leon Inlet Management Plan, Taylor Engineering, March 1994–** The first Inlet Management Plan for Ponce de Leon Inlet evaluated the morphologic and hydraulic conditions before and after the construction of the Inlet. The study determined that the Inlet increased erosion at the adjacent beaches and outlined recommendations to mitigate the adverse effects of the Inlet construction.

Table 2.5 Ponce de Leon Inlet Survey History

Dates	Description	Surveyor
September 1986	Inlet	U.S. Coast and Geodetic Survey and USACE
April 1990	Inlet	U.S. Coast and Geodetic Survey and USACE
January 1992	Inlet Channel	USACE
July 1994	Inlet Channel	USACE
June 2001	Inlet, Flood Shoal, Ebb Shoal	Morgan & Eklund
August 2017	Inlet, Flood Shoal, Ebb Shoal	Morgan & Eklund
September 2022	Inlet, Flood Shoal, Ebb Shoal	Morgan & Eklund
April 2024	Inlet Channel and Flood Shoal	Morgan & Eklund
August 2024	Inlet Ebb Shoal	Morgan & Eklund
2025*	Inlet Channel, Pre-Dredge	USACE
2025*	Inlet Channel, Post-Dredge	USACE

*Data collected but not yet released by USACE

2.3 TIDAL DATUMS

This study applied the MHW elevations defined by FDEP for the County (obtained via FDEP mhwrequest, personal communications, 2019). Notably, multiple MHW elevations span the County's expansive length of shoreline. Table 2.6 presents the MHW elevation in ft, referenced to NAVD88, and the associated stretch of shoreline as defined by FDEP and applied in this study.

Table 2.6 FDEP MHW Elevations for Volusia County

R Monument	Elevation (feet NAVD88)
R-0 to R-20	+1.4
R-21 to R-80	+1.3
R-81 to R-163	+1.2
R-164 to R-234	+1.1

3 BEACH PROFILE SURVEY RESULTS

Project monitoring generally includes analyses of topographic and bathymetric data to determine the evolution of Volusia County's beaches over time. This analysis investigates two common beach evolution parameters— changes to the shoreline position and profile volume within the study area. Taylor Engineering evaluated changes to the parameters both between and at FDEP R-monument transect locations to compare the gross scale spatial and temporal evolution of the beach, including alongshore and cross-shore changes. Alongshore changes occur between FDEP R-monument transects and show broad, community-wide, and countywide trends, while cross-shore changes occur along the R-monument transects and show localized trends.

Calculating the distance from a given point (the reference monument) to a known elevation tracks the change in shoreline position. This analysis uses the MHW elevation, which varies from +1.1 to +1.4 ft-NAVD88 from north to south across the study area as described in Section 2.3, to track the shoreline position.

Tracking volumes between reference monuments (spatially) and surveys (temporally) provides a historical perspective of the project's evolution and performance. The volume analysis for this report segregates cross-shore volumes into the following vertical compartments: dune to MHW, MHW to -15 ft-NAVD88, and below -15 ft-NAVD88 to the profile extent. Changes above MHW represent variations to the subaerial or dry beach— the area the public typically considers the beach. Changes below MHW, also called subaqueous changes, indicate the volume remaining below the water surface and still within the active profile. The MHW to -15 ft-NAVD88 compartment represents the most dynamic area with significant changes in the position and elevation of the offshore bar. Below -15 ft-NAVD88, bathymetry changes are usually less pronounced, and historic profiles typically converge to common elevations; we refer to this offshore limit where no significant changes occur to the bottom elevation and sediment exchange is limited as the depth of closure.

Notably, specifying a finite depth of closure applicable across the entire monitoring domain proved difficult for this countywide dataset. The profiles become steeper (deeper offshore depths for a finite distance offshore) as the distance from the ebb shoal increases. Thus, for a set distance offshore, a flatter profile (closer to the ebb shoal) extends to a shallower depth than one further away from the ebb shoal. The profiles at R-150 to R-153, just south of the inlet, do not extend deeper than -20 ft-NAVD88, whereas many of the profiles further to the north and south extended beyond -40 ft-NAVD88 (see profile plots in Appendix A). The following volume analysis used the full data extents, applying the maximum offshore survey extent at each profile as the offshore limit of volume calculations.

The following sections present the findings of the MHW shoreline position and volume analyses for the 2019, 2024, 2024 post-Milton, and 2025 surveys. Section 3.1 provides the Countywide overview, with results summarized by the County's coastal communities. Section 3.2 further breaks down the results to analyze changes within the North Sand Placement Project monitoring area, and Section 3.3 does the same within the South Sand Placement Project monitoring area.

3.1 COUNTYWIDE OVERVIEW

As mentioned in Section 1.1, the County's beaches are divided into ten coastal communities (Table 2.1); this monitoring report analyzes nine of the ten regions spanning from R-0 to T-208 and excludes the federally managed Canaveral National Seashore. A weighted average procedure incorporates the

alongshore (controlling) distance between monuments. This weighted average, applied to the MHW and volume analyses, establishes a comparative basis between alongshore segments of beach. In general, a monument's controlling distance extends between the halfway points of adjacent monuments. Exceptions to this rule occur at the north and south ends of the monitoring area and at Ponce de Leon Inlet. At R-0 and T-208, the controlling distances extend only halfway towards the adjacent monument within the monitoring area. Surrounding Ponce de Leon Inlet, the controlling distances extend to the adjacent jetty.

The following shoreline and beach volume analyses compare the 2019, 2024, and 2024 post-Milton surveys to the 2025 monitoring survey. Appendix A contains beach profile plots of the survey data at each monument within the study area.

3.1.1 SHORELINE POSITIONS

Changes in the MHW shoreline position demonstrate the alongshore and cross-shore evolution of the beach monitoring area. Viewing MHW shoreline positions on recent aerial photographs of the monitoring area provides a convenient way to qualitatively evaluate the evolution and performance of the beach. Appendix C presents the July 2019, August-October 2024, November 2024, and August 2025 MHW shorelines on aerial photography of the County. The MHW lines derive from the contour positions along the monument profiles and straight lines connect the contour positions between monuments. The figures also include the coastal construction control line (CCCL) for reference.

Appendix D presents the MHW shoreline positions as a function of distance from each monument for the July 2019, August-October 2024, November 2024, and August 2025 conditions and the MHW shoreline position changes for the three comparison periods. A positive value represents seaward shoreline advance while a negative value represents landward shoreline retreat. Table 3.1 summarizes the weighted average shoreline change results for each Volusia County coastal community.

3.1.1.1 2019 BASELINE CONDITION (JULY 2019) VERSUS 2025 CONDITION (AUGUST 2025)

The comparison of the 2019 MHW shoreline position and the 2025 MHW shoreline position indicates significant average shoreline retreat throughout the County, with extreme retreat occurring from Ormond Beach to Ponce Inlet. During this period, Hurricane Ian (September 2022) and Hurricane Nicole (November 2022) induced catastrophic erosion throughout the County, including the loss of infrastructure and large portions of the existing protective dune system (Taylor Engineering, 2023b; Taylor Engineering, 2023c). Similar to past monitoring reports, Daytona Beach and Daytona Beach Shores experienced the greatest shoreline retreat since 2019, averaging 103 ft of retreat across the community. The average shoreline retreat magnitude generally decreases throughout the communities to the north and south of Daytona Beach and Daytona Beach Shores, apart from New Smyrna Beach North where an average of 24 ft of shoreline advance occurs. Notably, a strong retreat signature occurs directly north of the Ponce Inlet north jetty for multiple monuments; this may be tied to the jetty's poor condition. Additionally, the significant shoreline advance within New Smyrna Beach North is likely from the ebb shoal dynamics. Overall, the MHW shoreline position retreated an average of 49 ft across the County since 2019.

3.1.1.2 2024 CONDITION (AUGUST – OCTOBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The comparison of the 2024 and 2025 MHW shoreline positions indicates that average shoreline advance occurred across the County; on a monument-by-monument basis, most communities show mixed advance and retreat. On average, most communities experienced shoreline advance; however, North Peninsula

and Ponce Inlet experienced minimal and moderate retreat, respectively. The shoreline advance observed during this comparison period indicates the seaward movement of the MHW contour despite the impacts of Hurricane Milton in October 2024. The largest average community advance occurred in New Smyrna Beach North (53 ft); as noted in the previous comparison, this significant advance is likely due to ebb shoal dynamics. Overall, the MHW shoreline position advanced an average of 7 ft across the County.

3.1.1.3 2024 POST-MILTON CONDITION (NOVEMBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

Comparison of the 2024 post-Milton MHW shoreline position to the 2025 MHW shoreline position presents the one-year post-storm recovery following Hurricane Milton. During this comparison period, the average MHW shoreline advanced throughout the County, suggesting natural shoreline recovery following Hurricane Milton. The largest average community advance occurred on either side of the Inlet within Ponce Inlet (69 ft) and New Smyrna Beach North (89 ft). The advance within these communities is likely attributed to inlet dynamics in addition to the North Sand Placement Project Stockpile (pumped June-December 2025) within the Ponce Inlet community, further discussed in Section 3.2.1. On average, the magnitudes associated with shoreline advance decrease with movement away from the inlet. Overall, the MHW shoreline position advanced an average of 38 ft across the County, suggesting natural post-storm recovery of the shoreline following Hurricane Milton.

Table 3.1 Countywide Average MHW Shoreline Change by Community

2019 2025 Average MHW Shoreline Change by Community				
Community	**MHW Elevation Range (feet NAVD88)**	**July 2019 to August 2025 Average MHW Shoreline Change (feet)**	**August October 2024 to August 2025 Average MHW Shoreline Change (feet)**	**November 2024 to August 2025 Average MHW Shoreline Change (feet)**
North Peninsula – R-0 to R-16	+1.4	-29.8	-0.8	9.6
Ormond-by-the-Sea – R-16 to R-47	+1.4 to +1.3	-35.1	3.8	5.3
Ormond Beach – R-47 to T-67	+1.3	-46.9	24.3	29.7
Daytona Beach and Daytona Beach Shores – T-67 to R-122	+1.3 to +1.2	-102.5	6.4	48.4
Wilbur-by-the-Sea – R-122 to R-128	+1.2	-72.7	16.1	59.8
Ponce Inlet – R-128 to R-148	+1.2	-53.4	-13.3	68.8
New Smyrna Beach North – R-149 to R-160	+1.2	24.2	52.6	89.1
New Smyrna Beach South – R-160 to R-185	+1.2 to +1.1	-25.1	3.1	49.7
Silver Sands and Bethune Beach – R-185 to T-208	+1.1	-7.3	0.4	15.3
Volusia County Study Area – R-0 to R-208	**+1.4 to +1.1**	**-49.3**	**6.9**	**38.2**

3.1.2 BEACH VOLUME CHANGES

As discussed in Section 3, beach volume changes indicate beach evolution and performance. Taylor Engineering calculated volume changes at each monument within the following vertical compartments: dune to MHW, MHW to -15 ft-NAVD88, below -15 ft-NAVD88 (extending offshore to the maximum common survey extent at each monument for each survey comparison), and above -15 ft-NAVD88 (extending onshore to the maximum common survey extent at each monument for each survey comparison). The total volume above MHW represents the subaerial or dry beach, while below MHW changes represent the subaqueous portion of the beach.

Appendix E presents beach volume changes on a monument-by-monument basis for each volume compartment. Table 3.2 provides an overview of the weighted average volume change by community presented in units of cubic yards per foot of shoreline (cy/ft), and Table 3.3 presents the values in cubic yards (cy). Of note, extending the volume calculations offshore to the maximum common survey extent at each monument for each survey comparison, as opposed to limiting the calculations to a consistent distance offshore (e.g., 3,000 ft offshore), results in volume changes that reflect the available data to the greatest degree possible. With beach volume changes rounded to tenths for cubic yard/foot (cy/ft) values and to the hundreds for cubic yard (cy) values, some of the reported values may not exactly match.

Data shortcomings to note include the limited offshore extent of the November 2024 post–Hurricane Milton LiDAR dataset, as discussed in Section 2.2.1 and detailed in Appendix B. This limitation increases uncertainty in subaqueous volume change calculations derived from the dataset, and volumes should be interpreted with an understanding of these constraints.

3.1.2.1 2019 BASELINE CONDITION (JULY 2019) VERSUS 2025 CONDITION (AUGUST 2025)

The 2019 to 2025 volume change analysis documents the countywide beach volume changes over the past six years. Looking at a county-wide scale, the County experienced an average net erosion of 24 cy/ft above -15 ft-NAVD88. Similar to the 2023 and 2024 monitoring results, significant sediment accretion occurred beyond -15 ft-NAVD88, averaging 53 cy/ft (Taylor Engineering, 2023a; Taylor Engineering, 2024). On average, minor erosion of 4 cy/ft occurred above MHW, and moderate erosion of 20 cy/ft occurred between MHW and -15 ft-NAVD88.

When assessed on a monument-by-monument basis, the subaerial beach volumes fluctuate primarily between minor to moderate erosion throughout the communities north of the Inlet (an exception to this is the area associated with the North Sand Placement Project, Section 3.2) and between minor to moderate erosion and accretion south of the Inlet. The average volume changes above MHW to the south of the Inlet indicate that minor erosion occurred in New Smyrna Beach South while minor accretion occurred in New Smyrna Beach North and Silver Sands and Bethune Beach. The most significant erosion of the subaerial beach occurred just north of Ponce Inlet (R-148), while the most significant accretion also occurred in Ponce Inlet (R-143)—the erosion adjacent to the inlet may be influenced by the condition of the federally maintained jetty and the accretion occurs within the North Sand Project's stockpile. Below MHW and above -15 ft-NAVD88, erosion primarily occurred throughout the County, with minor net accretion occurring within New Smyrna Beach North where the inlet's ebb shoal is located. The most significant average erosion between MHW and -15 ft-NAVD88 occurred in Wilbur-by-the-Sea and at adjacent monuments. Below -15 ft-NAVD88, accretion controlled within all communities, averaging 53 cy/ft across the County. Evident in the profile plots (Appendix A), and similar to findings in the 2023 and 2024 monitoring, the sediment accretion beyond -15 ft-NAVD88 is likely a result of the shifting and

redistribution of sand as a result of the 2022 and 2024 hurricane seasons. Similar to these past studies, moderate erosion controlled the comparison period above the -15 ft-NAVD88 contour; however, significant accretion beyond the -15 ft-NAVD88 contour outweighed the erosion experienced in the subaerial and nearshore beach (Taylor Engineering, 2023a; Taylor Engineering, 2024).

3.1.2.2 2024 CONDITION (AUGUST – OCTOBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

Comparison of the annual 2024 and 2025 data documents volume changes over the past year and documents any post-storm recovery of the beach following Hurricane Milton. On a county-wide scale, the County experienced an average net erosion of -9 cy/ft above -15 ft-NAVD88 and accretion of 11 cy/ft below -15 ft-NAVD88. Minimal to moderate accretion occurred above MHW throughout the communities, averaging 4 cy/ft across the County. Except for Ponce Inlet, minor to moderate erosion occurred across the communities between MHW and -15 ft-NAVD88, averaging 12 cy/ft countywide.

The subaerial beach trends suggest natural post-storm recovery of the subaerial beach. Wilbur-by-the-Sea experienced the largest average accretion above MHW (17 cy/ft) due to the North Sand Placement Project dune feature which is clearly depicted in the beach profile plots (Appendix A). Despite sand placement occurring at several monuments, the communities of Daytona Beach and Daytona Beach Shores as well as Ormond Beach only experienced minimal accretion on average. South of the inlet, consistent minor accretion occurred. Below MHW and above -15 ft-NAVD88, beach volume trends show minor to moderate erosion throughout the County except in Ponce Inlet, suggesting movement of nearshore bars back onshore or further offshore. The Silver Sands and Bethune Beach communities experienced the most significant erosion in the nearshore region averaging 24 cy/ft. Below -15 ft-NAVD88, communities experienced minor to moderate accretion throughout the County, indicating material displaced from Hurricane Milton is possibly still located below -15 ft-NAVD88. On average, the northern part of the County experienced larger volumes of sand moving within this offshore compartment; this may also be attributed to the downdrift movement of sand from the Flagler Beach CSRM project shifting offshore following Hurricane Milton.

3.1.2.3 2024 POST-MILTON CONDITION (NOVEMBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The 2024 post-Milton to 2025 volume change comparison documents the natural recovery of the beach following Hurricane Milton. For this comparison, the County experienced net accretion averaging 12 cy/ft across the profiles. Notably, the volume analysis for this comparison period is limited based on the LiDAR coverage and only extends to an average elevation of -5.8 ft-NAVD88. The seaward extent of the LiDAR is limited due to the resolution and water surface penetration of the LiDAR data; Appendix B presents the extent for each individual profile, as this varies across the County. Notably, there are some locations where sharp elevation changes are not captured due to the resolution of the LiDAR data.

Majority of the profiles throughout the County experienced accretion, averaging 9 cy/ft above MHW. A closer examination of community-level trends indicates that minor to moderate accretion controls the subaerial beach trends in all communities. The most significant accretion occurs within Wilbur-by-the-Sea (24 cy/ft) and Ponce Inlet (20 cy/ft); this is likely attributed to the construction activities related to the North Sand Placement Project. South of the inlet, consistent minor to moderate accretion occurred throughout the New Smyrna Beach communities before transitioning near T-190 to mixed minor erosion and accretion. Although FDOT sand placement activities occurred within North Peninsula, trends do not vary significantly from those observed on a county-wide scale.

Data is limited below MHW, but the comparisons yield minor to moderate erosion and accretion. The most significant accretion below MHW occurs at monuments associated with the North Sand Placement Project Stockpile and directly south of the inlet in the dynamic ebb shoal. Although some communities did experience erosion below MHW, accretion controls across the full profiles for all communities, suggesting the natural onshore movement of sand and post-storm recovery of the beach following Hurricane Milton.

Table 3.2 Countywide Average Volume Change by Community (cubic yards/foot)

July 2019 to August 2025 Average Volume Change by Community				
Community	**Average Volume Change above MHW (cubic yards/foot)**	**Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)**	**Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/ foot)**	**Average Volume Change above 15 feet NAVD88 (cubic yards/foot)**
North Peninsula – R-0 to R-16	-5.7	-11.5	41.9	-17.2
Ormond-by-the-Sea – R-16 to R-47	-3.4	-13.4	40.7	-16.8
Ormond Beach – R-47 to T-67	-6.8	-14.7	58.6	-21.5
Daytona Beach and Daytona Beach Shores– T-67 to R-122	-8.7	-25.8	59.3	-34.5
Wilbur-by-the-Sea – R-122 to R-128	3.7	-44.1	76.9	-40.4
Ponce Inlet – R-128 to R-148	-9.1	-23.4	87.0	-32.5
New Smyrna Beach North – R-149 to R-160	3.5	3.2	11.5	6.7
New Smyrna Beach South – R-160 to R-185	-3.3	-17.7	29.8	-21.0
Silver Sands and Bethune Beach – R-185 to T-208	5.0	-24.3	60.8	-19.3
Volusia County Study Area	**-4.4**	**-19.5**	**52.5**	**-23.8**

August October 2024 to August 2025 Average Volume Change by Community				
Community	**Average Volume Change above MHW (cubic yards/foot)**	**Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)**	**Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)**	**Average Volume Change above 15 feet NAVD88 (cubic yards/foot)**
North Peninsula – R-0 to R-16	2.0	-12.9	21.7	-10.8
Ormond-by-the-Sea – R-16 to R-47	3.2	-16.3	17.3	-13.1
Ormond Beach – R-47 to T-67	0.2	-9.1	9.0	-8.9
Daytona Beach and Daytona Beach Shores– T-67 to R-122	1.2	-16.1	11.9	-14.9
Wilbur-by-the-Sea – R-122 to R-128	16.6	-9.0	18.2	7.6
Ponce Inlet – R-128 to R-148	7.0	5.3	9.0	12.3
New Smyrna Beach North – R-149 to R-160	6.5	-11.2	0.9	-4.7
New Smyrna Beach South – R-160 to R-185	4.7	-4.4	2.0	0.3
Silver Sands and Bethune Beach – R-185 to T-208	4.8	-23.8	5.4	-19.0
Volusia County Study Area	**3.6**	**-12.1**	**10.6**	**-8.5**

November 2024 to August 2025 Average Volume Change by Community				
Community	**Average Volume Change above MHW (cubic yards/foot)**	**Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)**	**Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)**	**Average Volume Change above 15 feet NAVD88 (cubic yards/foot)**
North Peninsula – R-0 to R-16	7.4	-0.6	–	6.8
Ormond-by-the-Sea – R-16 to R-47	4.9	-1.3	–	3.6
Ormond Beach – R-47 to T-67	3.9	2.0	–	5.9
Daytona Beach and Daytona Beach Shores– T-67 to R-122	6.8	3.0	–	9.8
Wilbur-by-the-Sea – R-122 to R-128	23.5	2.7	–	26.2
Ponce Inlet – R-128 to R-148	19.6	8.4	–	28.0
New Smyrna Beach North – R-149 to R-160	11.8	10.7	–	22.5
New Smyrna Beach South – R-160 to R-185	10.9	6.4	–	17.3
Silver Sands and Bethune Beach – R-185 to T-208	4.0	1.6	–	5.6
Volusia County Study Area	**8.5**	**3.2**	**–**	**11.6**

Table 3.3 Countywide Total Volume Change by Community (cubic yards)

July 2019 to August 2025 Total Volume Change by Community				
Community	**Volume Change above MHW (cubic yards)**	**Volume Change MHW to 15 feet NAVD88 (cubic yards)**	**Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)**	**Volume Change above 15 feet NAVD88 (cubic yards)**
North Peninsula – R-0 to R-16	-85,000	-170,100	621,100	-255,100
Ormond-by-the-Sea – R-16 to R-47	-97,900	-387,900	1,180,200	-485,800
Ormond Beach – R-47 to T-67	-129,500	-279,600	1,112,500	-409,100
Daytona Beach and Daytona Beach Shores– T-67 to R-122	-453,800	-1,340,300	3,084,700	-1,794,100
Wilbur-by-the-Sea – R-122 to R-128	21,400	-253,800	442,500	-232,400
Ponce Inlet – R-128 to R-148	-173,900	-448,600	1,664,700	-622,500
New Smyrna Beach North – R-149 to R-160	34,900	32,400	115,800	67,400
New Smyrna Beach South – R-160 to R-185	-78,600	-423,400	711,500	-501,900
Silver Sands and Bethune Beach – R-185 to T-208	109,100	-526,800	1,316,600	-417,800
Volusia County Study Area	**-853,300**	**-3,798,000**	**10,249,500**	**-4,651,300**

August October 2024 to August 2025 Total Volume Change by Community

Community	Volume Change above MHW (cubic yards)	Volume Change MHW to 15 feet NAVD88 (cubic yards)	Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)	Volume Change above 15 feet NAVD88 (cubic yards)
North Peninsula – R-0 to R-16	29,700	-190,700	322,400	-160,900
Ormond-by-the-Sea – R-16 to R-47	94,100	-472,700	501,600	-378,600
Ormond Beach – R-47 to T-67	4,000	-172,200	171,300	-168,200
Daytona Beach and Daytona Beach Shores–T-67 to R-122	63,100	-838,900	617,500	-775,800
Wilbur-by-the-Sea – R-122 to R-128	95,600	-52,000	105,100	43,600
Ponce Inlet – R-128 to R-148	133,900	100,700	173,100	234,500
New Smyrna Beach North – R-149 to R-160	65,400	-112,700	9,400	-47,300
New Smyrna Beach South – R-160 to R-185	111,300	-105,000	47,200	6,400
Silver Sands and Bethune Beach – R-185 to T-208	104,100	-515,600	117,700	-411,500
Volusia County Study Area	**701,200**	**-2,359,000**	**2,065,400**	**-1,657,900**

November 2024 to August 2025 Total Volume Change by Community

Community	Volume Change above MHW (cubic yards)	Volume Change MHW to 15 feet NAVD88 (cubic yards)	Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)	Volume Change above 15 feet NAVD88 (cubic yards)
North Peninsula – R-0 to R-16	109,600	-9,200	–	100,400
Ormond-by-the-Sea – R-16 to R-47	141,000	-37,800	–	103,300
Ormond Beach – R-47 to T-67	73,100	38,600	–	111,800
Daytona Beach and Daytona Beach Shores–T-67 to R-122	353,300	155,000	–	508,300
Wilbur-by-the-Sea – R-122 to R-128	135,200	15,500	–	150,700
Ponce Inlet – R-128 to R-148	374,800	160,600	–	535,300
New Smyrna Beach North – R-149 to R-160	118,100	107,400	–	225,500
New Smyrna Beach South – R-160 to R-185	259,600	153,200	–	412,800
Silver Sands and Bethune Beach – R-185 to T-208	87,400	34,700	–	122,100
Volusia County Study Area	**1,652,100**	**618,000**	**–**	**2,270,100**

*November 2024 data limited in offshore extent

3.2 North Sand Placement Project Overview

To appropriately assess the North Sand Placement Project, detailed in Section 2.1, the study team split the monitoring area into four subsets: the fill placement area (R-118 to R-139), the stockpile (R-139 to R-145), the north reference area (R-113 to R-117), and the south reference area (R-146 to R-148), as detailed in Table 1.2. Notably, the project area includes the fill placement area and stockpile, while the monitoring area includes all four subsets: the fill placement area, the stockpile, the north reference area, and the south reference area.

During the 2025 survey, USACE and Volusia County were actively constructing the North Sand Placement Project. The profile plots in Appendix A clearly depict the dune at profiles R-118 through R-138 and the stockpile at profiles R-139 through R-143. Additionally, it should be noted that during the survey there were increased wave conditions due to the passing of Hurricane Erin and multiple nor'easters. These storm conditions made construction more challenging, with high water levels and waves redistributing the sand across the beach berm and nearshore from the stockpile and newly placed dune.

Typically, project-associated monitoring focuses on pre- to post-nourishment comparisons to track fill performance. Due to data availability, this analysis instead documents the conditions during construction and at the time of annual monitoring. Because this analysis is not a post-construction report, the comparison results will be similar to those within Section 3.1; however, rather than evaluating the full communities, the comparisons focus specifically on the project's monitoring area.

This analysis continues to apply a weighted average procedure, and in general, a monument's controlling distance extends between the halfway points of adjacent monuments. Exceptions to this rule occur at the stockpile. At the stockpile's northern limit, where it meets the south reference area, the controlling distance is split at the monument location. The following shoreline and beach volume analyses compare the 2019, 2024, and 2024 post-Milton surveys to the 2025 monitoring surveys for the North Sand Placement Project's monitoring area.

3.2.1 SHORELINE POSITIONS

As mentioned in Section 3.1.1, changes in the MHW shoreline position demonstrate the alongshore and cross-shore evolution of the beach monitoring area. Table 3.4 summarizes the weighted average shoreline change results for the North Sand Placement Project's monitoring area.

3.2.1.1 2019 BASELINE CONDITION (JULY 2019) VERSUS 2025 CONDITION (AUGUST 2025)

Similar to the countywide comparison (Section 3.1.1.1) for communities north of the inlet, the comparison of the 2019 MHW shoreline position and the 2025 MHW shoreline position indicates significant shoreline retreat throughout the North Sand Placement Project's monitoring area, averaging 68 ft. The largest retreat occurred in the north and south reference areas where the County did not place fill. Within the fill placement area, the beach also experienced retreat when compared to the 2019 condition—this is anticipated, given the magnitude of the project and it only being partially complete at the time of this survey. Advance, averaging 13 ft, occurs in the stockpile area, indicating that with placement of the stockpile, the shoreline has experienced a seaward shift from its 2019 position. .

3.2.1.2 2024 CONDITION (AUGUST – OCTOBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The 2024 to 2025 comparison depicts changes to the beach in the past year, inclusive of the impacts from Hurricane Milton. Throughout the North Sand Placement Project's monitoring area, minimal shoreline retreat averaging 1 ft occurred. The largest average retreat (-67 ft) occurred within the south reference area, just north of Ponce de Leon Inlet. Despite significant stockpiling and hauling efforts, the shoreline throughout the monitoring area remains landward of its 2024 position.

3.2.1.3 2024 POST-MILTON CONDITION (NOVEMBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

Comparison of the 2024 post-Milton data to the 2025 annual survey data presents the shoreline recovery about one year following Hurricane Milton. Within the North Sand Placement Project's monitoring area, significant shoreline advance occurred, averaging 67 ft. The largest average shoreline advance occurred within the stockpile (119 ft), while both the north reference and fill placement areas also experienced significant advance, averaging 60 ft. Despite nearby sand placement in the stockpile, the south reference area only experienced 3 ft of shoreline advance on average.

Table 3.4 North Sand Placement Project Average MHW Shoreline Change

2019 2025 Average MHW Shoreline Change				
Area	**MHW Elevation Range (feet NAVD88)**	**July 2019 to August 2025 Average MHW Shoreline Change (feet)**	**August October 2024 to August 2025 Average MHW Shoreline Change (feet)**	**November 2024 to August 2025 Average MHW Shoreline Change (feet)**
North Reference Area – R-113 to R-117	+1.2	-119.2	5.1	65.5
Fill Placement Area – R-118 to R-139	+1.2	-73.7	-9.3	59.8
Stockpile – R-139 to R-145	+1.2	12.7	54.8	119.2
South Reference Area – R-146 to R-148	+1.2	-107.0	-68.3	3.4
North Sand Placement Project Monitoring Area– R-113 to R-148	**+1.2**	**-67.7**	**-0.8**	**66.5**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**+1.2**	**-54.1**	**5.2**	**73.3**

3.2.2 BEACH VOLUME CHANGES

As discussed in Section 3.1.2, beach volume changes indicate beach evolution and performance. Table 3.5 provides an overview of the weighted average volume change for each monitoring area associated with the North Sand Placement Project in units of cubic yards per foot of shoreline (cy/ft), and Table 3.6 presents the values in cubic yards (cy). This methodology is the same as that presented in Section 3.1.2 and, as such, the profile comparisons extend to the furthest similar extent. Data limitations are detailed in Section 2.2.1.

3.2.2.1 2019 BASELINE CONDITION (JULY 2019) VERSUS 2025 CONDITION (AUGUST 2025)

The 2019 to 2025 volume change analysis documents beach volume changes over the past six years. Despite significant stockpiling and partial dune placement, both the monitoring area and project area experienced significant erosion above -15 ft-NAVD88 across this time period. Although the volume compartments above -15 ft-NAVD88 experienced net erosion, the portions of the profile below the -15 ft-NAVD88 contour experienced net accretion. As noted in the countywide analysis, the sediment accretion beyond -15 ft-NAVD88 is likely a result of the shifting and redistribution of sand following the 2022 and 2024 hurricane seasons.

Within the subaerial portion of the monitoring area, minor erosion controlled the volumetric trends with an average erosion of 6 cy/ft. The results show the impact of the stockpile and the dune placement, with minor erosion and minor accretion within the fill placement and stockpile segments. Notably, significant erosion occurred above MHW in the south reference area, averaging 39 cy/ft. Below MHW and above -15 ft-NAVD88, majority of the monitoring area experienced significant erosion, averaging 32 cy/ft. The north reference area, project area, and south reference area experienced erosion of 42 cy/ft, 42 cy/ft, and 43 cy/ft, respectively, while the area representing the stockpile showed minimal accretion of 14 cy/ft due to its presence. Similar to the countywide comparison, below -15 ft-NAVD88, significant accretion occurred across all of the North Sand Placement Project's monitoring areas.

3.2.2.2 2024 CONDITION (AUGUST – OCTOBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The 2024 to 2025 volume change analysis documents volume changes within the North Sand Placement Project's monitoring area over the past year. This comparison includes sand placement activities to date and includes the effects of Hurricane Milton. As a result of the sand placement, accretion controls the average trend across the subaerial beach, averaging 8 cy/ft across the monitoring area. As anticipated, the greatest accretion above MHW occurred within the stockpile area, averaging 23 cy/ft, whereas minor to moderate erosion occurred within the north and south reference areas where sand placement is not actively occurring. On average, below MHW and above -15 ft-NAVD88, the monitoring area experienced minor erosion, averaging 3 cy/ft. On a monument-by-monument basis, moderate erosion and accretion occur throughout the North Sand Placement Project area between MHW and -15 ft-NAVD88. Below -15 ft-NAVD88, accretion averaged 7 cy/ft across the monitoring area. As a whole, the stockpile volumes above the -15 ft-NAVD88 contour control the average trends throughout the monitoring area, showing the large influence this feature has on monitoring trends.

3.2.2.3 2024 POST-MILTON CONDITION (NOVEMBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The 2024 post-Milton to 2025 volume change analysis documents the volume changes due to the North Sand Placement Project and natural recovery following Hurricane Milton. As previously mentioned, the comparable survey extent is limited due to the LiDAR data.

Within the subaerial portion of the project's monitoring area, sand placement activities and natural recovery appears to control the volumetric trends, with an average accretion of 18 cy/ft. As anticipated, the greatest accretion occurred within the stockpile area, averaging 34 cy/ft above MHW and 26 cy/ft between MHW and the profile extent. On average, between MHW and the profile extent, the monitoring area experienced accretion averaging 8 cy/ft. Overall, accretion controlled the volumetric trends, showing the influence of the North Sand Placement Project and suggesting some natural post-storm recovery since Hurricane Milton.

Table 3.5 North Sand Placement Project Average Volume Change (cubic yards/foot)

July 2019 to August 2025 Average Volume Change

Area	Average Volume Change above MHW (cubic yards/foot)	Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)	Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)	Average Volume Change above 15 feet NAVD88 (cubic yards/foot)
North Reference Area – R-113 to R-117	-9.8	-42.4	63.6	-52.1
Fill Placement Area – R-118 to R-139	-4.6	-42.0	81.8	-46.6
Stockpile – R-139 to R-145	8.8	13.8	82.4	22.6
South Reference Area – R-146 to R-148	-39.1	-43.2	51.4	-82.4
North Sand Placement Project Monitoring Area – R-113 to R-148	**-5.8**	**-32.3**	**76.9**	**-38.1**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**-1.6**	**-29.3**	**82.0**	**-30.9**

August October 2024 to August 2025 Average Volume Change

Area	Average Volume Change above MHW (cubic yards/foot)	Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)	Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)	Average Volume Change above 15 feet NAVD88 (cubic yards/foot)
North Reference Area – R-113 to R-117	-1.1	-21.1	-14.7	-22.2
Fill Placement Area – R-118 to R-139	8.1	-5.6	14.9	2.5
Stockpile – R-139 to R-145	22.9	28.2	5.5	51.2
South Reference Area – R-146 to R-148	-8.9	-19.3	-13.2	-28.1
North Sand Placement Project Monitoring Area – R-113 to R-148	**8.0**	**-3.0**	**6.8**	**5.1**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**11.5**	**2.1**	**12.8**	**13.5**

November 2024 to August 2025 Average Volume Change				
Area	**Average Volume Change above MHW (cubic yards/foot)**	**Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)**	**Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)**	**Average Volume Change above 15 feet NAVD88 (cubic yards/foot)**
North Reference Area – R-113 to R-117	5.9	10.7	-	16.6
Fill Placement Area – R-118 to R-139	18.1	1.9	-	20.1
Stockpile – R-139 to R-145	33.7	26.4	-	60.1
South Reference Area – R-146 to R-148	5.8	1.9	-	7.7
North Sand Placement Project Monitoring Area – R-113 to R-148	**18.1**	**7.5**	**-**	**25.6**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**21.6**	**7.5**	**-**	**29.1**

*November 2024 data limited in offshore extent

Table 3.6 North Sand Placement Project Total Volume Change (cubic yards)

July 2019 to August 2025 Total Volume Change				
Area	**Volume Change above MHW (cubic yards)**	**Volume Change MHW to 15 feet NAVD88 (cubic yards)**	**Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)**	**Volume Change above 15 feet NAVD88 (cubic yards)**
North Reference Area – R-113 to R-117	-47,200	-205,000	307,800	-252,100
Fill Placement Area – R-118 to R-139	-94,500	-854,500	1,666,700	-949,000
Stockpile – R-139 to R-145	52,700	82,100	491,300	134,700
South Reference Area – R-146 to R-148	-107,300	-118,500	140,800	-225,800
North Sand Placement Project Monitoring Area – R-113 to R-148	**-196,300**	**-1,096,000**	**2,606,600**	**-1,292,200**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**-41,800**	**-772,500**	**2,158,000**	**-814,300**

August October 2024 to August 2025 Total Volume Change

Area	Volume Change above MHW (cubic yards)	Volume Change MHW to 15 feet NAVD88 (cubic yards)	Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)	Volume Change above 15 feet NAVD88 (cubic yards)
North Reference Area – R-113 to R-117	-5,400	-101,900	-71,300	-107,300
Fill Placement Area – R-118 to R-139	164,600	-114,300	304,200	50,400
Stockpile – R-139 to R-145	136,800	168,500	32,600	305,300
South Reference Area – R-146 to R-148	-24,300	-52,800	-36,200	-77,300
North Sand Placement Project Monitoring Area – R-113 to R-148	**271,800**	**-100,500**	**229,300**	**171,300**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**301,500**	**54,200**	**336,800**	**355,700**

November 2024 to August 2025 Total Volume Change

Area	Volume Change above MHW (cubic yards)	Volume Change MHW to 15 feet NAVD88 (cubic yards)	Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)	Volume Change above 15 feet NAVD88 (cubic yards)
North Reference Area – R-113 to R-117	28,500	51,700	–	80,200
Fill Placement Area – R-118 to R-139	369,000	39,600	–	408,600
Stockpile – R-139 to R-145	200,900	157,600	–	358,500
South Reference Area – R-146 to R-148	16,000	5,200	–	21,200
North Sand Placement Project Monitoring Area – R-113 to R-148	**614,300**	**254,200**	**–**	**868,500**
North Sand Placement Project Area (Fill & Stockpile) – R-118 to R-145	**569,900**	**197,200**	**–**	**767,100**

*November 2024 data limited in offshore extent

3.3 SOUTH SAND PLACEMENT PROJECT OVERVIEW

This section details the pre-construction conditions and beach changes for the South Sand Placement Project. To assess the South Sand Placement Project, detailed in Section 2.1, the study team split the monitoring area into three subsets: the fill placement area (R-161 to R-191), the north reference area (R-155 to R-160), and the south reference area (R-192 to R-196), as noted in Table 2.2.

Unlike the North Sand Placement Project, the contractor had not begun work on the South Sand Placement Project at the time of the 2025 survey. Additionally, as mentioned in Section 3.2, project-associated monitoring typically focuses on pre- to post-nourishment comparisons to track performance. Due to data availability, this analysis instead documents the conditions prior to construction and at the time of annual monitoring. Because this analysis is not a post-construction report, the comparison results will be similar to those within Section 3.1; however, rather than evaluating the full communities, the comparisons focus specifically on the project's monitoring area.

This analysis continues to apply a weighted average procedure, and in general, a monument's controlling distance extends between the halfway points of adjacent monuments. The following shoreline and beach volume analyses compare the 2019, 2024, and 2024 post-Milton surveys to the 2025 monitoring surveys for the South Sand Placement Project's monitoring area.

3.3.1 SHORELINE POSITIONS

As mentioned in Section 3.1.1, changes in the MHW shoreline position demonstrate the alongshore and cross-shore evolution of the beach monitoring area. Table 3.7 summarizes the weighted average shoreline change results for the South Sand Placement Project's monitoring area.

3.3.1.1 2019 BASELINE CONDITION (JULY 2019) VERSUS 2025 CONDITION (AUGUST 2025)

The comparison of the 2019 MHW shoreline position and the 2025 MHW shoreline position indicates moderate average shoreline retreat throughout the South Sand Placement Project's monitoring area. The greatest shoreline retreat occurred in the fill placement area, with an average shoreline retreat of 22 ft. This demonstrates the need for the project. Within the north reference area, the shoreline remained generally stable on average, likely due to ebb shoal interactions, while the south reference area experienced an average retreat of 8 ft. Overall, the South Sand Placement Project's monitoring area experienced an average retreat of 17 ft within this comparison period.

3.3.1.2 2024 CONDITION (AUGUST – OCTOBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The comparison of the 2024 and the 2025 MHW shoreline positions shows a mixture of retreat and advance within the South Sand Placement Project's monitoring area. Shoreline retreat occurred in the south reference area, averaging 18 ft; whereas, the north reference area and the fill placement area experienced average shoreline advance of 31 ft and 6 ft, respectively. Overall, the South Sand Placement Project's monitoring area experienced an average advance of 7 ft for this comparison period.

3.3.1.3 2024 POST-MILTON CONDITION (NOVEMBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

Comparison of the 2024 post-Milton MHW shoreline position to the 2025 MHW shoreline position presents the changes to the beach since Hurricane Milton. Within the South Sand Placement Project's

monitoring area, significant shoreline advance occurred, with an average shoreline advance of 44 ft, suggesting natural recovery of the beach. The greatest shoreline advance occurred within the north reference area, averaging 62 ft.

Table 3.7 South Sand Placement Project Average MHW Shoreline Change

2019 2025 Average MHW Shoreline Change				
Community	**MHW Elevation Range (feet NAVD88)**	**July 2019 to August 2025 Average MHW Shoreline Change (feet)**	**August October 2024 to August 2025 Average MHW Shoreline Change (feet)**	**November 2024 to August 2025 Average MHW Shoreline Change (feet)**
North Reference Area – R-155 to R-160	+1.2	-0.4	31.0	61.9
Fill Placement Area – R-161 to R-191	+1.2 to +1.1	-21.7	5.6	47.1
South Reference Area – R-192 to R-196	+ 1.1	-8.2	-17.6	6.8
South Sand Placement Project Monitoring Area – R-155 to R-196	**+1.2 to +1.1**	**-17.0**	**6.5**	**44.4**

3.3.2 BEACH VOLUME CHANGES

As discussed in Section 3.1.2, beach volume changes indicate beach evolution and performance. Table 3.8 provides an overview of the weighted average volume change for each monitoring area associated with the South Sand Placement Project in units of cubic yards per foot of shoreline (cy/ft), and Table 3.9 presents the values in cubic yards (cy). This methodology is the same as that presented in Section 3.1.2 and, as such, the profile comparisons extend to the furthest similar extent. Data limitations are detailed in Section 2.2.1.

3.3.2.1 2019 BASELINE CONDITION (JULY 2019) VERSUS 2025 CONDITION (AUGUST 2025)

The 2019 to 2025 volume change analysis documents the South Sand Placement Project's changes over the past six years. The subaerial portion of the monitoring area remained generally stable, with minor accretion in the north and south reference areas (5 cy/ft and 7 cy/ft, respectively) and minimal erosion in the fill placement area, averaging 2 cy/ft. Below MHW and above -15 ft-NAVD88, the monitoring area experienced erosion across the fill placement area and reference areas, averaging 15 cy/ft. Below -15 ft-NAVD88, the South Sand Placement Project's monitoring area showed significant accretion, averaging 40 cy/ft and controlling overall trends. Notably, in 2019, USACE completed a nearshore sand placement event, beneficially using sand from the navigation channel; although some of the accretion below -15 ft-NAVD88 may be associated with this event, it is likely that much of it is attributed to the overall offshore movement of sand observed throughout the County, as discussed in Section 3.1.2.1.

3.3.2.2 2024 CONDITION (AUGUST – OCTOBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The 2024 to 2025 volume change analysis documents the beach volume changes over the past year, including the effects of Hurricane Milton within the South Sand Placement Project's monitoring area. The subaerial portion of the monitoring area experienced minor accretion, averaging 5 cy/ft. Below MHW and above -15 ft-NAVD88, the monitoring area experienced erosion within the fill placement area and reference areas, averaging 9 cy/ft. Notably, the south reference area experienced significant erosion averaging 30 cy/ft within this compartment. Below -15 ft-NAVD88, minor accretion occurred in the fill placement area and reference areas, averaging 4 cy/ft across the monitoring area. As a whole, the South Sand Placement Project's monitoring area experienced erosion averaging 4 cy/ft above -15 ft-NAVD88 for this monitoring period.

3.3.2.3 2024 POST-MILTON CONDITION (NOVEMBER 2024) VERSUS 2025 CONDITION (AUGUST 2025)

The 2024 post-Milton to 2025 volume change analysis documents the volume changes approximately one year following Hurricane Milton within the South Sand Placement Project's monitoring area. As previously mentioned, the comparable survey extent is limited due to the LiDAR data.

Consistent accretion trends occurred across the monitoring area. The subaerial portion of the beach gained approximately 10 cy/ft of sediment, whereas the segment between MHW and the profile extent gained an average of 6 cy/ft. These values suggest natural recovery of the beach following Hurricane Milton; however, the prior comparisons (3.3.2.1 and 3.3.2.2) feature net average erosion, which suggests that the beach has not recovered to its prior conditions.

Table 3.8 South Sand Placement Project Average Volume Change (cubic yards/foot)

July 2019 to August 2025 Average Volume Change

Community	Average Volume Change above MHW (cubic yards/foot)	Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)	Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/ foot)	Average Volume Change above 15 feet NAVD88 (cubic yards/foot)
North Reference Area – R-155 to R-160	4.5	-6.8	28.8	-2.3
Fill Placement Area – R-161 to R-191	-2.3	-15.2	36.1	-17.5
South Reference Area – R-192 to R-196	6.9	-25.3	76.8	-18.4
South Sand Placement Project Monitoring Area – R-155 to R-196	**-0.2**	**-15.2**	**39.9**	**-15.4**

August October 2024 to August 2025 Average Volume Change

Community	Average Volume Change above MHW (cubic yards/foot)	Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)	Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)	Average Volume Change above 15 feet NAVD88 (cubic yards/foot)
North Reference Area – R-155 to R-160	4.7	-10.4	3.4	-5.7
Fill Placement Area – R-161 to R-191	5.0	-5.3	2.4	-0.3
South Reference Area – R-192 to R-196	5.7	-30.0	11.1	-24.3
South Sand Placement Project Monitoring Area – R-155 to R-196	**5.0**	**-9.0**	**3.6**	**-4.0**

November 2024 to August 2025 Average Volume Change				
Community	**Average Volume Change above MHW (cubic yards/foot)**	**Average Volume Change MHW to 15 feet NAVD88 (cubic yards/foot)**	**Average Volume Change 15 feet NAVD88 to Profile Extent (cubic yards/foot)**	**Average Volume Change above 15 feet NAVD88 (cubic yards/foot)**
North Reference Area – R-155 to R-160	10.9	8.0	–	18.9
Fill Placement Area – R-161 to R-191	10.6	6.2	–	16.8
South Reference Area – R-192 to R-196	1.3	0.0	–	1.3
South Sand Placement Project Monitoring Area – R-155 to R-196	**9.5**	**5.7**	**–**	**15.3**

Table 3.9 South Sand Placement Project Total Volume Change (cubic yards)

July 2019 to August 2025 Total Volume Change				
Community	**Volume Change above MHW (cubic yards)**	**Volume Change MHW to 15 feet NAVD88 (cubic yards)**	**Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)**	**Volume Change above 15 feet NAVD88 (cubic yards)**
North Reference Area – R-155 to R-160	26,000	-39,500	165,900	-13,500
Fill Placement Area – R-161 to R-191	-68,600	-443,900	1,055,900	-512,500
South Reference Area – R-192 to R-196	33,200	-121,600	369,600	-88,400
South Sand Placement Project Monitoring Area – R-155 to R-196	**-9,400**	**-605,000**	**1,591,400**	**-614,400**

August October 2024 to August 2025 Total Volume Change

Community	Volume Change above MHW (cubic yards)	Volume Change MHW to 15 feet NAVD88 (cubic yards)	Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)	Volume Change above 15 feet NAVD88 (cubic yards)
North Reference Area – R-155 to R-160	27,200	-60,200	19,300	-33,000
Fill Placement Area – R-161 to R-191	145,600	-154,200	71,200	-8,700
South Reference Area – R-192 to R-196	27,200	-144,200	53,700	-117,000
South Sand Placement Project Monitoring Area – R-155 to R-196	**200,000**	**-358,600**	**144,100**	**-158,600**

November 2024 to August 2025 Total Volume Change

Community	Volume Change above MHW (cubic yards)	Volume Change MHW to 15 feet NAVD88 (cubic yards)	Volume Change 15 feet NAVD88 to Profile Extent (cubic yards)	Volume Change above 15 feet NAVD88 (cubic yards)
North Reference Area – R-155 to R-160	62,800	46,200	–	109,000
Fill Placement Area – R-161 to R-191	310,400	182,000	–	492,400
South Reference Area – R-192 to R-196	6,200	0	–	6,200
South Sand Placement Project Monitoring Area – R-155 to R-196	**379,500**	**228,300**	**–**	**607,700**

*November 2024 data limited in offshore extent

4 SUMMARY

The County conducted annual beach monitoring in August 2025 to characterize Volusia County's beach evolution. The 2019 to 2025 survey data comparison revealed the County's beaches experienced moderate to major retreat of the MHW shoreline position. Moderate erosion occurred above -15 ft-NAVD88, and similar to the 2023 and 2024 monitoring reports, significant accretion occurred below -15 ft-NAVD88 as sand moved offshore following Hurricanes Ian, Nicole, and Milton. Profile plots do indicate movement of nearshore sand bars, which is anticipated to occur as a result of storm events. On average, the August-October 2024 to 2025 comparison revealed minor overall shoreline advance; however, a closer look at the community trends reveals varying results averaging minor to moderate retreat and significant advance. The volume changes for this comparison period reveal mixed minor to moderate erosion and accretion across the volume compartments, averaging erosion of 9 cy/ft above -15 ft-NAVD88 countywide. The comparison of the 2024 post-Hurricane Milton to the 2025 annual monitoring data suggests post-storm natural recovery across the County, with advance of the MHW shoreline position and accretion throughout most of the County.

Notably, during the 2025 survey, USACE and Volusia County were actively constructing the North Sand Placement Project and associated stockpile. The profile plots (Appendix A) clearly depict this material placement across Daytona Beach and Daytona Beach Shores, Wilbur-by-the-Sea, and Ponce Inlet. Shoreline advance and accretion control the near-term trends; however, volume changes above -15 ft-NAVD88 since 2019 depict moderate erosion throughout the communities, suggesting that despite this sand placement event, the beach is not as robust as its past condition. Taylor Engineering recommends that the County continue to study the effects of the stockpile and dune within future monitoring efforts and within any post-construction required reporting. This is also true for the South Sand Placement Project, which began construction in January 2026. Additionally, there are significant shifts in data trends directly south of the stockpile and north of the Inlet—the County should continue to monitor this area and coordinate jetty repairs with USACE.

Despite sand placement associated with the FDOT secant wall project, the analysis did not reveal a significant variation in trends when compared at the community level— this is expected, as construction methods require removal of the dune followed by dune reestablishment. The dune placed in association with this project does not differ significantly from the natural dune in recent years prior to construction. Additionally, although USACE placed 1.7 Mcy of sand within Flagler Beach, the profiles and comparisons do not show a prominent trend of southernly transport into Volusia County; the analysis only reveals a slight increase in sand within the -15 ft-NAVD88 to profile extent, suggesting that if this sand has transported south into Volusia County, recent storms moved the sand further offshore.

Taylor Engineering recommends the County continue to monitor its beaches to establish a record of erosion and accretion trends and document the effects of storms. As more projects are constructed, it is critical that the County track physical conditions for these projects and perform maintenance as required and as funding permits. A longer monitoring period is recommended in order to better document the long-term changes to the County's beaches, monitor future events, and help better understand the effects of sand placement events. Taylor Engineering suggests the County continues its beach and inlet monitoring plan, which consists of a complete county-wide beach and inlet survey every five years and beach surveys annually. The profile spacing associated with the annual beach surveys is dependent on project permit requirements, beach conditions, and storm activity. Annually, the County and consultants

should assess if data collection warrants an interim survey or full survey. This data is required to monitor project performance and assess potential storm losses.

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