

8/10/2023

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Subject: Proposed John's Pass Village Activity Center Adoption Application in Madeira Beach.

The scope of this review includes an assessment of surge risk, potential flood hazards, feasibility of emergency evacuations, impacts on the county's shelter demand, and recommended mitigation measures to minimize these impacts.

The following summary is a response to the City of Madeira Beach's proposed 2023-01 ordinance for adopting the John's Pass Village Activity Plan.

Review Summary:

1. The digital elevation model (DEM)¹ indicates ground elevations within the project area between 3 and 6 feet (*Attachment 1*).
2. The entire area is located in the Coastal Storm Area (CSA)² identified in the Pinellas County Comprehensive Plan and lies within the Coastal High Hazard Area (CHHA)³ (*Attachment 2*). As a result, storm surge, floodplain management and sea level rise are important factors regarding this potential application.
3. The storm surge inundation analysis based on the Sea Lake and Overland Surges from Hurricanes (SLOSH)⁴ model indicates that this area could be subject to storm surge from tropical storms up to Category 5 Hurricane on the Saffir-Simpson scale⁵ (*Attachments 4 – 9*).
4. In the event of these storms, flooding can obstruct access to and from the area, affecting both residents and first responders.
5. Structures and infrastructure located at or slightly above ground levels, including AC units, electrical systems, elevators, pools, vehicles, and garages, are susceptible to inundation and

¹ Pinellas County. *Digital Elevation Model and Contours Derived from 2017 LiDAR Data*.

² Policy 1.3.3 http://www.pinellascounty.org/Plan/comp_plan/05coastal/2-goals.pdf

³ Policy 1.3.1 http://www.pinellascounty.org/Plan/comp_plan/05coastal/2-goals.pdf

⁴ *Sea, Lake, and Overland Surges from Hurricanes (SLOSH) Storm Surge Model Results for the west Florida Basin*. Version 2020. Published by the National Hurricane Center (NHC), National Oceanic and Atmospheric Administration (NOAA).

Online Linkage: <https://www.nhc.noaa.gov/nationalsurge/#data>. Accessed Oct. 2021

⁵ <https://www.nhc.noaa.gov/aboutsshws.php#:~:text=The%20Saffir%2DSimpson%20Hurricane%20Wind,Scale%20estimates%20potential%20property%20damage.>

damage from storm surges. Further, the SLOSH model results indicate that residential units could experience flooding inside their homes from a Category 1 storm or higher when storm surge levels exceed their base floor elevations. (*Attachments 5 – 9*).

6. The entire project area has been designated as a Level A evacuation zone. Consequently, any future construction within this vicinity will carry a Level A evacuation designation⁶ (*Attachment 3*).
7. A Level A evacuation status mandates the evacuation of residents, hotel staff and guests, commercial establishments and employees at all subsequent levels of mandatory evacuation orders (A-E).
8. The Activity Center region directly intersects with the Gulf Blvd emergency evacuation route. Consequently, concerns regarding access during ordered evacuations are not anticipated.

Additional Factors to Consider:

1. The existing SLOSH model does not consider the contribution of rainfall during storms, which can significantly influence overall flooding levels.
2. Storm surge depths provided by the SLOSH model do not encompass the effects of waves riding atop the surge. These waves, reaching up to 0.75 miles inland, can augment surge heights and intensify flooding.
3. The current SLOSH model does not account for sea level rise, potentially exacerbating the impact of future storm events.
4. One (1) foot of water can float various vehicles. With two (2) feet of moving water, it can carry away most vehicles, adding to the dangers of flooding.
5. Inundation of electrical outlets by storm surge poses the risk of electrocution and fire. Additionally, any electric vehicles remaining in the vicinity that become flooded with saltwater add an extra layer of potential fire hazards that needs attention.
6. Recognizing that a surge event can extend over many hours is crucial. The aftermath could lead to hours or days before emergency responders gain access due to standing water and debris accumulation.
7. Storm surge often carries significant debris, including cars, boats, trees, and structural components. This debris not only hampers access but also introduces health and safety hazards that demand effective management.
8. Building and dock foundations are threatened by storm surge's potential to undermine their structural integrity, potentially resulting in complete collapse. The impact on essential infrastructure and property cannot be underestimated.
9. The vulnerability of underground utilities, such as water, sewage, and gas lines, to storm surge is critical to assessing the overall impact and recovery efforts.
10. Financial losses resulting from property damage, infrastructure repair, and disruption of economic activities should be evaluated as part of the overall impact assessment.

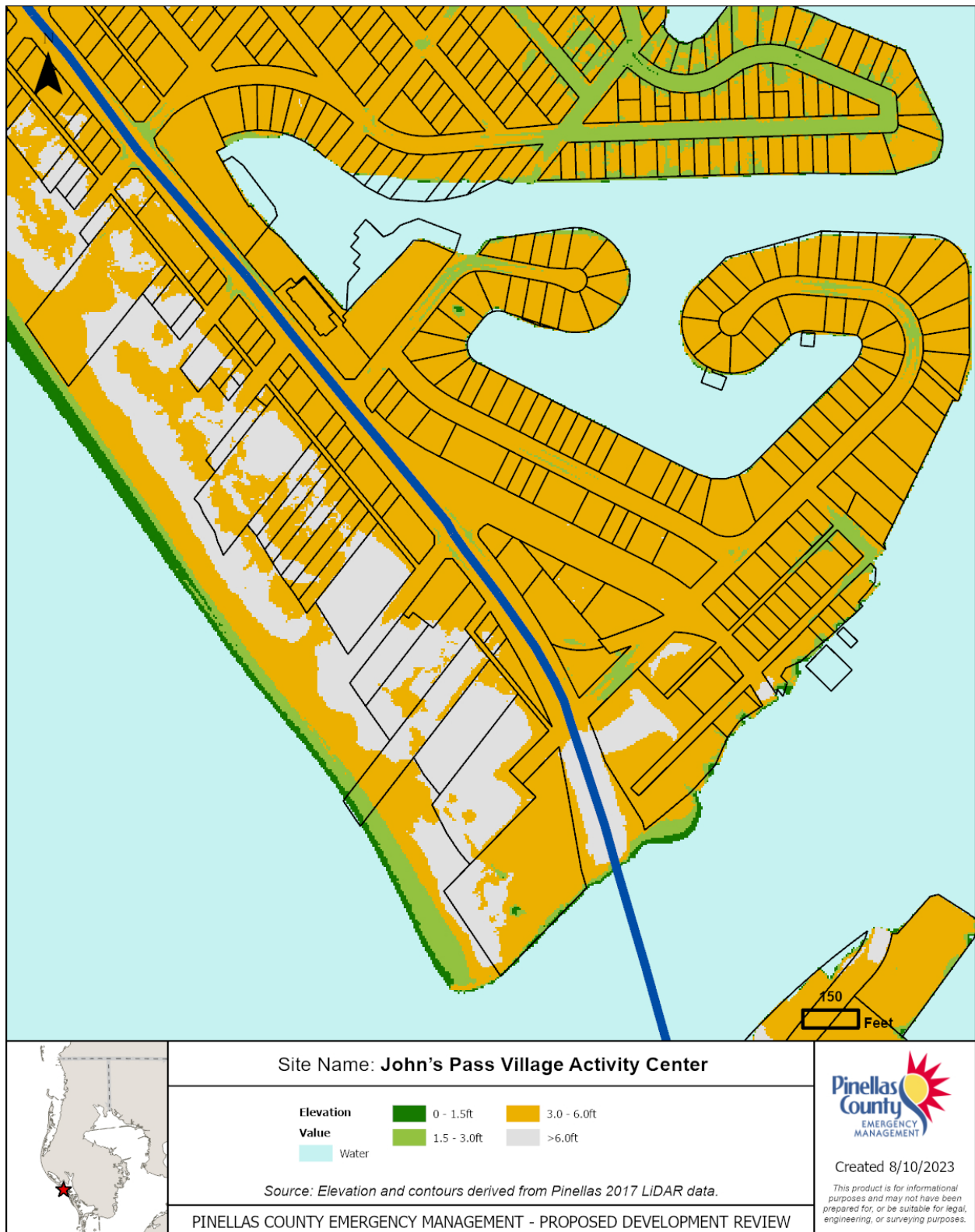
⁶ As determined by Pinellas County's GIS Programmatic Evacuation Assignment Process

Conclusion:

In light of the susceptibility to storm surges in the Activity Center area, it is recommended that current residents, commercial businesses and potential developers adopt mitigation and construction practices that exceed the mandates outlined in prevailing building codes. This proactive approach will help minimize the adverse consequences of wind and storm surge events and their associated hazards.

Moreover, it is incumbent upon the city to address the resilience of community services and vital infrastructure in the face of these imminent hazards. Likewise, Residents and business owners in the Activity Center area can significantly contribute to safeguarding both property and human lives by incorporating comprehensive mitigation, evacuation and continuity of operations planning strategies. This entails a comprehensive assessment of potential vulnerabilities, followed by implementing measures designed to bolster the area's capacity to withstand and recover from storm surge events.

In summary, recognizing the heightened risk posed by storm surges, existing and new developments should embrace a markedly more robust construction paradigm than what is currently prescribed by building codes. This heightened preparedness could mitigate the profound disruptions brought about by storm surge-induced property damage and subsequent displacements. Additionally, the city must extend its commitment to fortify community services and critical infrastructure. This multifaceted endeavor can significantly enhance the area's resilience to the challenges posed by storm surges and their aftermath.



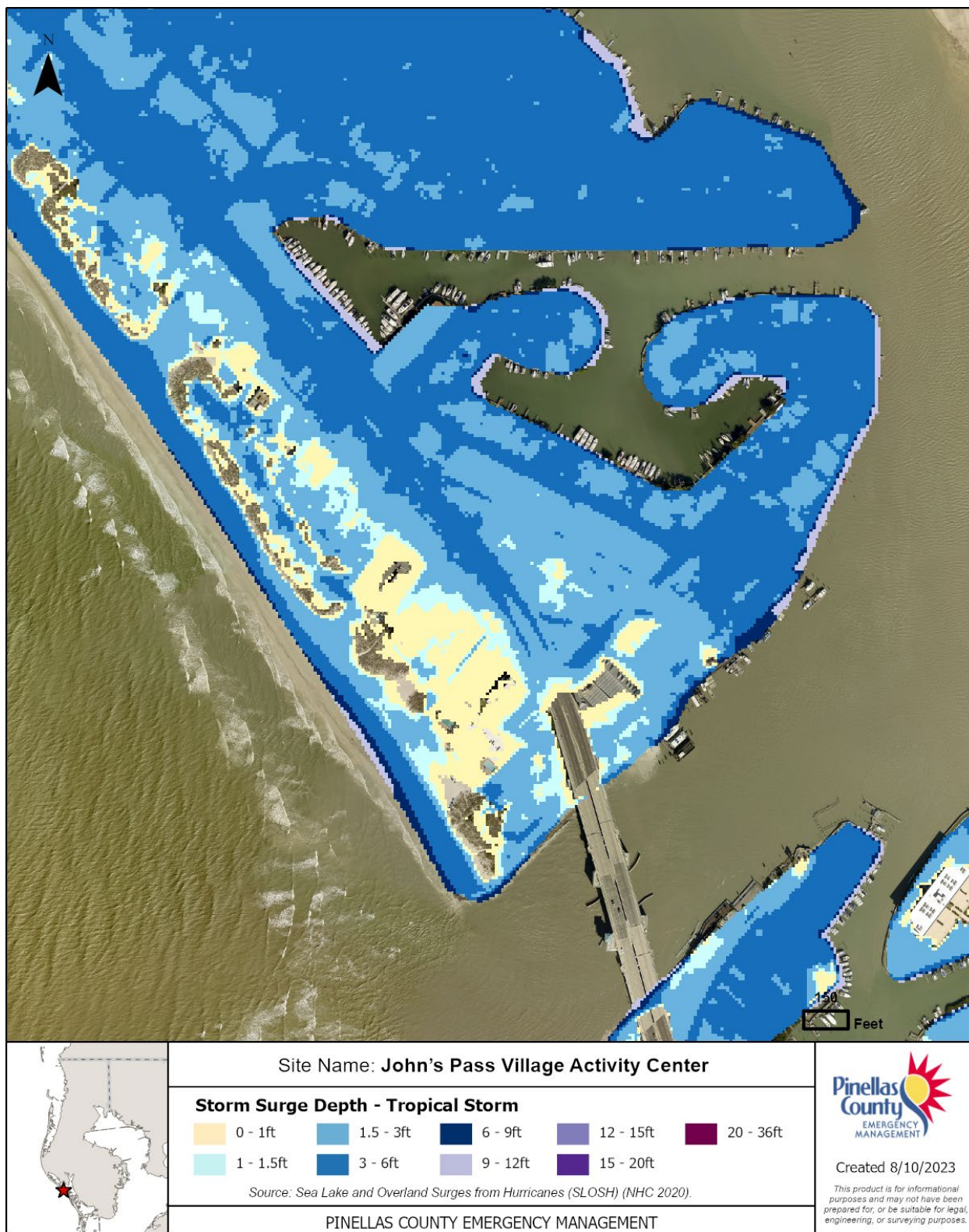
Attachment 1. Site ground elevation. Source: Pinellas County Topographic Digital Elevation Model (v2017).



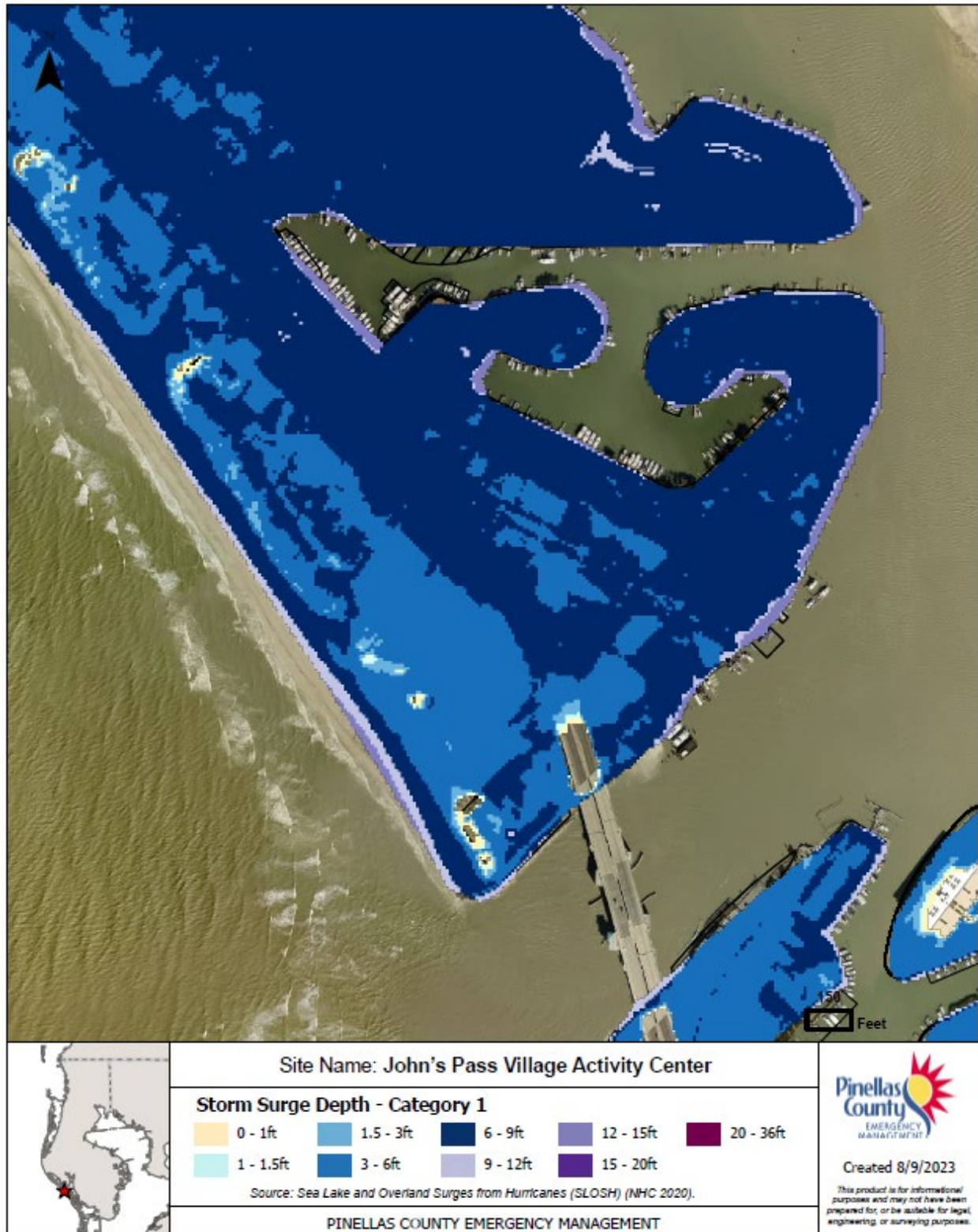
Attachment 2. Site parcel boundaries and Coastal High Hazard Area (CHHA). Source: Pinellas County Comprehensive Plan v.2008, Chapter 1-1.



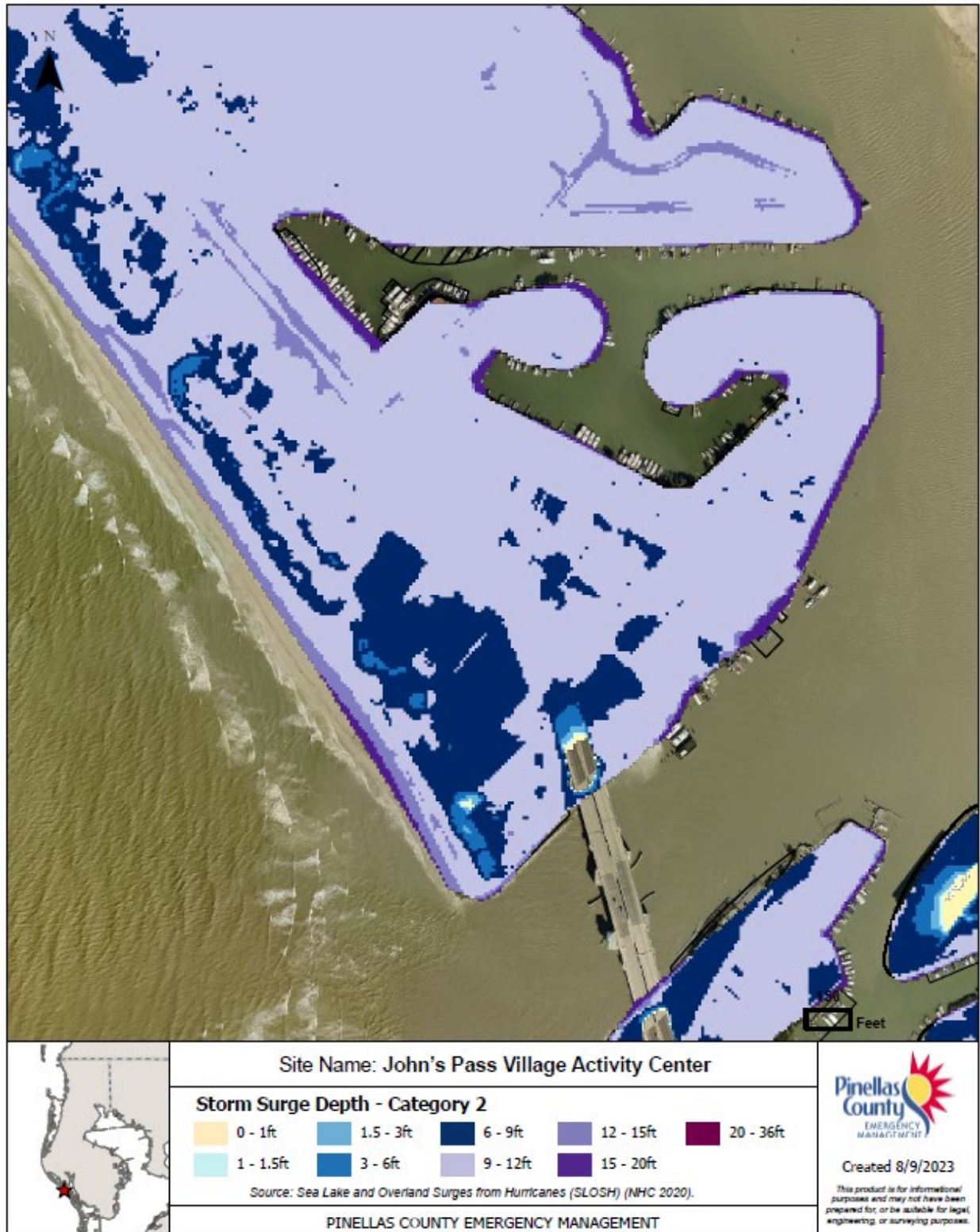
Attachment 3. Site boundaries and respective Pinellas County Emergency Evacuation Zones (v2021)



Attachment 4. Tropical Storm surge inundation depth (ft). Source: Source: NHC SLOSH Model, v2020.



Attachment 5. Category 1 surge inundation depth (ft). Source: NHC SLOSH Model, v2020.



Attachment 6. Category 2 surge inundation depth (ft). Source: NHC SLOSH Model, v2020.



Attachment 7. Category 3 surge inundation depth (ft). Source: NHC SLOSH Model, v2020.



Attachment 8. Category 4 surge inundation depth (ft). Source: NHC SLOSH Model, v2020.



Attachment 9. Category 5 surge inundation depth (ft). Source: NHC SLOSH Model, v2020.