

Western Pinellas County Manatee Protection Rule Review
Preliminary Identification of Areas for LRRC Review
April 2014

Prepared by Florida Fish and Wildlife Conservation Commission (FWC) staff for use by the Pinellas County Local Rule Review Committee (LRRC)

Please refer to the accompanying document (**Manatee Data Review and Summary for Western Pinellas County**) for a discussion and summary of the primary data and analyses used during the preliminary review.

Reason for reviewing western Pinellas County

Currently there are no manatee protection zones in western Pinellas County. There are existing local and state zones in various locations throughout the area, most of which are for boating safety purposes. The existing zones provide some incidental protection of manatees but the zones were not established with manatee protection in mind and are not necessarily in the locations where they are most needed from a manatee protection perspective.

FWC approved a Manatee Management Plan (MMP) in December 2007 to provide a state framework for conserving and managing manatees in Florida. The MMP is complementary to the federal Florida Manatee Recovery Plan, with both plans describing actions that will ensure the manatee's long-term survival. One of the many tasks called for in the MMP is to evaluate areas that currently have little or no manatee protection to determine if new manatee protection zones may be warranted. Western Pinellas County is identified for evaluation in the MMP because of the substantial amount of manatee use and human use in this area and because available information suggests the risks to manatees have increased considerably in recent years as compared to the 1990s and earlier periods. These increased risks have affected federal and state reviews of proposals for new or expanded boat facility projects, particularly in the Boca Ciega Bay area.

Summary of review process to date and development of preliminary recommendations

When evaluating the potential need for new manatee protection zones, FWC staff placed the greatest emphasis on analyses of manatee use and where this use overlaps with boating use (referred to as spatial overlap analysis) – because where manatees were seen during recent surveys and where there was high spatial overlap between manatee use and boat use are critical factors in determining where manatees are most at risk of being struck by boats. Other factors and data were also considered, such as manatee telemetry data, mortality data, water depth, habitat availability (e.g., seagrass), locations of boat access facilities and marked channels, sign-posting considerations, and issues related to overall zone complexity and the ease with which boaters would be able to understand the zones. (Note on mortality data: With regard to zone configurations staff did not place a lot of significance on the precise location of carcass recoveries for boat-related manatee deaths because of the inability in most cases to know the relationship between where a manatee was struck and where it was recovered. Mortality data also do not provide much information on the potential for sub-lethal injuries, which is an important consideration when assessing risk.)

As part of the review process, FWC staff has met with staff from the County and the U.S. Fish and Wildlife Service as well as FWC law enforcement. Staff has held informal discussions with local residents and stakeholders to gather input on local views and concerns. Staff also made presentations to the Barrier Islands Governmental Council (BIG-C) and a joint committee meeting of the Agency on Bay Management. Over the years many individuals and local governments have contacted FWC with suggestions for areas that may need protection and these areas were examined as part of the review process as well.

Based on the data review and other factors discussed above, FWC staff identified 21 areas where some configuration of new protection zones may be warranted. This document identifies and discusses each of these areas. At this time FWC staff has not made a final determination as to whether any potential zones should be presented to the FWC Commissioners for consideration. Prior to making a final determination, staff will fully evaluate the input provided by the LRRC. The FWC requests that the LRRC review the identified areas and provide recommendations as to what zones, if any, it believes should be proposed. This document should not be construed to limit what information the

LRRC may consider or what zones it can recommend. The LRRC report may contain any recommendations the LRRC deems worthy and the FWC response to the LRRC report will address all recommendations.

Notes on areas where protection zones may be warranted

Site-specific areas identified as potentially warranting a manatee protection zone are discussed below. Figures showing the locations of the site-specific areas are included for each region.

As compared to the overall means for all of western Pinellas County, mean manatee density and manatee-boat spatial overlap values in the site-specific areas are characterized using the following relative scale: **Very High** (≥ 7 times the warm-season mean); **High** (≥ 3 times but < 7 times the warm-season mean); **Moderate** (> 1 but < 3 times the warm-season mean); **Low** (\leq the warm-season mean).

Potential zones: North Region (Table 6; Figure 29 and Figures 31 – 36)

N1: Spring Bayou Area. Very high manatee use during the cold season; moderate use during the warm season.

Cold-season manatee density (4.63) was the highest of any of the areas evaluated (over 60 times greater than the overall cold-season density for western Pinellas County). Cold-season Fast Overlap was zero. Warm-season manatee density (0.24) was 1.4 times greater than the overall density for western Pinellas County, but less than most of the areas evaluated in the South Region. Warm-season Fast Overlap was low. The low amount of Fast Overlap is likely related to existing local speed zones (see below).

This general area, and Spring Bayou in particular, is a secondary warm water aggregation site for manatees, with as many as 20 manatees seen during a single aerial survey during the cold season. Some seagrass and other aquatic vegetation is available in this immediate area; however, manatees using this area likely travel to the lower Anclote River and/or St. Joseph Sound to feed.

Existing Zones: Current information indicates there are local zones (Tarpon Springs) in this area. The zones are a seasonal No Internal Combustion Motor zone (Nov 15 – Mar 31) / Idle Speed (rest of the year) in Spring Bayou, seasonal Idle Speed (Nov 15 – Mar 31) in Whitcomb Bayou, and year-round Idle Speed to the north, including the adjacent section of the Anclote River). FWC has received requests from the public for increased protection in this general area.

Potential Zone: **Option 1:** A Slow Speed (or possibly Idle Speed) zone may be warranted in this area, probably only during the cold season. A good northern limit might be Riverside Drive. **Option 2:** Add a year-round Slow Speed zone under the existing local zones, including the adjacent section of the Anclote River (but leaving Whitcomb Bayou unregulated during the warm season). Given the existing local zones, adding a FWC zone would serve mainly as a backdrop in case the local zones are removed.

N2: Anclote River Mouth. Moderate manatee use and high Fast Overlap during both seasons.

Cold-season manatee density for this area (0.21) was 2.7 times greater than the overall cold-season density for western Pinellas County, and higher than most other areas evaluated for the cold season outside of the Anclote River Area. Cold-season Fast Overlap (0.44) was the highest of any of the areas evaluated for the cold season (over 53 times greater than the overall cold-season value for western Pinellas County). Warm-season manatee density (0.44) was 2.5 times greater than the overall density for western Pinellas County, but less than most of the areas evaluated in the South Region. Warm-season Fast Overlap (0.70) was 6.5 times greater than the overall value for western Pinellas County and higher than most other areas.

The lower Anclote River contains substantial amounts of seagrass outside of the main channel. This portion of the river also serves as the travel corridor for manatees moving between the upper river, including the Spring Bayou/Whitcomb Bayou area, and St. Joseph Sound.

Existing Zones: Current information indicates there is a local shore-to-shore Idle Speed zone (Tarpon Springs) in the Anclote River east of channel marker 32 to the Alt. US 19 Bridge and south of the spoil islands between channel markers 23 and 32 (generally north of Circle Drive and North Florida Avenue). There also is a recently enacted Idle Speed zone (Pasco County) in the general vicinity of Anclote River Park. FWC has received requests from the public for increased protection in this general area.

Potential Zone: A year-round Slow Speed zone may be warranted in this area. A good eastern (upstream) limit might be channel marker 32 since this is the western boundary of an existing local Idle Speed zone. A good western limit might be the western boundary of the zone at Anclote River Park (which would put part of the zone in Pasco County). Using these limits, the length of the zone would be about 1.2 miles (about 0.9 miles in Pinellas County, and a total of one mile outside of the zone in Pasco County). *Note that zones in the Pasco County portion of the river could not be proposed as part of this rule making action because they would first need to be reviewed by a LRRC for Pasco County. Therefore, all or part of a zone in this area could be delayed until a rule making action is considered for Pasco County.*

N3: Memorial Causeway (North). High manatee use and very high Fast Overlap during the warm season.

Warm-season manatee density (0.77) was 4.3 times greater than the overall density for western Pinellas County and higher than all of the other areas in the North Region, but less than many of the areas in the South Region. Warm-season Fast Overlap (1.50) was 13.8 times greater than the overall value for western Pinellas County and higher than all but two other areas. Cold-season manatee density (0.18) was 2.4 times greater than the overall cold-season density for western Pinellas County, but was moderate compared to the warm season. Cold-season Fast Overlap (0.14) was 16.4 times greater than the overall cold-season value for western Pinellas County and higher than all but one other area for the cold season, but was moderate compared to the warm season.

There is abundant seagrass in this general area, particularly adjacent to the eastern shoreline and north of the causeway to the west of the ICW. Based on the manatee survey data, the most important areas are probably the seagrass areas to the east and west of the ICW within about 0.6 miles of the causeway and the seagrass area to the east of the ICW south of Stevenson Creek.

Existing Zones: There is a FWC Slow Speed boating safety zone at the Memorial Causeway that extends 3315 feet north of the bridge to just past the Seminole boat ramp (includes ICW and waters to the east). At the request of the city of Clearwater, this zone was expanded in 2013 to extend the zone about 700 feet farther south (to 1215 feet south of the bridge) and 500 feet farther west (in the vicinity of the bridge). (A previously-existing FWC 30 MPH boating safety zone in all sections of the ICW channel right-of-way between the Honeymoon Island Causeway and the Pinellas Bayway Bridge at Tierra Verde, except where more restrictive zones existed, was removed as part of the 2013 amendments.) Current information indicates there also are local Slow Speed and Idle Speed zones (Clearwater) along the west side in and around the residential canals.

Potential Zone: A Slow Speed zone may be warranted in this area, possibly only during the warm season although a year-round zone might be worthwhile given the overlap with the year-round boating safety zone. The only portion of the ICW channel included within this potential zone is the 0.6 mile section that is already a part of the existing boating safety zone. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones.

N4: Indian Rocks Causeway (North). Moderate manatee use and high Fast Overlap during the warm season.

Warm-season manatee density (0.38) was 2.1 times greater than the overall density for western Pinellas County and higher than most other areas in the North Region, but less than most of the areas in the South Region. Warm-season Fast Overlap (0.38) was 3.5 times greater than the overall value for western Pinellas County and higher than about half of the other areas. Cold-season manatee density was low and Fast Overlap was zero.

There is substantial seagrass to the east of the ICW south of the Harbor Hills area as well as a few isolated patches in the coves to the west of the ICW and immediately adjacent to the shorelines.

Existing Zones: There is a FWC Slow Speed boating safety zone at the Indian Rocks Causeway extending 1790 feet to the northeast to just past Largo Intercoastal Marine and 7340 feet to the south. Current information indicates there also are local Idle Speed zones (County or Largo?) along the east side in and around the residential canals of the Harbor Bluffs and Harbor Hills subdivisions and in McKay Creek.

Potential Zone: Option 1: A warm-season Slow Speed zone may be warranted in this area. The northern limit would probably not need to extend past Oakwood Drive. Using this limit, the length of the zone would be about 1.8 miles in the ICW channel (1.5 miles beyond the existing Slow Speed boating safety zone). Option 2: Same area as Option 1 but with the ICW regulated at 25 MPH. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones.

Potential zones: South Region (Table 6; Figure 30 and Figures 37 – 46)

S1: Center Section of The Narrows. Moderate manatee use and very high Fast Overlap during the warm season.

Warm-season manatee density (0.53) was 3.0 times greater than the overall density for western Pinellas County and 2.0 times greater than the overall density for the South Region. Warm-season Fast Overlap (1.01) was 9.4 times greater than the overall value for western Pinellas County and higher than all but three other areas. Cold-season manatee density (0.17) was 2.2 times greater than the overall cold-season density for western Pinellas County, but was low compared to the warm season. Cold-season Fast Overlap (0.04) was 4.4 times greater than the overall cold-season value for western Pinellas County and higher than most other areas for the cold season, but was low compared to the warm season.

There are patches of seagrass throughout The Narrows, with the most abundant seagrass occurring in the central section generally between ICW markers 28 and 19. Based on the manatee survey data, the most important area may be the area to the east of the ICW, south of the Tara Cay residential canal, although the entire Narrows area is an important (and narrow) travel corridor.

Existing Zones: There is a FWC Slow Speed boating safety zone at the Park Blvd Bridge that extends 3050 feet to the north (near ICW marker 19) and 6270 feet to the south. Current information indicates there may be a local Idle Speed zone (County?) in the residential canal of the Tara Cay condominiums. FWC has received requests from the public for increased protection in this general area.

Potential Zone: A Slow Speed zone may be warranted in this area, possibly only during the warm season although a year-round zone might be worthwhile given the adjacent year-round boating safety zones. A good northern limit would be the southern boundary of the Indian Rocks Bridge boating safety zone (near ICW marker 27). A good southern limit would be the northern limit of the Park Blvd boating safety zone (just south of ICW marker 19). The length of the zone would be about 0.9 miles in the ICW channel.

S2: Redington Shores. Very high manatee use and moderate Fast Overlap during the warm season.

Warm-season manatee density (1.36) was the highest of any of the areas evaluated (7.6 times greater than the overall value for western Pinellas County and 5.1 times greater than the overall density for the South Region). Warm-season Fast Overlap (0.24) was 2.2 times greater than the overall value for western Pinellas County. Cold-season manatee density and Fast Overlap were zero.

There is extensive seagrass to the north of the ICW as well as a few isolated patches south of the ICW and in the coves and canals to the west. Based on the manatee survey data, the most important area appears to be the seagrass areas north of the ICW.

Existing Zones: The FWC Slow Speed boating safety zone at the Park Blvd Bridge extends slightly into this area. Current information indicates there are local Idle Speed and Slow Speed zones (County or Redington Shores) in and around Redington Shores Marina and other residential canals as well as in and around the residential canals of the Oakhurst. FWC has received requests from the public for increased protection in this general area.

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. A good northern limit would be the northwestern limits of Boca Ciega Bay (southern end of The Narrows). A good southern limit would be a line running southeast from the eastern end of 173rd Avenue East (North Redington Beach) to the southern end of Oakhurst Drive. The only portion of the ICW channel included within this potential zone is the 0.3 mile section that is already a part of the boating safety zone. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones.

S3: Bay Pines (West). High manatee use and moderate Fast Overlap during the warm season.

Warm-season manatee density (1.11) was 6.2 times greater than the overall density for western Pinellas County and 4.1 times greater than the overall density for the South Region. Warm-season Fast Overlap (0.31) was 2.9 times greater than the overall value for western Pinellas County. Cold-season manatee density and Fast Overlap were low.

There is extensive seagrass along the northern shoreline, with a more expansive patch near the southern end of War Veterans Memorial Park. Most manatee use in this area was documented over or in the immediate vicinity of the seagrass areas.

Existing Zones: Just to the north and west, there is a FWC Slow Speed boating safety zone at the Stuart Causeway (includes ICW and waters to the north to the mean high water mark). Just to the west, current information indicates there is a local Slow Speed zone (Madeira Beach) in the residential canals and coves along the western side of Boca Ciega Bay. The northern end of this area (as well as the basin to the north) appears to be used as a mooring area.

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. A good southern limit might be the southern end of War Veterans Memorial Park. The most important area appears to be the seagrass areas adjacent to the northern shoreline (generally within 500-800 feet of shore). If a zone is proposed for this area, one question is if the basin to the north should be included or excluded.

S4: Johns Pass. Moderate manatee use and high Fast Overlap during the warm season.

Warm-season manatee density (0.24) was 1.3 times greater than the overall density for western Pinellas County and 0.9 times the overall density for the South Region. Warm-season Fast Overlap (0.50) was 4.6 times greater than the overall value for western Pinellas County. Cold-season manatee density and Fast Overlap were low. Many of the areas with the highest Fast Overlap were within the existing zones.

There is extensive seagrass throughout most of the area on the inside of the inlet, particularly in the immediate vicinity of Eleanor Island, Little Bird Key, and the unnamed island in between them.

Existing Zones: Current information indicates there are local Slow Speed zones (Madeira Beach and Treasure Island) along the western and southeastern portions of the area.

Potential Zone: A Slow Speed zone may be warranted in this area, possibly only during the warm season although a year-round zone might be worthwhile given the overlap with the local year-round boating safety zones. A good western limit might be the Gulf Blvd Bridge. The eastern limit probably does not need to extend all the way to the ICW because it is primarily the seagrass areas in the vicinity of Eleanor Island and the other islands on the inside of the pass that are most important. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones. Marking the eastern limit of a zone may be complicated because of the numerous boating routes that exist between the pass and the inland waterways.

S5: Long Bayou (South). High manatee use during the warm season.

Warm-season manatee density (1.09) was 6.1 times greater than the overall density for western Pinellas County and 4.0 times greater than the overall density for the South Region. Cold-season manatee density (0.18) was 2.3

times greater than the overall cold-season density for western Pinellas County but slightly less than the overall density for the warm season. Fast Overlap was low during the warm season and zero during the cold season.

There is extensive seagrass in this area, particularly along the eastern shoreline and around the string of small islands east of the Long Bayou channel. Based on the manatee survey data, the most important areas is the seagrass area along the eastern shoreline, especially east of the small islands.

Existing Zones: Just to the north, current information indicates there is a local Slow Speed zone (County?) in the vicinity of the Seminole Bridge, War Veterans Memorial Park, and several marinas in Long Bayou.

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. A good northern limit would be the island west of 33rd Avenue North (St. Petersburg). A good southern limit might be the Jungle Prada boat ramp.

S6: Treasure Island Causeway (North). High manatee use and very high Fast Overlap during the warm season; moderate manatee use during the cold season.

Warm-season manatee density (1.15) was 6.4 times greater than the overall density for western Pinellas County and 4.3 times greater than the overall density for the South Region. Warm-season Fast Overlap (0.94) was 8.7 times greater than the overall value for western Pinellas County. Cold-season manatee density (0.18) was 2.4 times greater than the overall cold-season density for western Pinellas County, but was moderate compared to the warm season. Fast Overlap during the cold season was zero.

There is abundant seagrass along the eastern shoreline, with a more expansive patch about 0.25 miles south of the Jungle Prada boat ramp and another expansive patch just north of the Treasure Island Causeway (Central Avenue). There also are smaller patches on either side of the ICW within about 0.4 miles of the causeway. Based on the manatee survey data, the most important areas appear to be within about 1500 feet to the north of the Treasure Island Causeway and the seagrass area east of the ICW along the eastern shoreline, especially between the causeway and 5th Avenue North.

Existing Zones: There is a FWC Slow Speed boating safety zone at the Treasure Island Causeway that extends 500 feet to the north and approximately 2.2 miles to the south to 800 feet southeast of the Pasadena Avenue Bridge / Corey Causeway (shoreline to shoreline, including the ICW but excluding side canals). FWC has received requests from the public for increased protection in this general area.

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. A good northern limit might be the southern boundary of the zone discussed for Long Bayou so that the zone includes the basin and entrance to the Jungle Prada boat ramp. The only portion of the ICW channel included within this potential zone is the 1500-foot section immediately north of the causeway, 500 feet of which is part of the boating safety zone. The area in and west of the ICW could be excluded from the zone to simplify zone marking and reduce the amount of regulation in the ICW. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones and the fact the boating safety zone is in effect year-round.

S7: Treasure Island Causeway (South). High manatee use and very high Fast Overlap during the warm season.

Warm-season manatee density (1.15) was the second highest of any of the areas evaluated (6.4 times greater than the overall density for western Pinellas County and 4.3 times greater than the overall density for the South Region). Warm-season Fast Overlap (1.64) was 15.1 times greater than the overall value for western Pinellas County and higher than all but one other area. Cold-season manatee density was low and Fast Overlap was zero.

There is abundant seagrass near the eastern shoreline as well as patches in the coves and canals to the west. Based on the manatee survey data, the most important area appears to be the seagrass area along the eastern shoreline south of Villagrande Avenue South.

Existing Zones: None.

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. A good northern limit would be the Treasure Island Causeway (Central Avenue). A good southern limit would be a line running southeast from the southern end of the peninsula containing 79th Circle South to the western end of Majestic Way South.

S8: Blind Pass. Moderate manatee use and very high Fast Overlap during the warm season.

Warm-season manatee density (0.37) was 2.1 times greater than the overall density for western Pinellas County and 1.4 times greater than the overall density for the South Region. Warm-season Fast Overlap (0.87) was 8.0 times greater than the overall value for western Pinellas County. Cold-season manatee density and Fast Overlap were zero.

Existing Zones: Current information indicates there are local Slow Speed zones (Treasure Island and St. Petersburg Beach) covering this entire area. The zones may be in effect only on weekends and holidays.

Potential Zone: A warm-season Slow Speed zone may be warranted in all or part of this area. A good northern limit would be Blind Pass Road, although it might be worthwhile to use the same northern boundary of the existing local zones. A good southern limit would be the mouth of Blind Pass. If the local zones are also in effect on weekdays, adding a FWC zone would serve mainly as a backdrop in case the local zones are removed.

S9: Pasadena Avenue. High manatee use and very high Fast Overlap during the warm season.

Warm-season manatee density (0.54) was 3.0 times greater than the overall density for western Pinellas County and 2.0 times greater than the overall density for the South Region. Warm-season Fast Overlap (0.84) was 7.7 times greater than the overall value for western Pinellas County. Cold-season manatee density was low and Fast Overlap was zero.

There is a large seagrass area on the north side of the ICW south of the Pasadena Avenue Bridge and another, more extensive, seagrass area on the south side. North of the Pasadena Avenue Bridge, there is a large seagrass area on the east side of the ICW, south of 80th Street South and west of Sailboat Key Blvd, as well as isolated patches along both shorelines. Based on the manatee survey data, the most important area appears to be the area on the south side of the Pasadena Avenue Bridge, including the seagrass area in the vicinity of the Bay Palms Motel.

Existing Zones: There is a FWC Slow Speed boating safety zone at the Pasadena Avenue Bridge / Corey Causeway that extends approximately 2.2 miles to the north to 500 feet north of the Treasure Island Causeway and 800 feet southeast of the Pasadena Avenue Bridge (shoreline to shoreline, including the ICW but excluding side canals). Current information indicates there are local Idle Speed zones (South Pasadena) in the vicinity of the Pasadena Avenue South bridges and to the east of the ICW east of ICW marker 6, and also possibly along the shorelines of St. Petersburg Beach.

Potential Zone: A Slow Speed zone may be warranted in this area, probably only during the warm season. **Option 1:** The most important area to include is the area south of Pasadena Avenue. A good southern limit would be a line running northeast from the eastern end of peninsula containing 64th Avenue (St. Petersburg Beach) to a point in the water 300 feet south of the island containing South Shore Drive South (South Pasadena). Using these limits, the length of the zone would be about 0.7 miles in the ICW channel (0.5 miles beyond the existing Slow Speed boating safety zone). **Option 2:** In addition to the zone in Option 1, include a portion of the area covered by the boating safety zone to the north, with the northern limit being just south of the Captiva Cay Condominiums (north of Egan Park). Given the existing FWC boating safety zone, this expanded zone would not change the overall amount of regulated area but would serve as a backdrop in case the boating safety zone is ever removed. If a zone is added in this area it will be important to consider how the zone would be posted given the existing zones.

S10: Pasadena Golf Club. High manatee use during the warm season; moderate use during the cold season.

Warm-season manatee density (0.80) was 4.4 times greater than the overall density for western Pinellas County and 3.0 times greater than the overall density for the South Region. Cold-season manatee density (0.29) was 3.8 times greater than the overall cold-season density for western Pinellas County and higher than most other areas evaluated for the cold season outside of the Anclote River Area, but was moderate compared to the warm season. Fast Overlap was low during both seasons.

There is extensive seagrass throughout this area. Most manatee use was documented over or in the immediate vicinity of the seagrass areas, especially in the area just to the south of MarineMax and Pasadena Marina.

Existing Zones: Current information indicates there may be local Slow Speed zones (Gulfport) just to the south in the residential canals associated with the Pasadena Yacht Club, Kipps Colony, and Skimmer Point and possibly to the west along the shorelines of St. Petersburg Beach.

Potential Zone: A Slow Speed zone may be warranted in this area, probably only during the warm season but possibly year-round. None of the zone would affect the ICW, but up to about one mile of the access channels leading to the marinas would be included.

S11: Boca Ciega Isle. High manatee use during the warm season; moderate use during the cold season.

Warm-season manatee density (0.95) was 5.3 times greater than the overall density for western Pinellas County and 3.5 times greater than the overall density for the South Region. Cold-season manatee density (0.32) was 4.3 times greater than the overall cold-season density for western Pinellas County and higher than most other areas evaluated for the cold season outside of the Anclote River Area, but was moderate compared to the warm season. Fast Overlap was low during both seasons.

There is extensive seagrass throughout this area. Most manatee use was documented over or in the immediate vicinity of the seagrass areas, especially in the vicinity of Punta Vista Drive and Boca Ciega Isle.

Existing Zones: Current information indicates there may be local Slow Speed zones along the shorelines of St. Petersburg Beach. FWC has received requests from the public for increased protection in this general area.

Potential Zone: A Slow Speed zone may be warranted in this area, probably only during the warm season but possibly year-round.

S12: Marina Harbour. High manatee use during the cold season; moderate use during the warm season.

Cold-season manatee density for this area (1.06) was 13.9 times greater than the overall cold-season density for western Pinellas County, and higher than any other area evaluated for the cold season outside of the Anclote River Area. Warm-season manatee density (0.24) was 1.4 times greater than the overall density for western Pinellas County but less than all but one of the other areas evaluated in the South Region. Fast Overlap was low during the warm season and zero during the cold season.

These two canals appear to serve as a minor warm water aggregation site for manatees, with as many as 7 manatees seen during a single aerial survey during the cold season and with at least one manatee seen in the canals during 42% of the cold season surveys. Based on the manatee survey data, the most important area may be the canal system north of Maximo Marina (between 42nd Avenue South and 46th Avenue South). There is very little seagrass in the canals but there are isolated patches near the shorelines in the adjacent bay areas.

Existing Zones: Current information indicates there is a local Idle Speed zone (St. Petersburg) in the basin and canal leading to Maximo Marina but not in the other two canals to the north.

Potential Zone: A Slow Speed zone may be warranted in this area, possibly only during the cold season. Adding a FWC zone in the area with local zones would serve mainly as a backdrop in case the local zones are removed.

S13: Indian Key Area. High manatee use during both seasons and high Fast Overlap during the warm season.

Warm-season manatee density (0.68) was 3.8 times greater than the overall density for western Pinellas County and 2.5 times greater than the overall density for the South Region. Warm-season Fast Overlap (0.61) was 5.7 times greater than the overall value for western Pinellas County. Cold-season manatee density (0.73) was 9.6 times greater than the overall cold-season density for western Pinellas County and higher than all but one area evaluated for the cold season outside of the Anclote River Area. Cold-season Fast Overlap (0.08) was 9.3 times greater than the overall cold-season value for western Pinellas County and higher than all but one area evaluated for the cold season outside of the Anclote River Area, but it was low compared to the warm season.

The Frenchman Creek and marina basin appears to serve as a minor warm water aggregation site for manatees, with as many as 10 manatees seen during a single aerial survey during the cold season and with at least one manatee seen in the creek or basin during 42% of the cold season surveys. Based on the manatee survey data, the most important areas may be the seagrass area on the north side of Indian Key and in Frenchman Creek, especially the eastern end of the creek in and around the marina basin east of I-275. Almost all of the cold-season manatee use in this area was in Frenchman Creek or the marina basin. There also are isolated patches of seagrass near the shorelines in the adjacent bay, with particularly abundant seagrass just south of Maximo Park.

Existing Zones: Current information indicates there is a local Idle Speed zone in the Frenchman Creek / Maximo Park area (St. Petersburg or County) and a No Internal Combustion Motor zone surrounding Indian Key (County). There also is a non-regulatory “shallow water caution” zone west of Indian Key. There also may be a local Idle Speed zone in the canal east of Leeland Street South and west of Eckerd College.

Potential Zone: A Slow Speed zone may be warranted in this area, possibly only during the warm season but probably year-round. Option 1: The most important area to include other than the north side of Indian Key and Frenchman Creek is the area connecting these two locations. Option 2: In addition to the zone in Option 1, include the entire area between Indian Key and the island to the north containing Leeland Street South. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones. Adding a FWC zone in the areas with local zones would serve mainly as a backdrop in case the local zones are removed.

S14: Isla del Sol. High manatee use and Fast Overlap during the warm season.

Warm-season manatee density (0.78) was 4.4 times greater than the overall density for western Pinellas County and 2.9 times greater than the overall density for the South Region. Warm-season Fast Overlap (0.34) was 3.1 times greater than the overall value for western Pinellas County. Cold-season manatee density was low and Fast Overlap was zero.

Existing Zones: There is a FWC Slow Speed boating safety zone at the Pinellas Bayway South Bridge to Tierra Verde that extends 1500 to the west and 500 feet to the southeast of the bridge (includes waters in and adjacent to the ICW).

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. If a zone is added in this area it will be important to consider how the zone would be posted given the existing zones.

S15: Tierra Verde. Moderate manatee use during the warm season.

Warm-season manatee density (0.53) was 2.9 times greater than the overall density for western Pinellas County and 2.0 times greater than the overall density for the South Region. Cold-season manatee density (0.18) was 2.3 times greater than the overall cold-season density for western Pinellas County but slightly less than the overall density for the warm season. Fast Overlap was low during both seasons. The low amount of Fast Overlap is likely related to existing local speed zones and non-regulatory zones (see below).

There is extensive seagrass throughout this entire area.

Existing Zones: Current information indicates there is a local Idle Speed zone (County) in the residential canals of Tierra Verde and a No Internal Combustion Motor zone surrounding Tarpon Key. There also is a non-regulatory “shallow water caution” zone east of Tierra Verde to just west of the Skyway (I-275) Bridge.

Potential Zone: A Slow Speed zone may be warranted in this area, probably only during the warm season but possibly year-round. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones, especially the non-regulatory caution zone. To simplify zone marking, it would be worthwhile to align the zone with the boundaries of the existing zones to the extent possible.

S16: Sister Key Area. High manatee use and very high Fast Overlap during the warm season.

Warm-season manatee density (1.05) was 5.9 times greater than the overall density for western Pinellas County and 3.9 times greater than the overall density for the South Region. Warm-season Fast Overlap (1.89) was the highest of any of the areas evaluated (17.4 times greater than the overall value for western Pinellas County). Cold-season manatee density was low and Fast Overlap was zero.

There is extensive seagrass north of Bunces Pass channel in the Sister Key area and waters to the north and west. There also is abundant seagrass along the northern shoreline of Mullet Key (south of the channel). Based on the manatee survey data, the most important area may be a corridor running southwest from Sister Key to the vicinity of the basin on the north shore of Mullet Key.

Existing Zones: Current information indicates there are local zones (County) in this general area. In addition to zones in the immediate vicinity of Tierra Verde to the north, there is a Slow Speed zone immediately south and east of Shell Key, a small No Entry zone south of the Slow Speed zone, and a No Internal Combustion Motor zone east of the Slow Speed and No Entry zones, including around Summer Resort Key. There also is a non-regulatory “seagrass caution” zone west, south, and east of the No Internal Combustion Motor zone, including around Sawyer Key and Sister Key. There also are zones in the Fort De Soto area (see below).

Potential Zone: A warm-season Slow Speed zone may be warranted in this area. The most important area to include is a corridor running southwest from Sister Key to the vicinity of the basin on the north shore of Mullet Key, including about 0.5 miles of the Bunces Pass channel. If a zone is added to this area it will be important to consider how the zone would be posted given the existing zones.

S17: Fort De Soto. High manatee use during the warm season; moderate use during the cold season.

Warm-season manatee density (0.61) was 3.4 times greater than the overall density for western Pinellas County and 2.3 times greater than the overall density for the South Region. Cold-season manatee density (0.31) was 4.0 times greater than the overall cold-season density for western Pinellas County and higher than most other areas evaluated for the cold season outside of the Anclote River Area, but it was moderate compared to the warm season. Fast Overlap was low during both seasons. The low amount of Fast Overlap is likely related to existing local speed zones (see below).

There is extensive seagrass throughout this area.

Existing Zones: Current information indicates there are local speed zones (County) covering this entire area. There is a Slow Speed zone east of Mullet Key south of the Bunces Pass channel (but not in the channel) and two No Internal Combustion Motor zones in the remainder of the area between Mullet Key and the Pinellas Bayway South.

Potential Zone: A Slow Speed zone may be warranted in this area, probably only during the warm season but possibly year-round. Adding a FWC zone would serve as a backdrop in case the local zones are removed.

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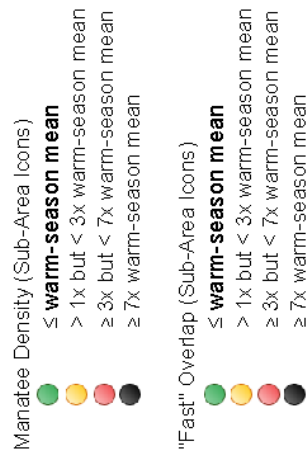
Figure 44 Existing local and state boating regulations; Pinellas Bayway Area

Figure 45 Areas where new protection zones may be warranted; Tierra Verde / Fort De Soto Area (S15 through S17)

Figure 46 Existing local and state boating regulations; Tierra Verde / Fort De Soto Area

Table 6: Manatee Density and Manatee-Boat Spatial Overlap by Area and Selected Sub-Areas

Location	Seasonal Period:				November - March			
	April - October		"Fast"		Manatee		"Fast"	
	Manatee Density [1]	Overlap [2]	Overlap [3]	Overlap Ratio [4]	Density [1]	Overlap [2]	Overlap [3]	Overlap Ratio [4]
North County	0.09	0.33	0.09	0.26	0.05	0.06	0.01	0.12
Andote River Area [a]	0.11	0.60	0.20	0.33	0.58	1.10	0.09	0.08
N1: Spring Bayou Area	0.24	0.33	0.06	0.17	4.63	9.87	0	0
N2: Andote River Mouth	0.44	1.85	0.70	0.38	0.21	0.83	0	0.54
North of Honeymoon Island Cswy [a]	0.07	0.18	0.02	0.11	0.01	0.004	0.002	0.59
Honeymoon Is. Cswy to Clearwater Cswy	0.14	0.37	0.14	0.38	0.03	0.04	0.01	0.19
N3: Memorial Cswy (North)	0.77	3.84	1.50	0.39	0.18	0.55	0	0.25
Clearwater Cswy to Indian Rocks Cswy	0.12	0.76	0.22	0.29	0.01	0.01	0.001	0.20
N4: Indian Rocks Cswy (North)	0.38	0.74	0.38	0.51	0	0.002	0	0
South County	0.27	0.66	0.13	0.20	0.10	0.08	0.01	0.13
Indian Rocks Cswy to Stuart Cswy	0.46	0.94	0.22	0.23	0.04	0.07	0.01	0.20
S1: The Narrows	0.53	2.00	1.01	0.51	0.17	0.29	0	0.13
S2: Redington Shores	1.36	2.34	0.24	0.10	0	0	0	--
Stuart Cswy to Treasure Is. Cswy	0.26	1.07	0.22	0.21	0.06	0.08	0.01	0.18
S3: Bay Pines (West)	1.11	1.22	0.31	0.25	0.03	0.0003	0.0003	1.00
S4: Johns Pass	0.24	5.88	0.50	0.09	0.05	0.09	0.05	0.60
S5: Long Bayou (South)	1.09	1.54	0.04	0.03	0.18	0.13	0	0
S6: Treasure Island Cswy (North)	1.15	2.64	0.94	0.36	0.18	0.14	0	0
Treasure Is. Cswy to Pinellas Bayway	0.28	0.44	0.17	0.38	0.14	0.07	0.02	0.26
S7: Treasure Island Cswy (South)	1.15	2.19	1.64	0.75	0.0004	0	0	--
S8: Blind Pass	0.37	1.93	0.87	0.45	0	0	0	--
S9: Pasadena Avenue	0.54	1.60	0.84	0.52	0.07	0.05	0	0
S10: Pasadena Golf Club	0.80	0.56	0.08	0.15	0.29	0.22	0.0002	0.001
S11: Boca Ciega Isle	0.95	0.78	0.04	0.05	0.32	0.03	0.01	0.29
S12: Marina Harbour	0.24	0.07	0.0005	0.01	1.06	0.32	0	0
South of Pinellas Bayway [b]	0.25	0.61	0.09	0.14	0.11	0.08	0.01	0.07
S13: Indian Key Area	0.68	1.28	0.61	0.48	0.73	0.38	0.08	0.20
S14: Isla del Sol	0.78	1.61	0.34	0.21	0.09	0.16	0	0
S15: Tierra Verde	0.53	0.38	0.03	0.08	0.18	0.05	0.0000	0.0003
S16: Sister Key Area	1.05	5.94	1.89	0.32	0.11	0.16	0	0
S17: Fort de Soto	0.61	0.38	0.03	0.07	0.31	0.23	0.0000	0.0000
Western Pinellas County	0.18	0.49	0.11	0.22	0.08	0.07	0.01	0.12



[1] Manatee Density: Mean manatee density per survey for the 2008-10 period (ArcGIS kernel density using a 325 m search radius)

[2] Overlap: Mean manatee-boat spatial overlap value (ArcGIS kernel density for manatees times the kernel density for boats)

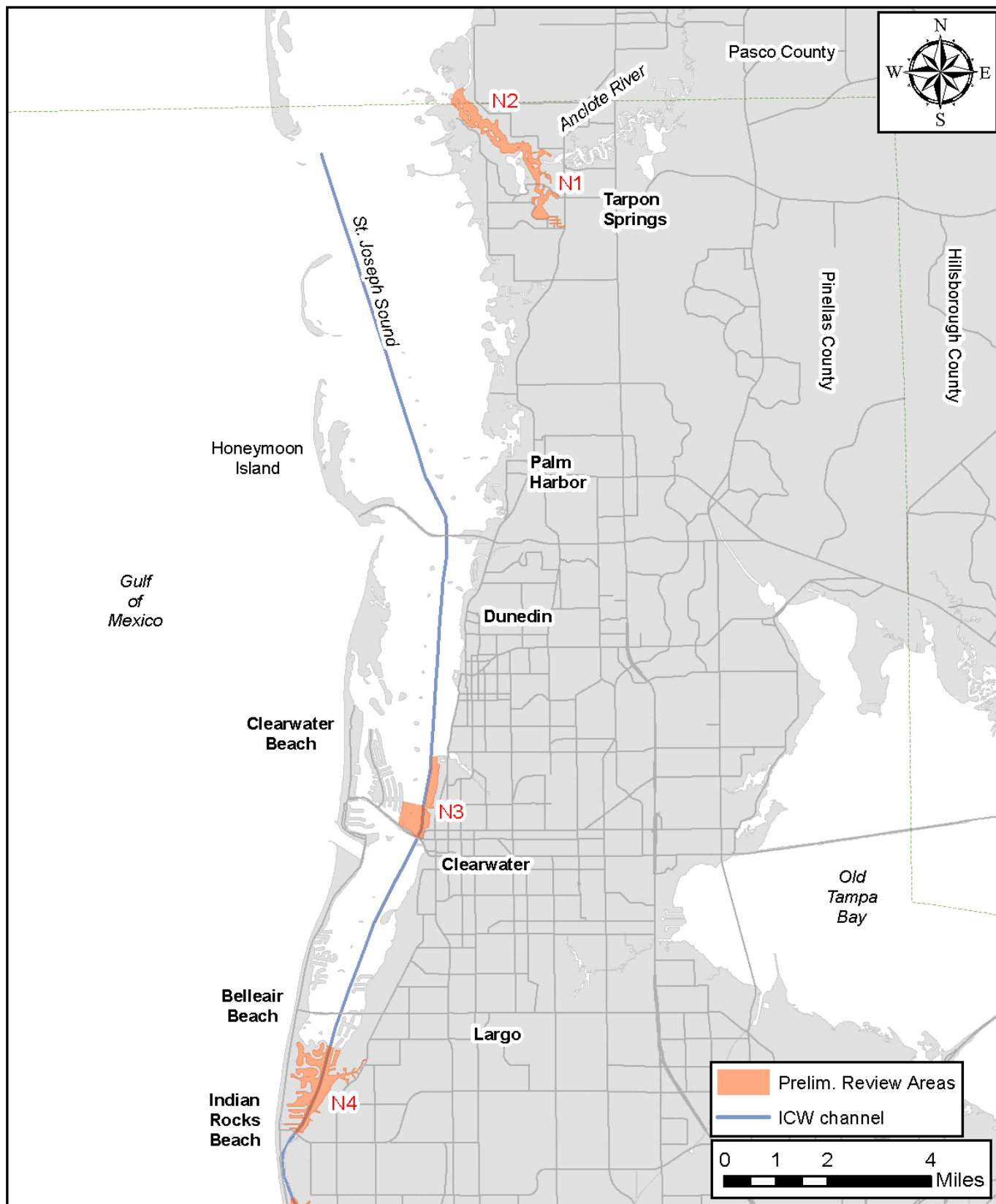
[3] "Fast" Overlap: Mean manatee-boat spatial overlap value using only boats with observed speeds of "planing," "cruising," or "plowing" (ArcGIS kernel density for manatees times the kernel density for "fast" boats)

[4] Overlap Ratio: Ratio of Fast Overlap to Overlap (Column [3] value divided by Column [2] value). In some cases this ratio may appear incorrect based on the Overlap and Fast Overlap values but this is due to the Overlap and Fast Overlap values only being shown to two decimal places.

[a] Includes some area in southern Pasco County

[b] Includes very small portion of Hillsborough County

Note on Manatee Density (Column [1]): These values are the mean kernel density values calculated in ArcGIS and are not the same as the values shown for the aerial survey summary table. The kernel density calculation includes a distance decay function and the water grid was used as a mask (so means are based on only values that occurred over water). The density values reported in the aerial survey summary table were calculated by dividing the number of manatees seen within each area by the amount of area surveyed. In most cases, the kernel density process results in lower density values than the mean densities reported in the aerial survey summary table.



Areas where protection zones may be warranted (April 2014)
Western Pinellas County (North)

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Figure 29

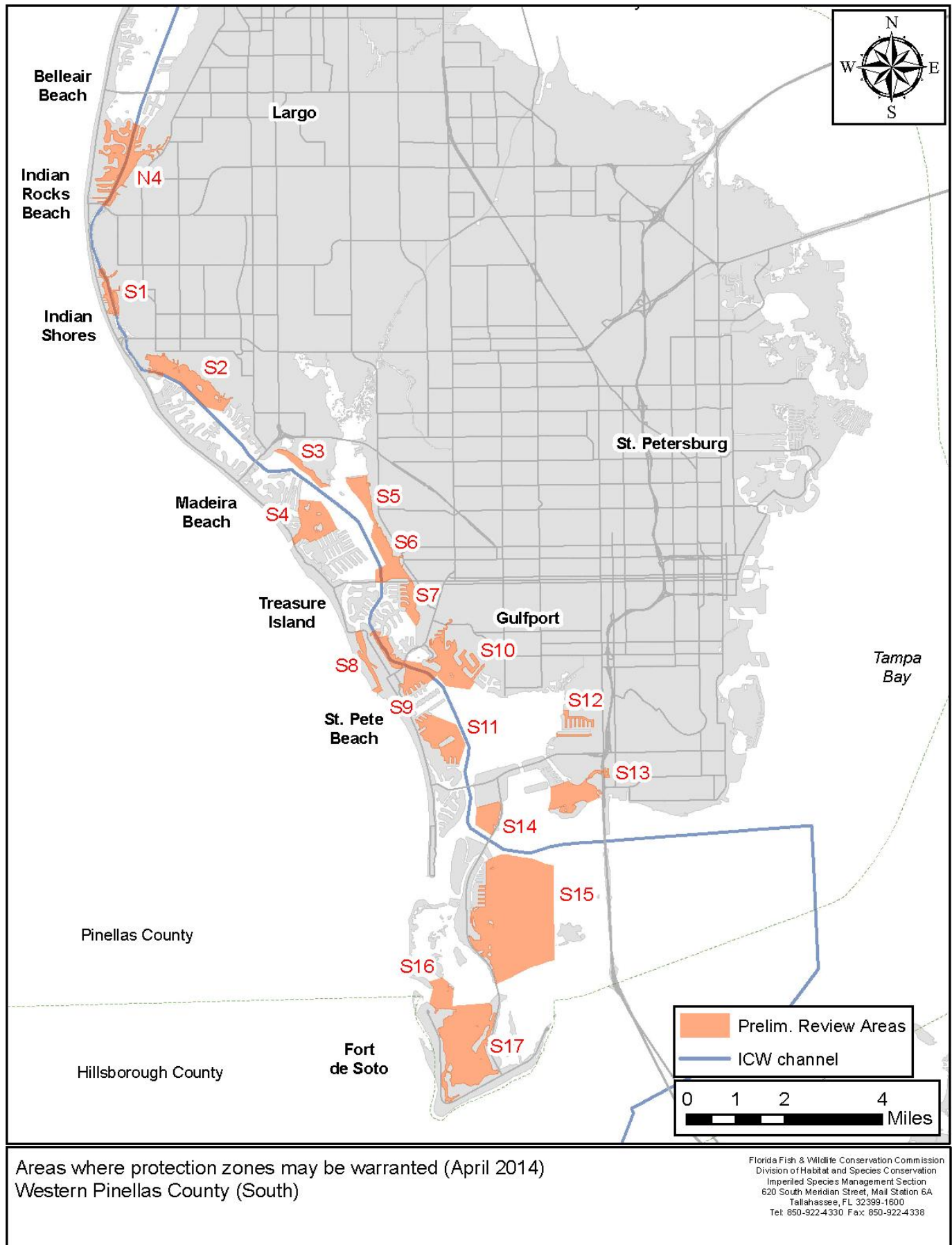
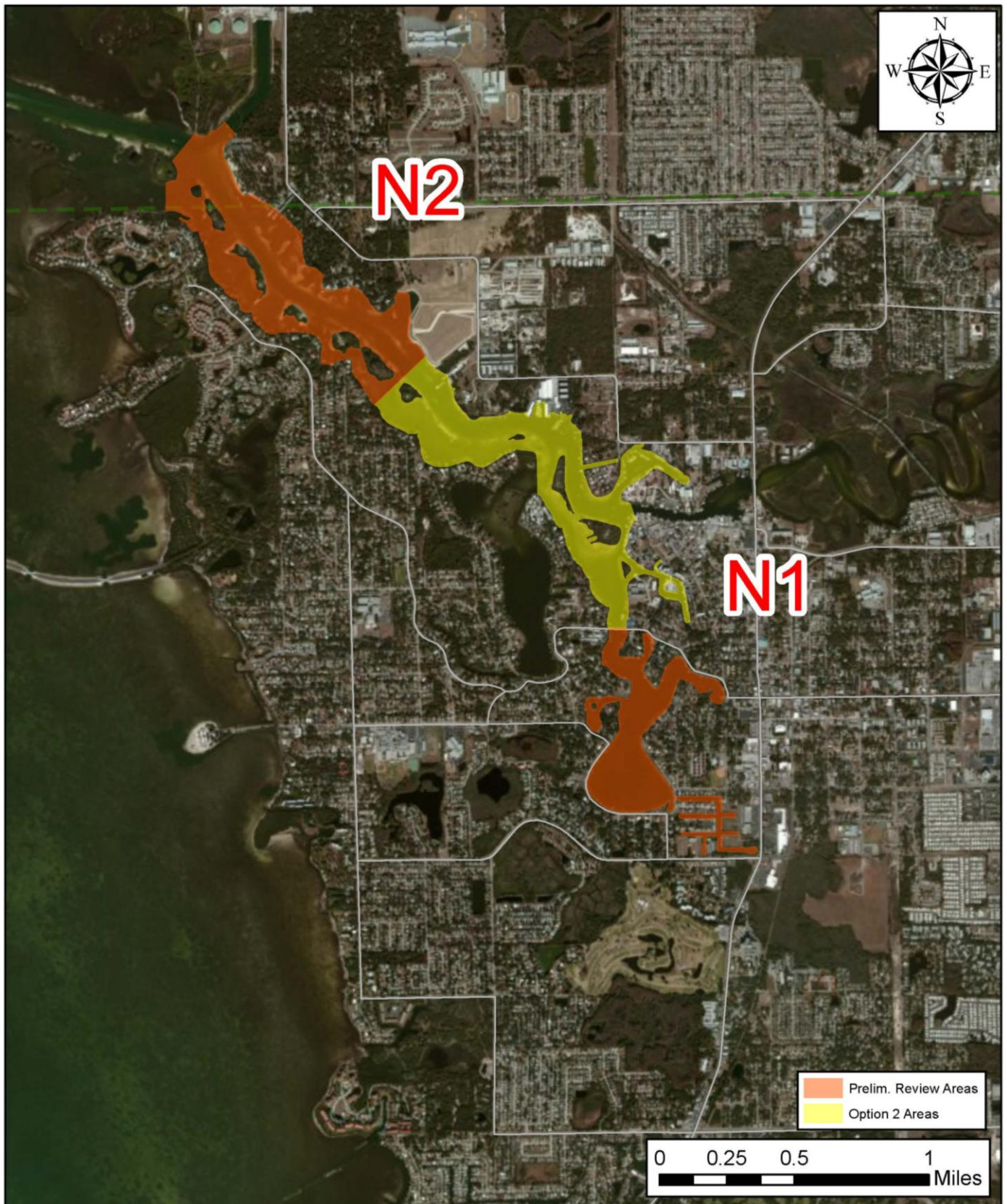


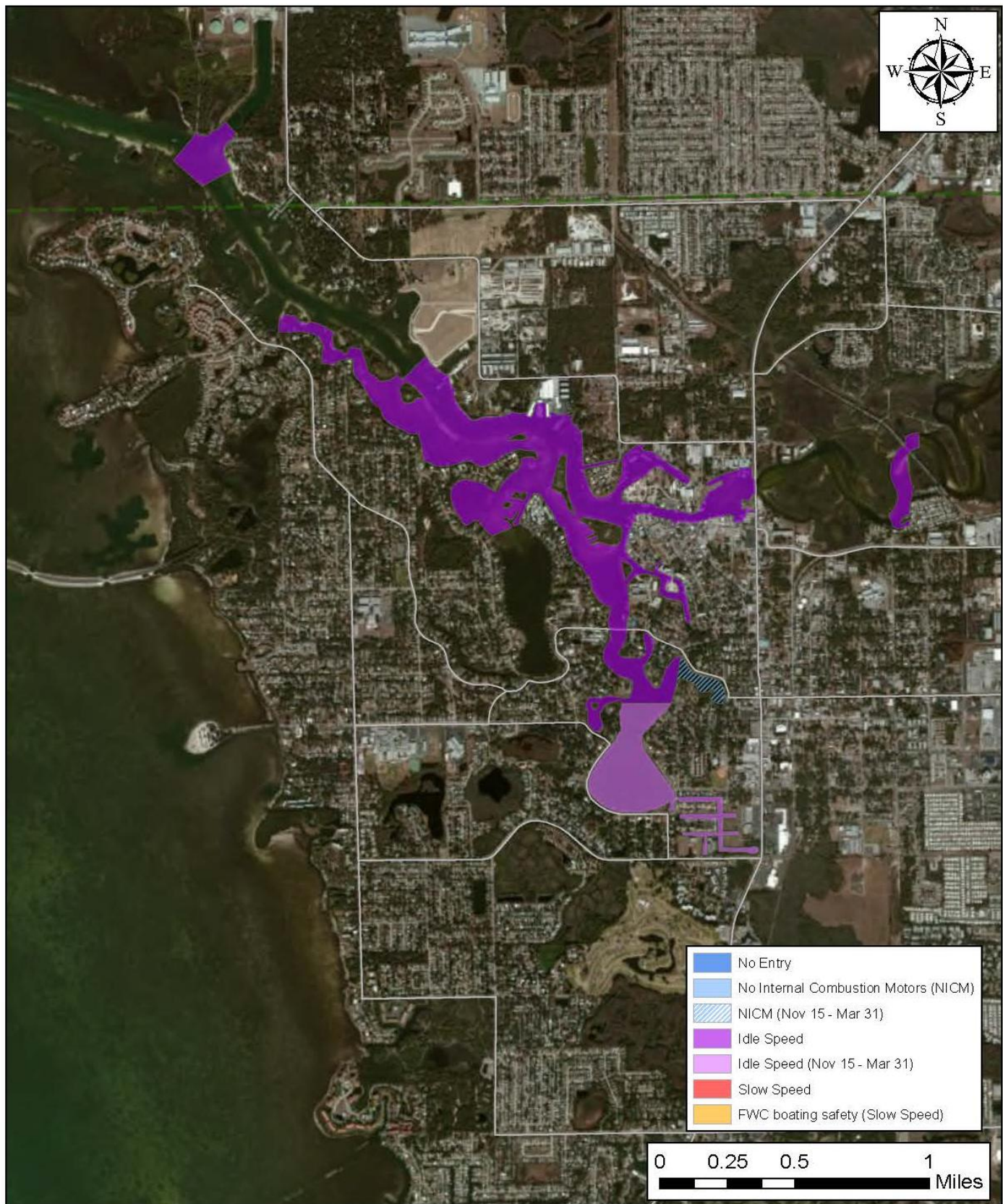
Figure 30



Areas where protection zones may be warranted (April 2014)
Anclote River Area (Review Areas N1 and N2)

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Figure 31



Existing local and state boating regulations (November 2013)
Anclote River Area

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Figure 32



Areas where protection zones may be warranted (April 2014)
Clearwater Area (Review Area N3)

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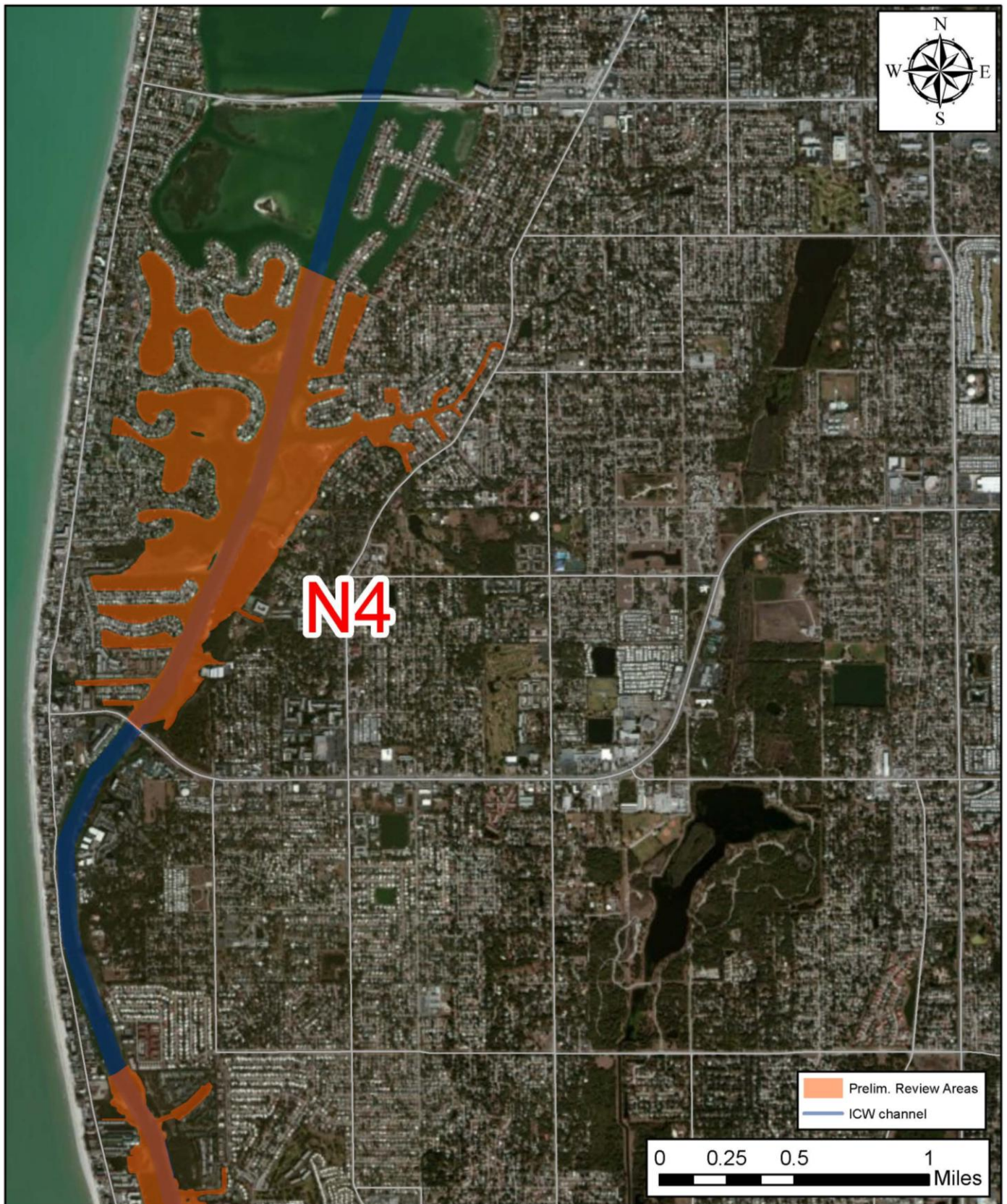
Figure 33



Existing local and state boating regulations (November 2013)
Clearwater Area

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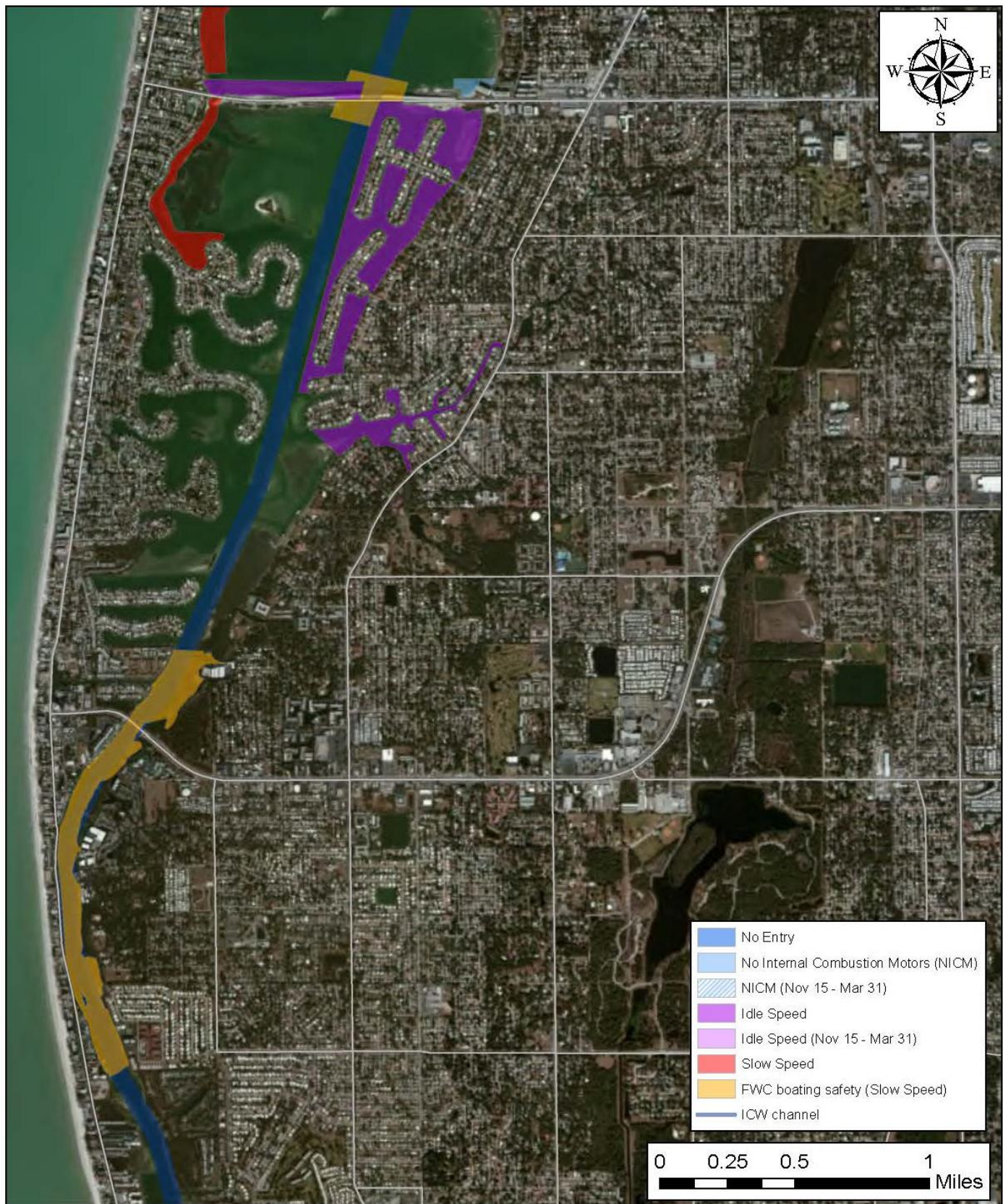
Figure 34



Areas where protection zones may be warranted (April 2014)
 Indian Rocks Beach Area (Review Area N4)

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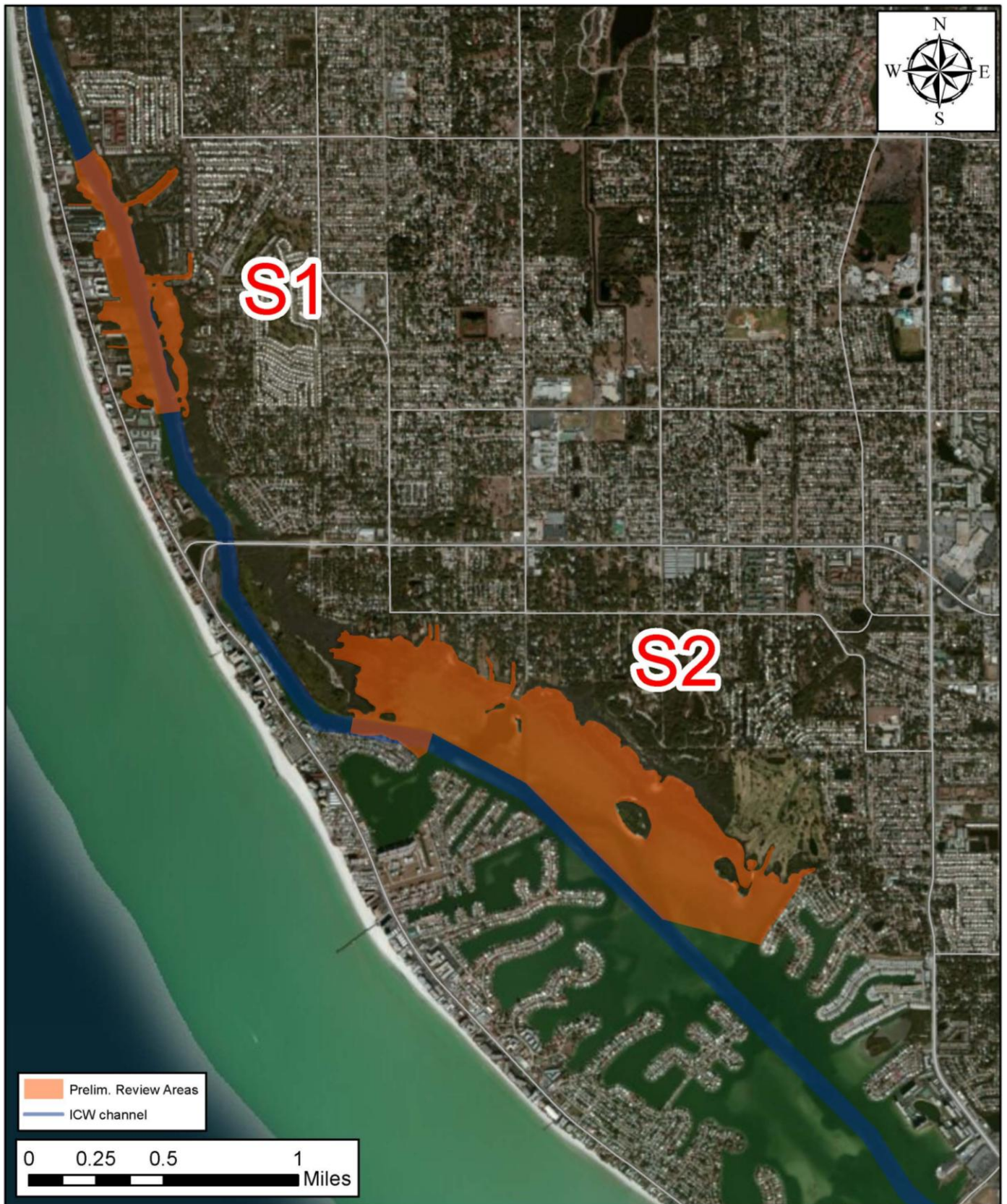
Figure 35



Existing local and state boating regulations (November 2013)
Indian Rocks Beach Area

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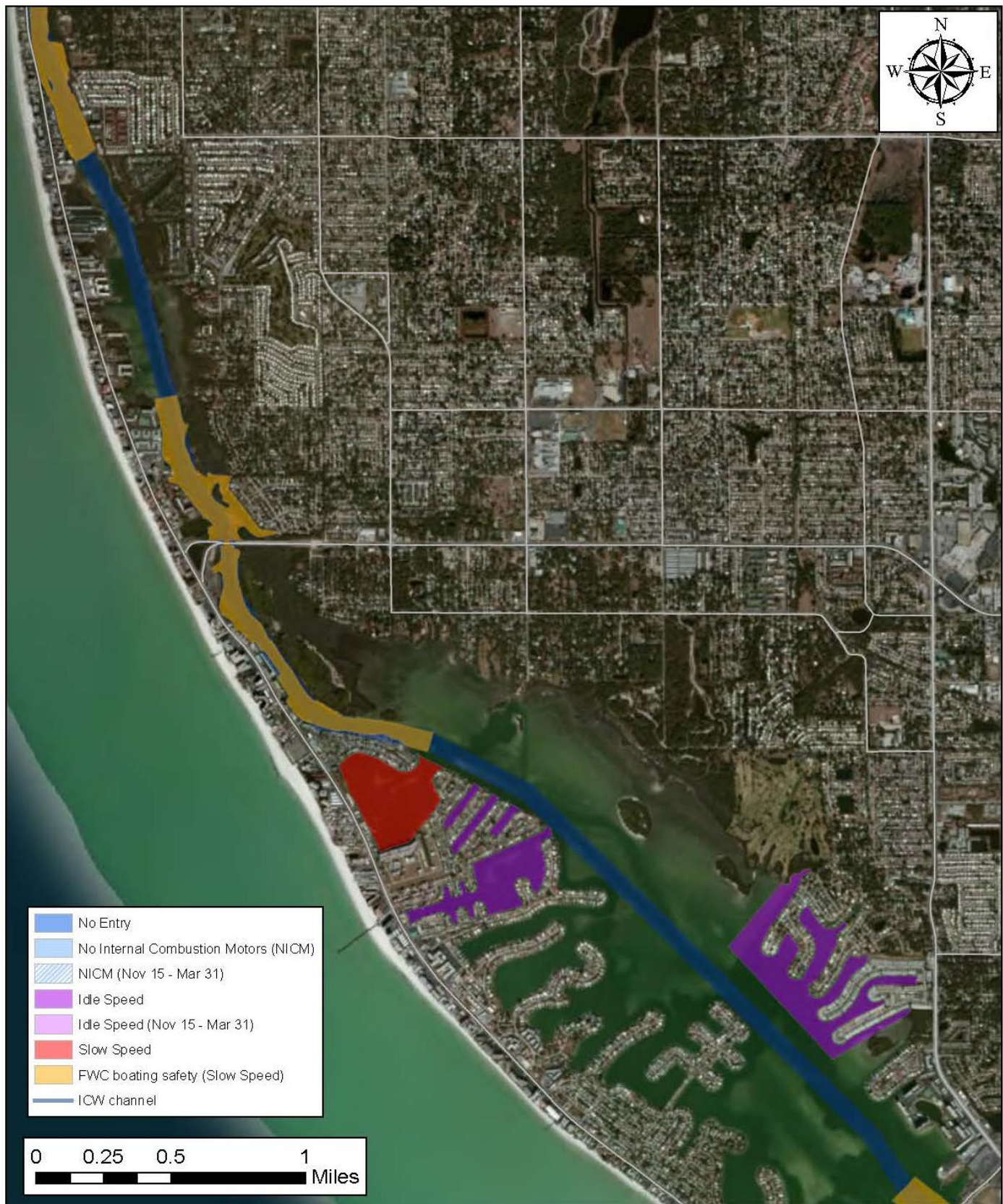
Figure 36



Areas where protection zones may be warranted (April 2014)
Narrows / Redington Shores Area (Review Areas S1 and S2)

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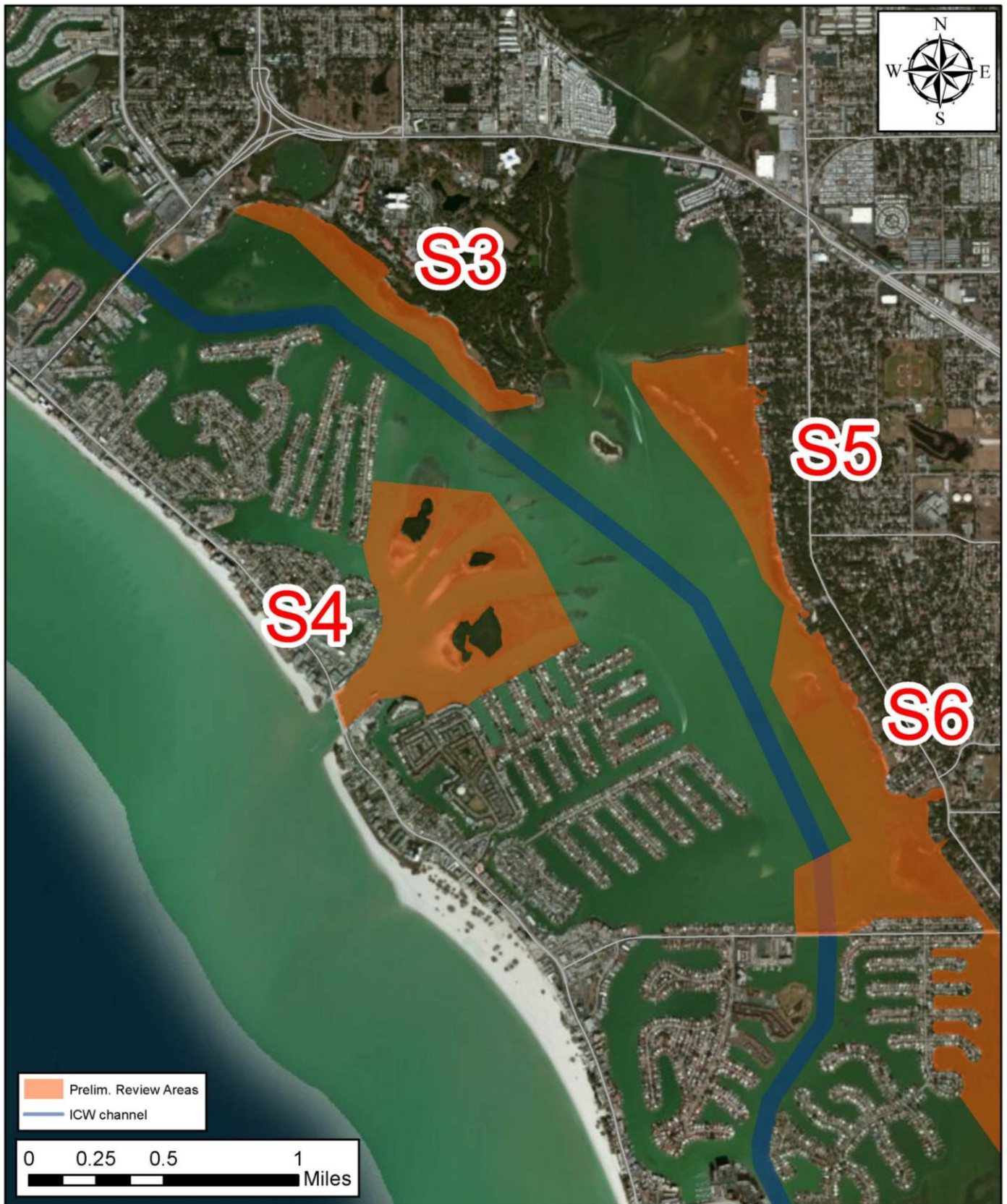
Figure 37



Existing local and state boating regulations (November 2013)
Narrows / Redington Shores Area

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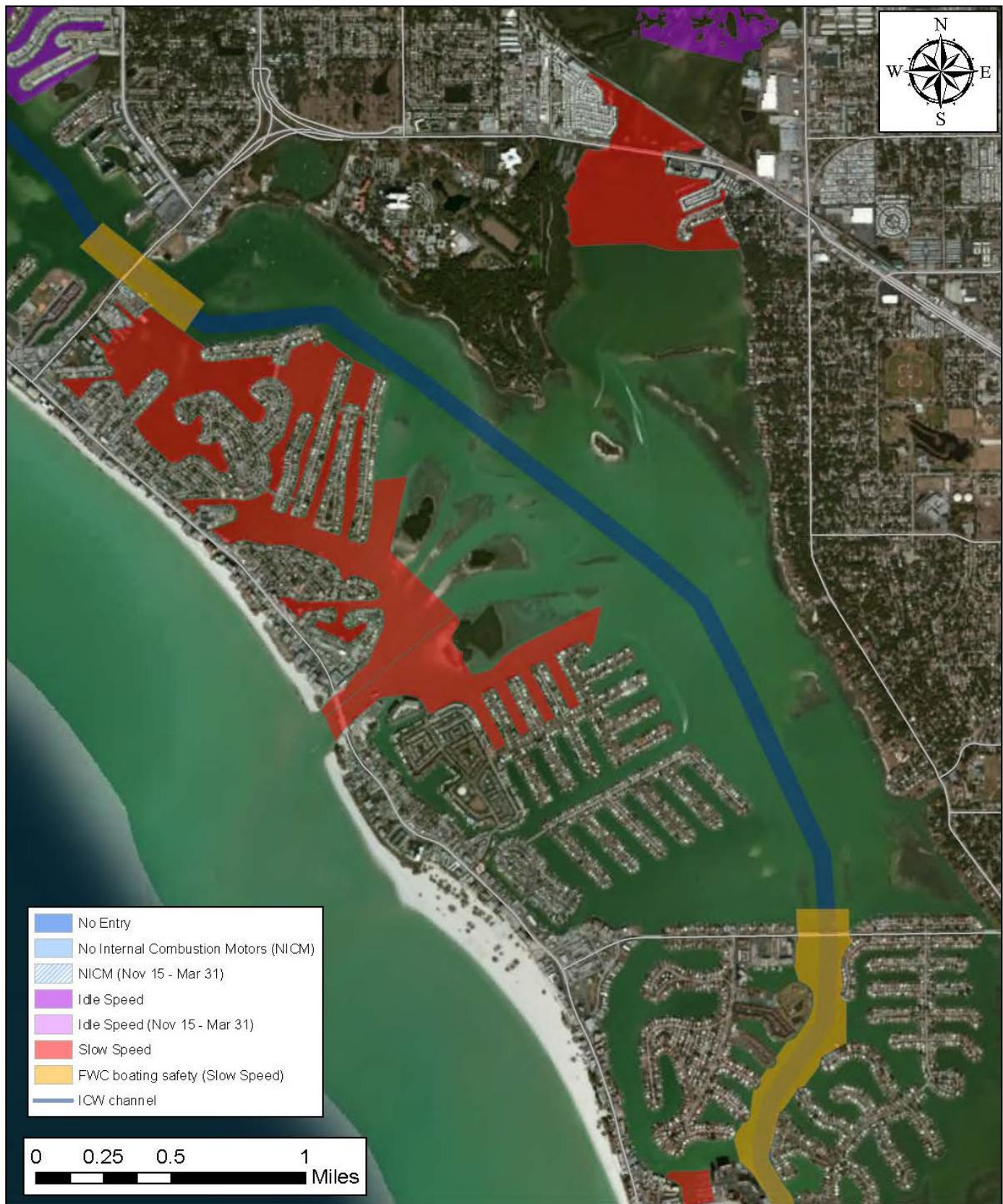
Figure 38



Areas where protection zones may be warranted (April 2014)
 Johns Pass Area (Review Areas S3 through S6)

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Figure 39



Existing local and state boating regulations (November 2013)
Johns Pass Area

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Figure 40

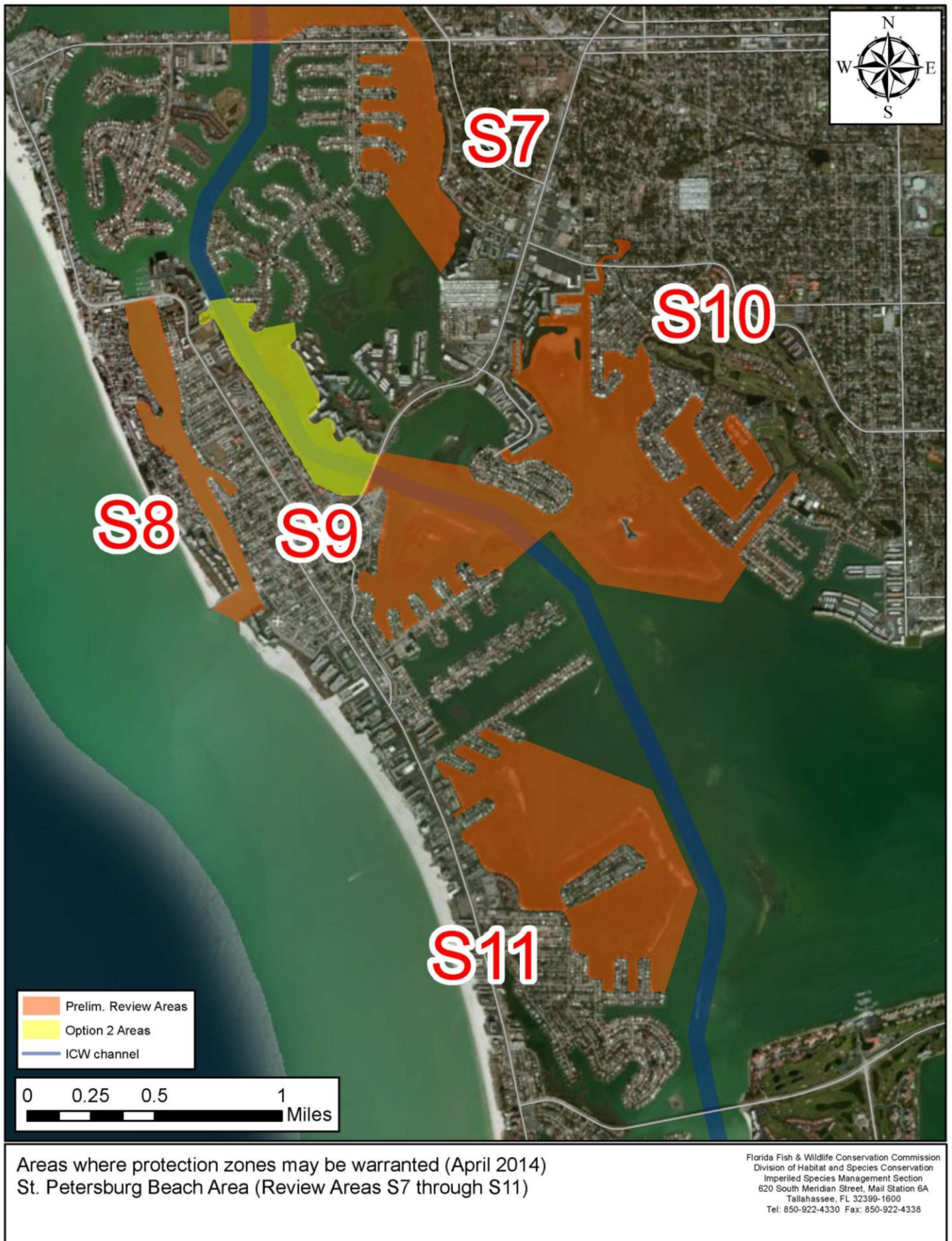
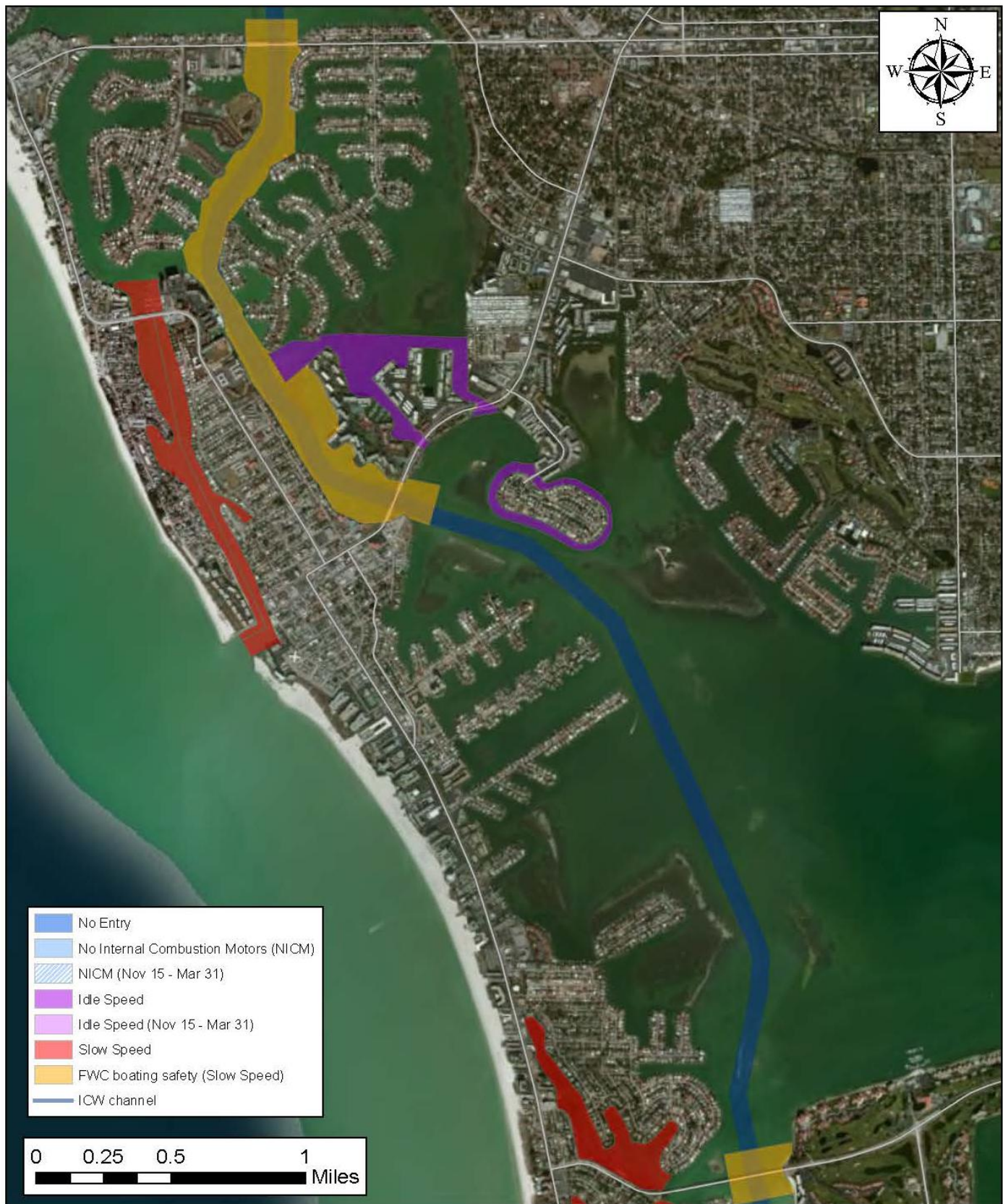


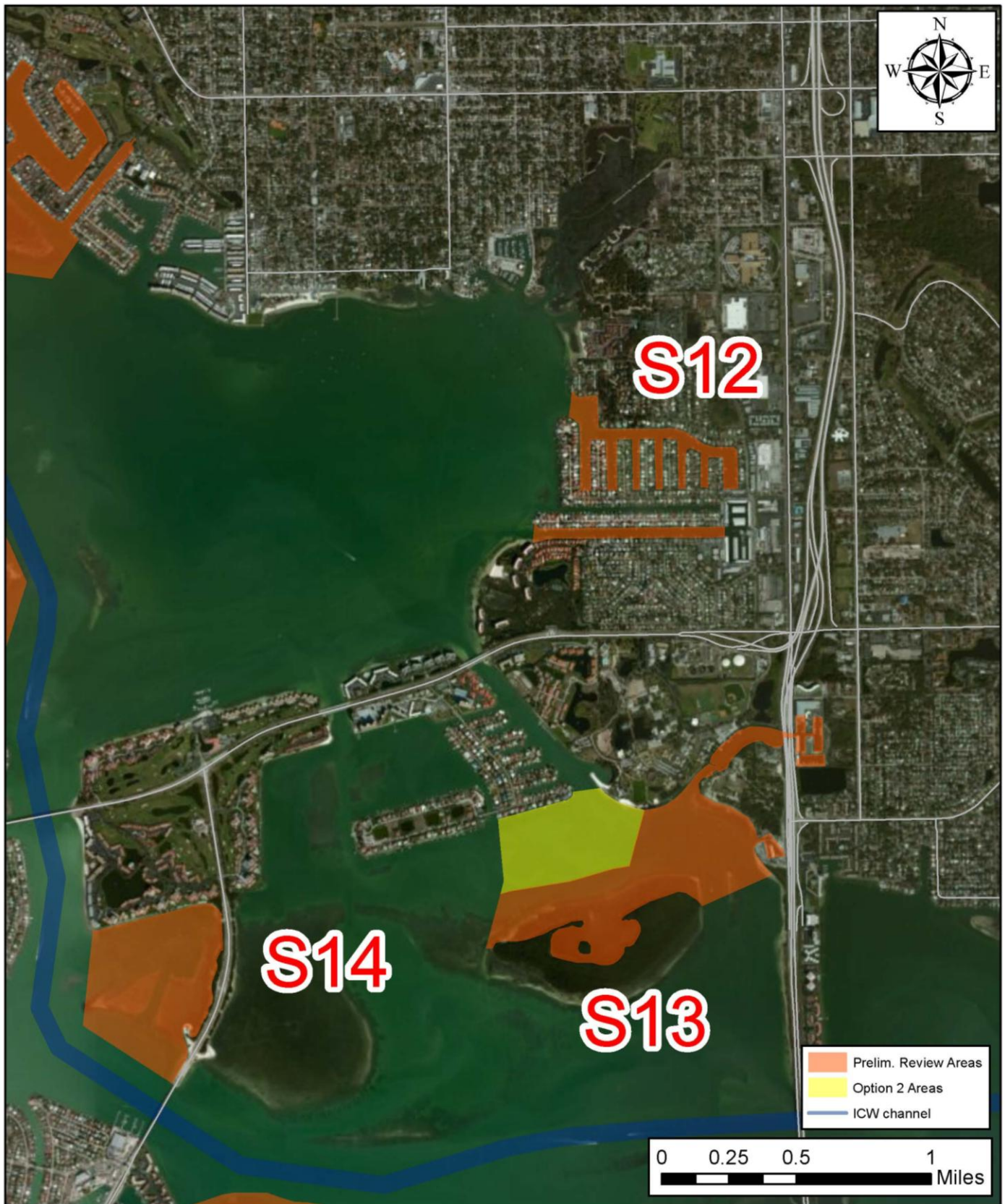
Figure 41



Existing local and state boating regulations (November 2013)
St. Petersburg Beach Area

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Figure 42



Areas where protection zones may be warranted (April 2014)
Pinellas Bayway Area (Review Areas S12 through S14)

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Figure 43



Existing local and state boating regulations (November 2013)
Pinellas Bayway Area

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Figure 44



Areas where protection zones may be warranted (April 2014)
 Tierra Verde / Fort De Soto Area (Review Areas S15 through S17)

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Figure 45



Existing local and state boating regulations (November 2013)
Tierra Verde / Fort De Soto Area

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Figure 46