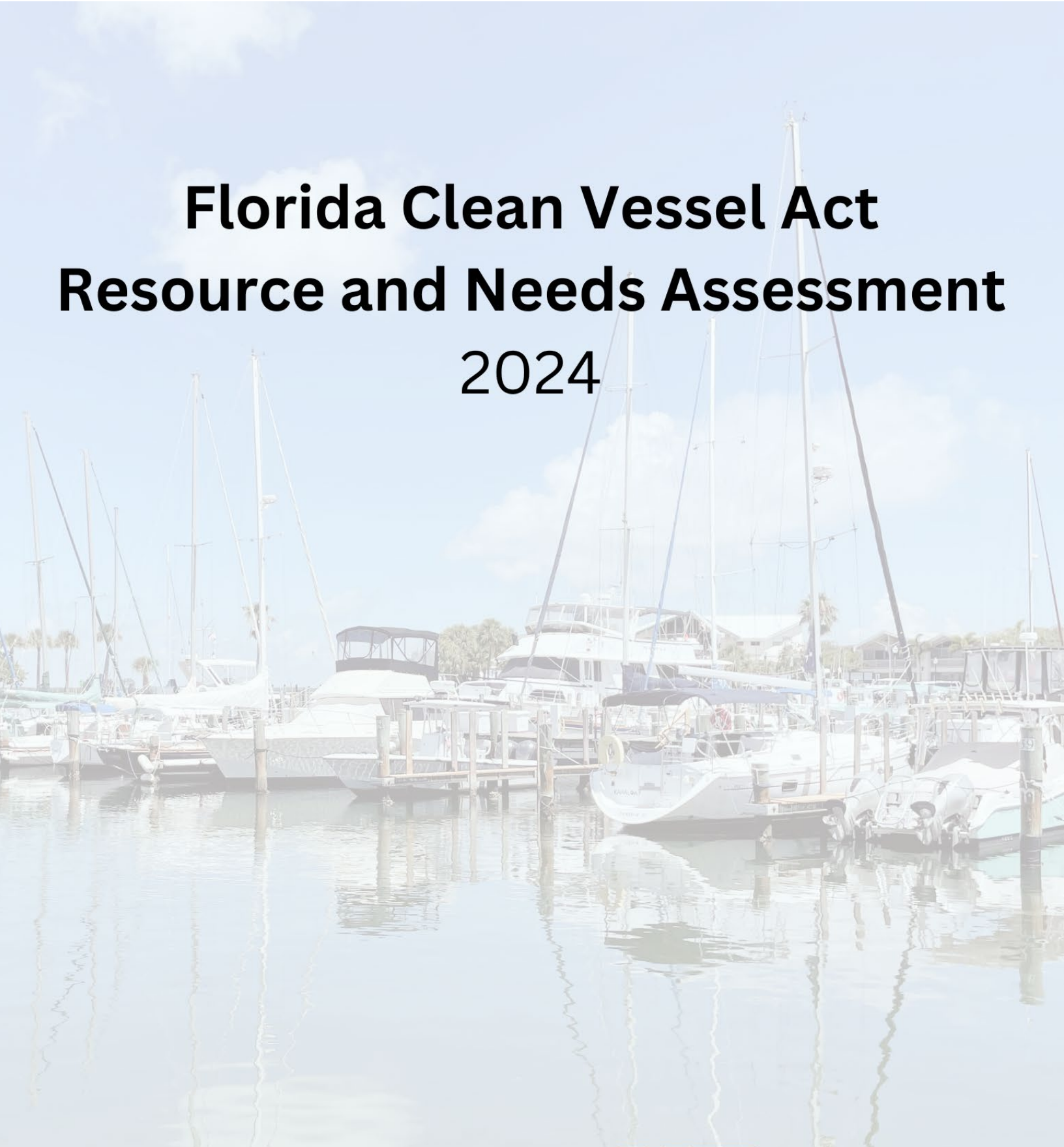
Florida Clean Vessel Act Resource and Needs Assessment

2024



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ACHRONYMS & TERMS

Accommodations (Accom.)- The number of vessel storage spaces a facility, with direct access to the water, offers. This includes slips (on the water with or without a lift), moorings, and dry storage with on-site access to a launch ramp or lift.

CVA- Clean Vessel Act

DEP- Florida Department of Environmental Protection

FWC- Florida Fish and Wildlife Conservation Commission

MSD- Marine Sanitation Device

Private pumpout- A pumpout that is only available to tenants, slip holders, or members of that facility. Private pumpouts may be located at marinas owned by a public municipality.

Public pumpout- A pumpout that is open to any member of the public for their use, with or without a fee. These may be located at private facilities, that allow visitors solely for use of the pumpout.

RNA- Resource and Needs Assessment

EXECUTIVE SUMMARY

Florida has the highest level of recreational boating when compared to other states. Providing the boating community with the knowledge and infrastructure they need to properly dispose of sewage waste is the primary goal of the Clean Vessel Act (CVA) program, housed within the Florida Department of Environmental Protection (DEP) and administered by the U.S. Fish and Wildlife Service.

To ensure limited CVA funding is utilized in the areas where there's the greatest need, Florida Sea Grant has conducted a comprehensive CVA Resource and Needs Assessment (RNA). This RNA includes an education portion conducted through an online survey to determine the boating community's current knowledge, attitude, and behavior as it relates to boat sewage topics. The RNA also includes an infrastructure portion to determine if there are sufficient sewage disposal resources (pumpouts and port-a-potty dump stations) for the boating community.

Results of the survey show that most boaters are ecologically conscious, care about the waters they recreate in, and want to "do the right thing". The survey showed that 81% of participants have some method of holding waste onboard. However, only 32% were able to correctly identify both Atlantic and Gulf coastal waters as locations where it's illegal to discharge untreated sewage. Of those that correctly identified coastal waters on the Gulf, only 23% were able to correctly identify the 9-mile discharge limit, most participants (50%), incorrectly believe the Gulf coast limit to be 3 miles. This shows the need for more education regarding sewage discharge laws. Additionally, survey participants indicate the need for more conveniently located and free sewage pumpout stations. Boats at moorings and anchored out were specifically identified as in need of a convenient disposal option, such as mobile pumpout vessels.

The infrastructure results show that Florida needs additional pumpouts. A new target ratio of 1 pumpout for every 500 boats ≥ 26' is recommended. Florida currently has 487 pumpouts throughout the state, 302 of which are public and 185 are private. To meet the recommended target ratio, 58 additional pumpouts are needed, 21 on inland waterways, and 37 on coastal waterways.

Further investigation is needed to determine if additional port-a-potty dump stations are warranted. Currently there are seven port-a-potty dump stations in Florida, one of which is private. Based on anecdotal feedback from facilities with existing dump stations they rarely, if ever, get utilized. It is suspected that boaters are unfamiliar with what dump stations are and where these facilities exist.

BACKGROUND

In 1992, the Clean Vessel Act (CVA) was signed into law to reduce water pollution by prohibiting vessels from discharging raw sewage into fresh water or coastal saltwater. The act established a federal grant program, administered by the U.S. Fish and Wildlife Service, to fund sewage disposal facilities. In Florida, the CVA Grant Program is housed within the Florida Department of Environmental Protection (DEP). Since 1994, DEP has provided grants to boating facilities across the state to install pumpout facilities and to purchase pumpout vessels. To further improve water quality in Florida's waterways, DEP's Clean Boater Program funds educational programs for boaters through the CVA grant. Since 2021, DEP has contracted with the University of Florida, Florida Sea Grant, to implement a comprehensive, state-wide CVA education program.

Florida Sea Grant has undertaken a CVA Resource and Needs Assessment (RNA) to ensure efforts and limited resources are utilized in areas where there is the largest need. The CVA RNA is broken down into two main sections, one to focus on education and another to focus on infrastructure.

The education portion of the CVA RNA was conducted by an online boater survey to determine boat demographics (i.e. boat type, boat length, MSD type, storage location, etc.), boater knowledge of laws, and awareness and perception about CVA topics. The results provide baseline data and help direct educational programming where it's most needed. Additionally, some of the boat demographic data was utilized for the infrastructure study.

The infrastructure portion of the CVA RNA includes a study to determine if the state is meeting the US Fish and Wildlife Service CVA Technical Guideline recommendation of "at least one pumpout station and dump stations should be provided for every 300 to 600 boats over 16 feet length overall." The infrastructure portion is further broken down into a pumpout section and a dump station section. There is currently no up-to-date study that determines if and where more sewage disposal resources are needed throughout the state to meet this recommendation. This study helps ensure the boating community has the resources they need to properly dispose of waste and protect water quality.

CVA EDUCATION

OBJECTIVES

- Determine the boating community's knowledge of boat sewage laws.
- Determine the boating community's attitudes regarding environmental issues as they relate to water quality impacts from sewage.
- Determine the boating community's behavior as it relates to sewage disposal practices.
- Collect Florida boat demographic data (boat length, head type, storage location, etc.)

METHODS

An online survey was developed using Qualtrics software and was available in English and Spanish. The research survey was determined to be exempt by the University of Florida's Institutional Review Board. The survey flow feature was utilized to provide respondents a more customized survey experience. Based on their answers to specific questions, survey participants were asked only questions that are applicable to them. Therefore, not all questions were asked to each participant. The survey was beta-tested to ensure the questions were not misinterpreted, did not use confusing language, or were not otherwise problematic. The survey was also reviewed and updated where needed to avoid leading questions and compound questions.

Due to limited resources the survey was conducted via convenience sampling. The survey was widely distributed to the boating community. Promotion of the survey was conducted via organic social media posts, direct outreach at boating events, displaying posters at boating facilities, garnering press coverage, and requesting distribution support from partnering entities such as US Coast Guard Auxiliary, local municipalities, boating facility managers, and boating organizations. Additionally, paid online and social media advertising was implemented.

The survey was open from August 2, 2023, to June 2, 2024, to allow for continued distribution and participation. Survey responses were reviewed, all duplicate responses were identified, and one of the duplications was removed from analysis. Additionally, the Qualtrics software feature that scores the

likelihood of a response to be a bot and therefore fraudulent was enabled, responses that had positive fraud scores were reviewed closely and responses were removed where appropriate. The Qualtrics ballot box stuffing feature was also enabled; however, there were no instances of ballot box stuffing detected.

RESULTS

Based on survey results, some participants 46% and 41% respectively, know it is illegal to discharge untreated sewage in Atlantic and Gulf coastal waters and 32% correctly selected both Atlantic and Gulf coastal waters, 22% of participants don't think it's legal to discharge untreated boat sewage anywhere, and 21% responded that they 'do not know'. Of those that correctly identified coast waters, most (78%) respondents know of the 3-mile discharge limit on the Atlantic coast. However, only 23% of respondents were able to correctly identify the 9-mile discharge limit on the Gulf coast, most participants (50%), incorrectly believe the Gulf coast limit to also be 3 miles. As for waste that has been treated through a type I or type II Marine Sanitation Device most participants correctly identified locations where it is illegal to discharge, 84% of participants correctly identify No Discharge Zones and Freshwater lakes, reservoirs, and impoundments, and 79% correctly identify rivers that cannot be accessed from the ocean, Gulf, or the waterways of other states.

The boating community's attitudes about sewage waste was investigated by asking for their level of agreement or disagreement with three statements. Based on the results of this study, most participants, 92% agree that 'nutrients from sewage in the water can trigger harmful algal blooms that can kill plants and animals' and 90% agree that 'high concentration of sewage in an area can seriously deplete dissolved oxygen in the water'. Additionally, 72% of participants disagree with the statement 'raw sewage discharged into the water from recreational boats is not significant enough to cause people to get sick'.

Finally, as an indication of boater behavior, participants were asked in the past year, how often they discharged boat sewage at various places. 91% of participants reported they never discharge sewage in waters less than 3 miles offshore or inland waterways, 71% never discharge sewage in waters between 3 and 9 miles offshore, and 68% never discharge sewage more than 9 miles offshore. Additionally, 43% of participants indicate they always use a landside facility such as a pumpout, port-a-potty dump, or landside toilet, to dispose of their waste.

See Appendix 1 for all questions asked as part of the survey and response data.

DISCUSSION

Objective: Determine the boating community's knowledge of boat sewage laws.

Results show the need for additional targeted education to increase knowledge. Given that 69% of participating boat owners have an MSD and a total of 81% have some method of holding waste onboard, it is important to educate boaters specifically on where it is illegal to discharge untreated waste. Special attention should be given to an educational effort regarding the Gulf coast 9-nautical mile discharge limit. Additionally, educational efforts should incorporate federal agencies such as the Environmental Protection Agency and Coast Guard, to ensure consistent messaging regarding the 9-nautical mile discharge limit.

Objective: Determine the boating community's attitudes regarding environmental issues as they relate to water quality impacts from sewage.

Based on results participants are ecologically conscious as it relates to water quality and sewage pollution. They realize the negative impacts sewage has on dissolved oxygen and nutrients in the water. And although most boaters (72%) recognize the effect boat sewage can have on human health, there is less consensus regarding this issue. This is likely because boat sewage was specifically identified, and there may exist the "I'm just one boater" mentality. To overcome this, it may be valuable to share information regarding how concentrated boat waste is compared with municipal waste.

Objective: Determine the boating community's behavior as it relates to sewage disposal practices.
Since this is a survey, it is self-reporting which, based on psychological research, tends to be biased and may not reflect actual behavior and is best when combined with other data collection. Due to resource limitations, additional data was unable to be collected regarding boater's waste management behaviors, for this study. However, participants did admit to discharging waste within state wasters. Community Based Social Marketing is a technique that specifically addresses barriers and benefits to desired behaviors and may be implemented to increase pumpout usage and decrease overboard discharges.

Objective: Collect Florida boat demographic data (boat length, head type, storage location, etc.)
The percentage of boaters with a Marine Sanitation Device (MSD) appears to have increased when comparing this study which found 69% of participants that own a boat have an MSD onboard (installed or portable) to the 2005 study (Swett et al.) that found 41.2% of survey respondents to have an MSD on their boat[1]. Additionally, there exists a trend that smaller boats are being equipped with more amenities, including MSDs. The increase in the number of boats with an MSD highlights the importance of continued education and infrastructure for sewage management to meet the rising demand.

Based on survey results and feedback it's clear most boaters are ecologically conscious, care about the waters they recreate in, and want to "do the right thing". However, survey participants indicate the need for more conveniently located, and free sewage pumpout stations. Additionally, there's sited concerns regarding waste from moored and anchored vessel. Mobile pumpout vessels were cited in the open comments section of the survey by 23 participants as a convenient pumpout solution.

To ensure the boating community has the information they need to properly dispose of waste, survey participants were asked to rank sources of information they would use to find the location of a pumpout. Results clearly indicate staff at a marina or yacht club, navigation guides in onboard electronics or mobile apps, and fellow boaters as the top three sources of information. Educational efforts should take this into consideration for successful development and implementation.

[1] Swett R., Fann S., DeLaney J. 2005. An assessment of Florida boaters and their awareness of the Clean Vessel Act and Clean Marina Program. Florida Sea Grant.

CVA INFRASTRUCTURE

OBJECTIVES

- Recommend a target sewage pumpout ratio.
- Prioritize counties in need of additional sewage pumpouts.
- Determine if and where additional dump stations may be needed.

METHODS

The capacity of marine sanitation infrastructure (resources) was compared with estimated demand (need) to determine if and where additional resources should be considered. Resources that were assessed include marine sewage pumpouts (stationary, in-slip, mobile carts with holding tanks, and mobile vessels) and marine port-a-potty dump stations. The need was determined by quantifying vessel accommodations with direct access to the water (marinas, yacht clubs, fish camps, hotel/resorts, recreational vehicle (RV) and mobile home parks, condominiums, boat docks behind private residential homes, etc.). This includes slips (on the water with or without a lift), moorings, and dry storage with on-site access to a launch ramp or lift. Vessel accommodations were quantified based on two size classes (<26' and ≥ 26'). The size class delineation was determined primarily because of Florida Statue 327.53(1) which requires every vessel 26 feet or more with an enclosed cabin with berthing facilities to be equipped with a toilet. Data was collected on infrastructure as opposed to the number of vessels in a geographic area, which is highly variable.

For the purpose of the infrastructure portion of this study, a vessel does not include personal watercrafts, kayaks, canoes, row boats, stand-up paddle boards, or the like. Generally, these smaller watercrafts are used for shorter periods of time, do not have any type of toilet onboard, and do not need access to sewage disposal resources.

A comprehensive list of boating facilities that provide on water accommodations for recreational vessels and facilities that provide dry storage with on-site water access was compiled. This task utilized data from Florida Fish and Wildlife Conservation Commission's (FWC) Boating and Waterways Program, DEP's Clean Boating program, Florida Sea Grant's Pumpout Nav data collection effort, and web-based investigation. These boating facilities were contacted, and data collected regarding the number of vessels their facility can accommodate by size class, and the number, type, and public or private availability of sewage disposal resources at their facility. If a facility was unreachable via phone, data was collected via satellite imagery and web information when available.

Non-boating facilities that also offer boating accommodations (hotel/ resorts, RV and mobile home parks, condominiums, etc.) were included in the data set to determine need. FWC data was the primary source of vessel accommodation quantities for these facilities, i.e. they had the number of slips. The data was then used in conjunction with data collected from the boater survey to extrapolate the number of vessels per size class. This was done by using the boat length data from the survey to determine the percentage of boats in each length class and applying that percentage to get the number of accommodations per size class at each facility.

All infrastructure data was mapped and compared with satellite imagery to identify and fill in any potential data gaps. During map analysis the number of boats accommodated at private residential docks was estimated and size class extrapolated using boater survey data results.

To extrapolate the number of vessels per size class based on boater survey results only survey respondents that selected they keep their vessel at a home dock or condominium wet slip were considered. Therefore, this process was based on limited data and may have inaccurately skewed data to a specific size class. Additionally, the same calculation was applied for the entire state due to limited data, therefore any potential geographic differences in size class distribution were not discernable.

All data was reviewed for quality assurance; facilities were removed if they are not appropriate for this study, such as restaurants with wet-slip for customers only, facilities that are out of business, any facility that accommodates only commercial vessels, etc.

Only facilities that provide direct access to the water were included in this analysis. It is assumed that vessels stored on land without water access, whether it's at a remote storage facility or on a trailer at a home, will need to utilize a launch ramp that is open to the public or pay for use of a private launch ramp.

This research is focused on boating infrastructure, which has the benefit of capturing accommodations for both Florida resident and visitor/transient populations. However, boaters who choose to anchor-out without the use of a managed mooring field are not captured in this study due to the difficulty in determining the number and size of vessels. Although some vessels that anchor-out are occupied and may need access to sewage disposal resources, many are also anchored-out as a means of long-term storage or over-wintering, and it is therefore appropriate that these vessels are not included in this study as they are not occupied and in need of sewage disposal resources.

Data analysis was broken up into two categories: Pumpout and Dump Station.

PUMPOUT

Based on survey results, 87% of boats ≥ 26' may need access to a pumpout because they have an installed toilet with a holding tank, 10% may need a dump station because they have a port-a-potty, bucket, or marine composting toilet, and 3% do not need any type of sewage disposal resource.

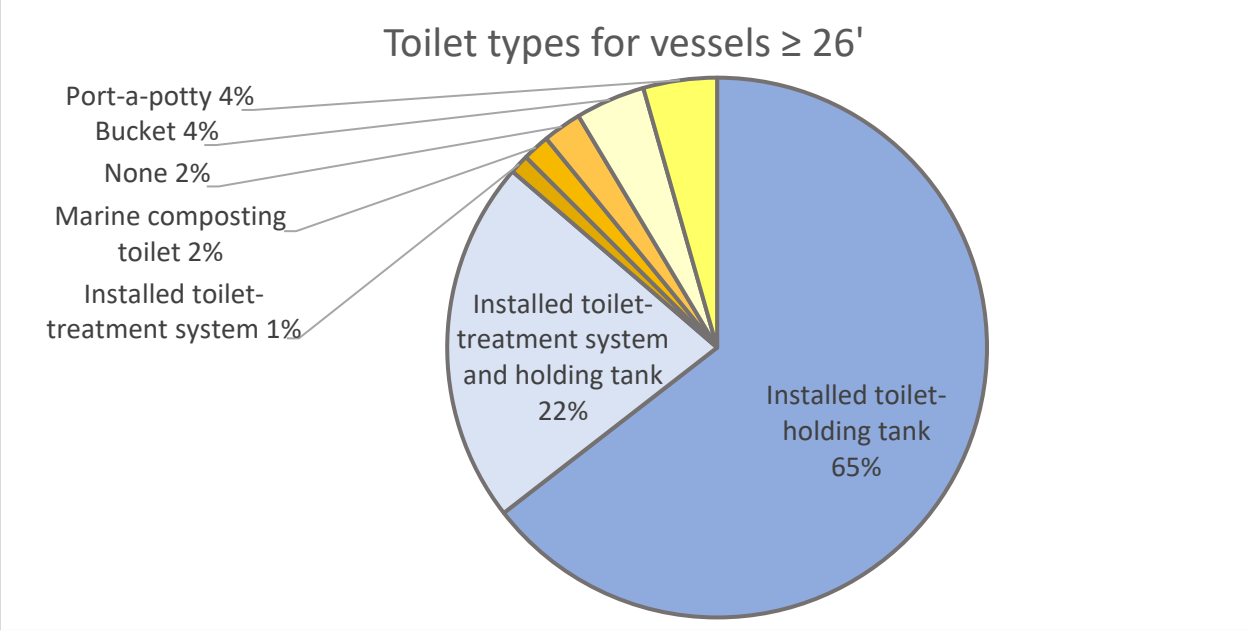

Figure 1. Toilet type based on survey respondents with a vessel ≥ 26 feet.

Objective: Recommend a target sewage pumpout ratio.
The Department of the Interior's (DOI) Technical Guidelines suggest "As a general guide, at least one pumpout station and dump station should be provided for every 300 to 600 boats." Because this equipment serves two separate populations of the boating community it was determined for practical programmatic purposes to develop a target ratio specifically for pumpouts. Based on the technical guideline's recommended ratio, existing pumpout ratios for counties, and boater survey feedback it was determined the target ratio should be 1 pumpout for every 500 boats ≥ 26'. However, more ambitious ratios such as 1 pumpout for every 300 boats, may be appropriate based on more localized data.

The existing pumpout ratio was determined for each county with a publicly available pumpout by calculating the total number of accommodations for vessels ≥ 26' without access to a private pumpout and dividing that by the total number of publicly available pumpouts in the county. The number of additional pumpouts needed to meet the recommended ratio of 1 pumpout for every 500 boats was also calculated, if the county has more than 250 boating accommodations ≥ 26'. If a county has less than 250 boating accommodations with direct access to the water, they were not included in this analysis.

Additionally, the data was analyzed to determine how many pumpouts are needed to meet the target ratio in coastal areas versus inland waterways. This was done because there is both a coastal and inland CVA grant available to states from the federal government.

Finally, the total number of boating facilities and number of boating facilities without a pumpout station was tallied for each county. This can be used as a general indication to help determine if opportunity exists for more pumpouts to be installed at facilities that do no currently have one.

DUMP STATION
Due to the low number of dump stations statewide and feedback suggesting low use of these facilities a dump station target ratio was not developed. Instead, this report simply provides the number of accommodations for boats <26 feet, the number of existing dump stations, and the number of launch ramp parking spaces that can accommodate a trailer, per county. Launch ramp data was obtained from FWC Florida Boat Ramp Inventory.

RESULTS
PUMPOUT
Results show a total of 487 pumpouts in Florida, 302 of which are publicly accessible meaning they are available for any boater in need of a pumpout and 185 are private meaning they are only available to tenants, slip holders, or members of that facility. When analyzed at the county level, an additional 58 pumpouts are needed to meet the target ratio of 1 pumpout for every 500 boats ≥ 26'. The breakdown of these 58 pumpouts needed are 21 on inland waterways and 37 on coastal waterways.

Objective: Prioritized counties in need of additional sewage pumpouts.

Table 1. Prioritized list of counties in need of additional sewage pumpouts.

Region	County	Pumpout Ratio	Additional Public Pumpouts Needed	Boating Facilities without Pumpouts	Total Boating Facilities
SW	Charlotte	1,398	9	8	15
NW	Santa Rosa	1,027	2	4	5
SW	Pasco	931	3	6	9
NE	Lake	785	2	13	16
NE	Martin	712	4	22	31
SW	Collier	695	6	19	44
SW	Manatee	688	4	10	21
SW	Lee	670	6	32	53
SW	Glades	594	1	4	7
SW	Pinellas	586	4	37	64
SE	Palm Beach	569	3	23	46
NW	Citrus	542	1	4	7
NW	Walton	534	1	2	4
SW	Hillsborough	511	1	9	20
NE	Flagler	507	1	0	3
SE	Dade	501	1	16	57
SW	Polk		2	6	6
NE	Okeechobee		1	2	2
NE	Orange		1	2	2
NW	Hernando		2	6	6
NW	Marion		1	1	1
NW	Taylor		1	3	3
SW	Highlands		1	1	1

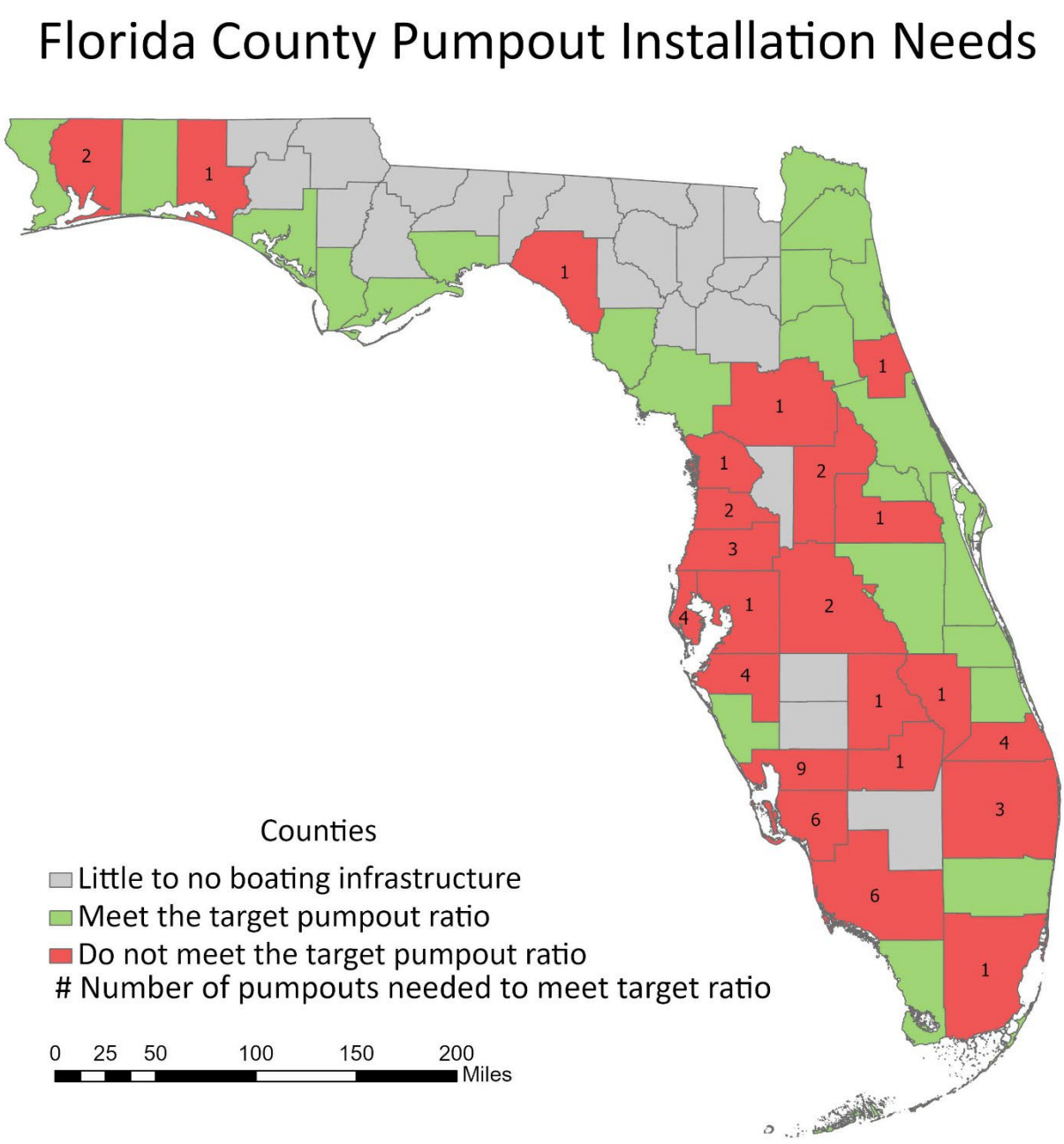

Figure 2. Map of Florida county pumpout installation needs.

DUMP STATIONS

Results show a total of seven port-a-potty dump stations available statewide, one of which is private, the remaining six are publicly available.

Table 2. Florida county infrastructure for vessels more likely to require the use of a port-a-potty dump station.

Region	County	Dump Stations	Accom. for boats <26'	Launch Trailer Parking Spots
NE	Baker			24
NE	Bradford			36
NE	Brevard	1	4,038	1141
NE	Clay		628	191
NE	Columbia			46
NE	Duval	*2	3,199	712
NE	Flagler		887	106
NE	Hamilton			65
NE	Indian River		1,135	503
NE	Lake		2,688	708
NE	Martin		3,479	454
NE	Nasau		378	205
NE	Okeechobee		660	350
NE	Orange		799	298
NE	Osceola		339	229
NE	Putnam		1,362	243
NE	Saint Johns		934	211
NE	Saint Lucie		1,512	284
NE	Seminole		276	135
NE	Union			28
NE	Volusia		2,323	954
NW	Alachua			320
NW	Bay		1,581	417
NW	Calhoun			23
NW	Citrus		1,898	426
NW	Dixie		323	170
NW	Escambia		1,343	548
NW	Franklin		625	320
NW	Gadsden		145	50
NW	Gilchrist			95
NW	Gulf		80	166
NW	Hernando		789	158
NW	Holmes			26
NW	Jackson			200
NW	Jefferson			33
NW	Lafayette			77

Region	County	Dump Stations	Accom. for boats <26'	Launch Trailer Parking Spots
NW	Leon			160
NW	Levy		312	218
NW	Liberty			76
NW	Madison			29
NW	Marion		467	344
NW	Okaloosa		2,092	325
NW	Santa Rosa		591	516
NW	Sumter		182	158
NW	Suwannee			93
NW	Taylor		314	265
NW	Wakulla		634	210
NW	Walton		561	292
NW	Washington			259
SE	Broward		6,366	1166
SE	Dade	1	4,796	1099
SE	Monroe	2	8,068	522
SE	Palm Beach		4,517	1484
SW	Charlotte		4,245	326
SW	Collier		5,804	543
SW	Desoto		20	97
SW	Glades		226	501
SW	Hardee			39
SW	Hendry		145	187
SW	Highlands		959	510
SW	Hillsborough		2,787	469
SW	Lee		8,499	766
SW	Manatee		3,283	257
SW	Pasco		1,866	227
SW	Pinellas	1	8,259	1547
SW	Polk		1,567	1010
SW	Sarasota		3,694	469
	State-wide Total	*7	101,675	24,116

*Includes 1 private dump station.

DISCUSSION

PUMPOUT

Based on results, Florida Sea Grant and DEP should focus education about the availability of CVA funding for installation of additional sewage pumpouts in the Southwest region of Florida. The Southwest region shows the greatest need, with 37 additional pumpouts required to meet the target ratio. Although the

need is greatest in the Southwest region, it is important to ensure other regions of the state continue to get the support they need. Every region needs additional pumpouts.

Many factors determine the location of new pumpout installations. The primary factor is generally the willingness of a facility to install and maintain the pumpout. Other factors may include water depth, ease of access for boaters, boater need, available space, and access to a sewage line or landside holding tank. The location of existing pumpouts in reference to Aquatic Preserves (Figure 3) should also be considered when promoting the CVA grant for installation of new facilities.

Continuing to ensure pumpouts are in working condition is essential. Pumpout equipment is subject to marine environmental conditions and will over time need maintenance and repairs. The state CVA program offers Operations and Maintenance (O&M) grants and should continue to do so to ensure installed pumpout equipment is maintained and available to the boating public. Additionally, it's essential to think about pumpouts as a network. To ensure resiliency, this network should continue to provide the boating community with reasonably available disposal options when one disposal unit is not available due to maintenance or repairs.

Considering pumpouts as a network and for the convenience of the boating public, having available more pumpouts than are needed to meet the recommended ratio, is best. More ambitious target ratios may be desirable.

Table 3. Various target pumpout ratios and the additional number of pumpouts needed state-wide to reach that ratio.

Target Ratio Pumpout: Boats ≥ 26'	Additional Pumpouts Needed
1:600	29
1:500	58
1:450	83
1:400	120
1:300	249

Along with the number of additional pumpouts needed per county, Table 1 also includes the number of boating facilities without a pumpout. As a reminder, boating facilities for this report, include those that have on water accommodations for recreational vessels and facilities that provide dry storage with on-site water access. There are two counties, Flagler and Charlotte, that have more pumpouts needed than there are boating facilities without pumpouts. This is due to the high number of private boat accommodations (including condominium docks and docks behind private homes) relative to the number of boating facilities. If further county specific investigation reveals additional pumpouts are indeed needed, other facilities such as bait docks, fuel docks, and launch ramps may be considered as an appropriate place for the installation of a pumpout.

The results and recommendations regarding pumpout installation presented in this report are solely based on quantitative data. The particularities that exist within a county were beyond the scope of this RNA. Therefore, a county may not show a need for additional pumpouts based on this report, but in reality, may have a great need for additional pumpouts. Additionally, the reverse of this statement may be true, a county that shows a great need for additional pumpouts, may in fact, not need as many as presented.

Pumpout Availability and Aquatic Preserves

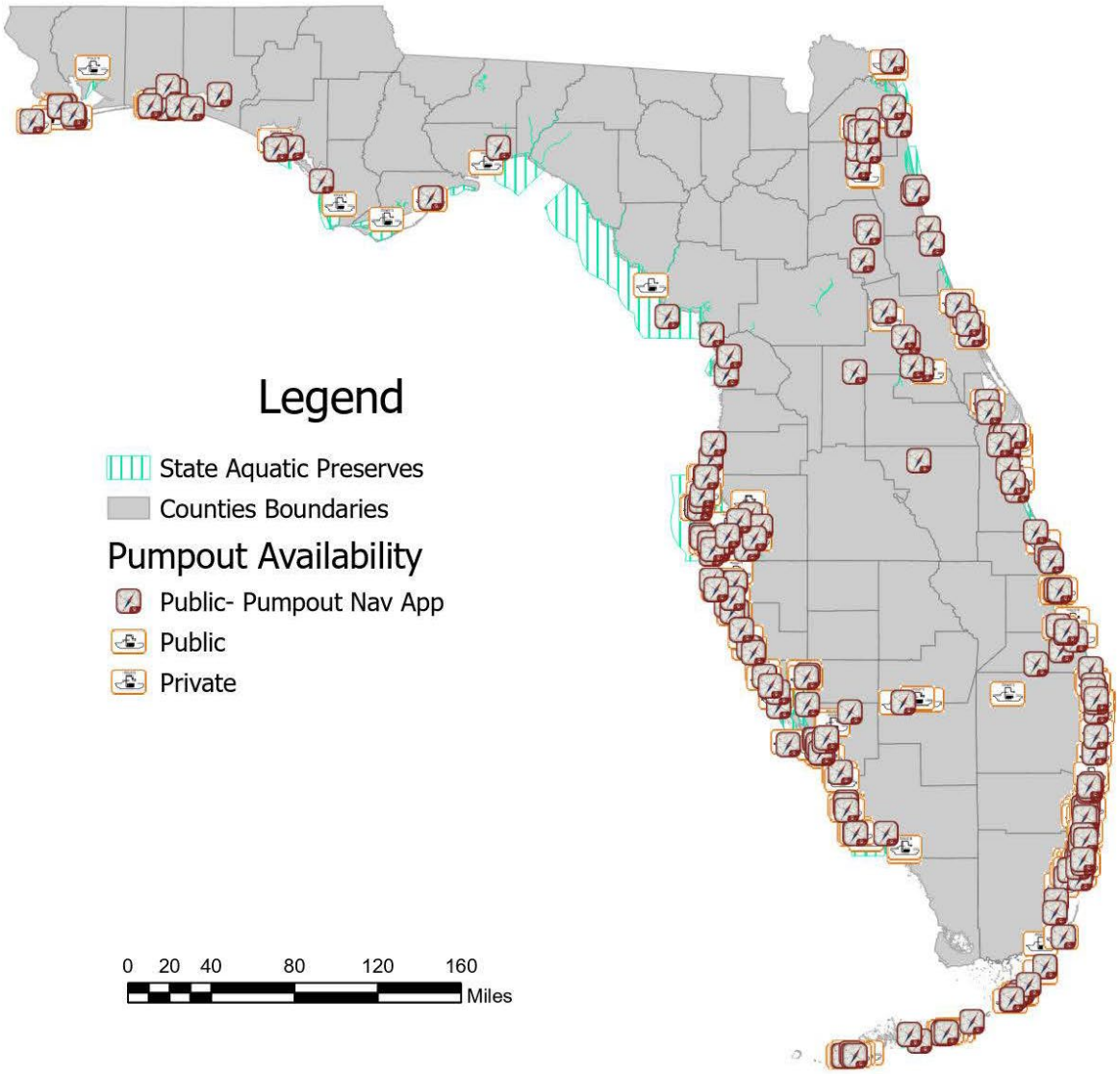

Figure 3. Map of pumpout availability relative to Aquatic Preserves.

Click on the map above to link to the interactive ARC GIS map.

DUMP STATION

The majority of boats sold in the United States are smaller vessels, less than 26 feet. This is no exception in Florida. Based on Florida vessel registration data from 2023, 88% of all recreational vessels are less than 26 feet with only 12% equal to or over 26 feet. With approximately 1 million registered recreational vessels in the state, and an estimated 46% of vessels less than 26 feet likely to have a port-a-potty or bucket for sewage (based on boater survey data), that's approximately 400,000 vessels that may utilize a dump station. However, it is worth noting that although a boat may have a bucket or port-a-potty onboard, it may be there for emergency situations only and not get used regularly if at all. In fact, a survey response included a comment from a boater with a bucket stating that they have never used it but have it just in case. Additionally, manufacturers of pumpout equipment have developed an attachment called the 'suction wand' that fits onto the pumpout hose and adapts the use of a pumpout for port-a-potties or buckets. Finally, boaters that use port-a-potties or buckets can also carry their waste tank into a landside facility for proper disposal in a toilet.

Based on survey results, 46% of boats <26' may need a dump station (because they have a port-a-potty or bucket for sewage) compared to only 12% which may need a pumpout (because they have an installed toilet with a holding tank), the remaining 42% do not need any type of sewage disposal resource.

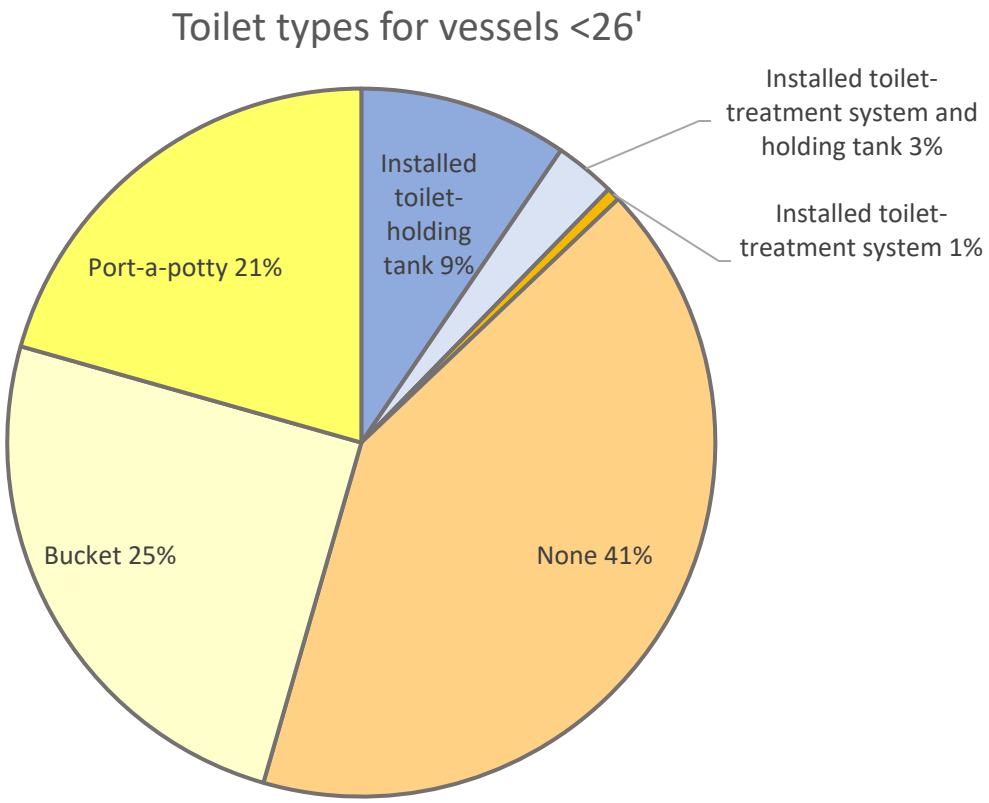

Figure 4. Toilet type based on survey respondents with a vessel <26 feet.

As part of the survey boaters with port-a-potties, buckets, and marine composting toilets were asked how they currently dispose of their waste, and their preferred method of waste disposal. When looking more closely at the data, most changes in disposal method were as follows:

- Boaters who currently discharge overboard would prefer to utilize a public or marina toilet.
- Boaters who currently use a public or marina toilet would prefer a port-a-potty dump station.
- Boaters who currently use their home toilet would prefer a port-a-potty dump station.

This is interesting to see and may reveal a gradual progression of preference in disposal options. Perhaps boaters who discharge overboard would also prefer a port-a-potty dump station after using a public or marina toilet and discovering some drawbacks to this disposal method.

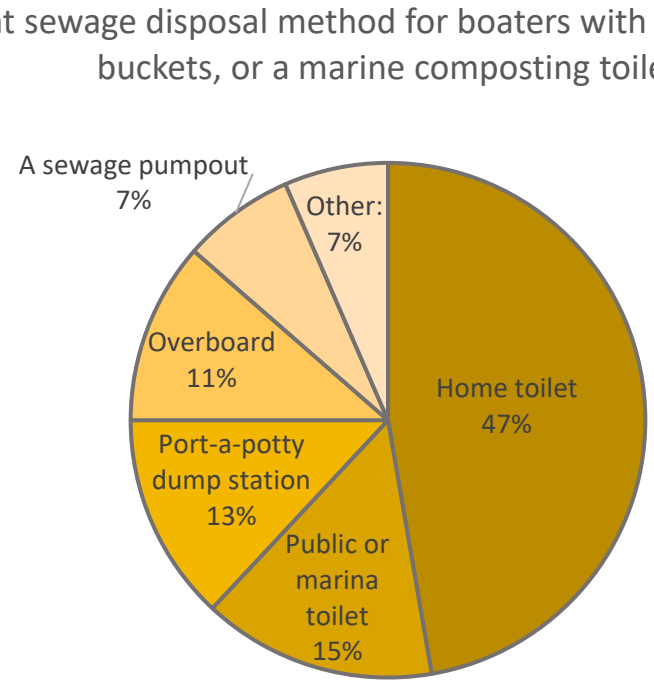

Figure 5. Respondents' disposal location of waste from a port-a-potty, bucket, or marine composting toilet.

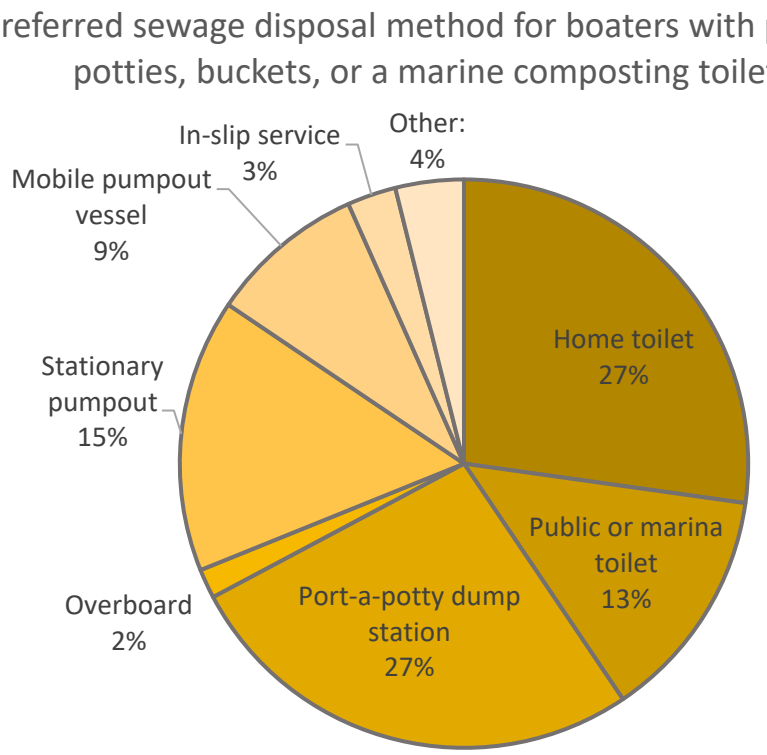

Figure 6. Respondents' preferred disposal location of waste from a port-a-potty, bucket, or marine composting toilet.

Objective: Determine if and where additional dump stations may be needed.

These results show that there is a desire among the boating community for the installation of dump stations. However, when talking with the marina operators at the locations of the existing dump stations, they report the equipment rarely or never gets used. Therefore, it is recommended that additional research be conducted regarding the disposal of port-a-potty waste. This can include promotion of the existing dump stations, what they are, where they're located, and how to use them. Then determining if there is an increase in use. Additionally, promotion and distribution of suction wands to adapt the use of a pumpout to a port-a-potty may be considered. These are two possible next steps to implement and then reassess and evaluate before investing in the installation of dump station infrastructure.

CONCLUSION

Based on survey results and feedback it is clear most boaters are ecologically conscious, care about the waters they recreate in, and want to "do the right thing". However, additional education is needed regarding sewage discharge laws and the locations of available sewage disposal options. Additionally, the availability of more convenient and free sewage pumpouts are needed.

Concern has been expressed regarding sewage discharge from vessels on mooring balls and anchored out. Mobile pumpout vessels are the most convenient sewage disposal option for these boaters. The availability of a mobile pumpout vessel should be considered in areas where vessels anchor out and at managed mooring fields.

Mobile pumpout vessels are so convenient for boaters that once utilized they tend to become dependent on this service for proper waste disposal as anecdotally described by other state CVA programs. Additionally, availability of a successful mobile pumpout program in an area may be utilized by boating facilities as a reason not to install their own sewage disposal infrastructure “we don’t need a pumpout, we use the publicly provided mobile service”. There is nothing wrong with facilities utilizing available mobile services, however, it is prudent to consider the long-term implementation and funding mechanism available to implement the mobile pumpout program. Additionally, cost analysis may be helpful in determining the most cost-effective sewage disposal option for an area. In-slip sewage pumpouts and mobile pumpout carts do not require boaters to move their vessel for waste disposal. These alternatives offer another convenient option that may be an appropriate alternative to mobile pumpout vessels in certain situations.

Boats with installed toilets and holding tanks require a pumpout for proper waste disposal. Due to the construction of these systems there’s no other option than pumping the waste out. Therefore, it’s essential to sustain a sufficient pumpout network throughout the state. When considering this network, it’s important to reflect on its resiliency in the face of inoperable pumpouts whether due to regular maintenance and repairs, or widespread infrastructure damage due to severe weather such as tropical storms and hurricanes. Mobile pumpout carts with holding tanks can quickly and easily be stored away from wind and flood risks and can quickly be put back into service when it is safe to return to recreational boating, offering added resiliency to the network.

Given that the vast majority of boats (88%) in Florida are less than 26 feet, it’s important to also provide convenient waste disposal options for this population of the boating community. Port-a-potty dump stations are one potential convenient waste disposal option for boaters with port-a-potties or buckets and should be investigated further to determine if they will be utilized and if focusing funding for the installation of this infrastructure is a worthwhile use of resources.

Appendix 1. BOATER SURVEY QUESTIONS AND DATA

Question: *What statement best describes you?*
(807 responses)
Table 4. Florida residency type.

Response	Count	Percentage
I am a full time Florida resident.	622	77%
I am visiting Florida.	98	12%
I am a part time Florida resident.	87	11%

Question: *What statement best describes you?*
(808 responses)
Table 5. Florida recreational boat ownership type.

Response	Count	Percentage
I am a recreational boater who OWNS a boat, that I use in Florida.	715	88%
I am a recreational boater who RENTS a boat, that I use in Florida.	48	6%
I operate a commercial boat, in Florida, that serves a recreational purpose (ex. fishing charter, eco-tours, etc.).	23	3%
I do not boat, in Florida, for recreational purposes.	22	3%

Question: *What type of boat do you own? If you own multiple boats, which type is the largest you own?*
Note: This question was only asked to respondents who indicated they own a boat or operate a commercial vessel. (738 responses)
Table 6. Boat owner's boat type.

Response	Count	Percentage
Power boat	601	81%
Sailboat	98	13%
Self-propelled vessel (kayak, canoe, rowboat, stand-up paddleboard, etc.)	37	5%
Personal Watercraft (jet ski, wave runner, etc.)	2	<1%

Question: *What is the largest type of boat you usually rent?*
Note: This question was only asked to respondents who indicated they rent a boat. (47 responses)
Table 7. Boat renter's boat type.

Response	Count	Percentage
Power boat	37	79%
Self-propelled vessel (kayak, canoe, rowboat, stand-up paddleboard, etc.)	6	13%
Sailboat	4	8%
Personal Watercraft (jet ski, wave runner, etc.)	0	0%

Question: *What is the length of your largest boat, in feet?*
This question was only asked to respondents who indicated they own a boat or operate a commercial vessel. The average vessel length of survey respondents is 31 feet, with a standard deviation of 12 feet. (735 responses)

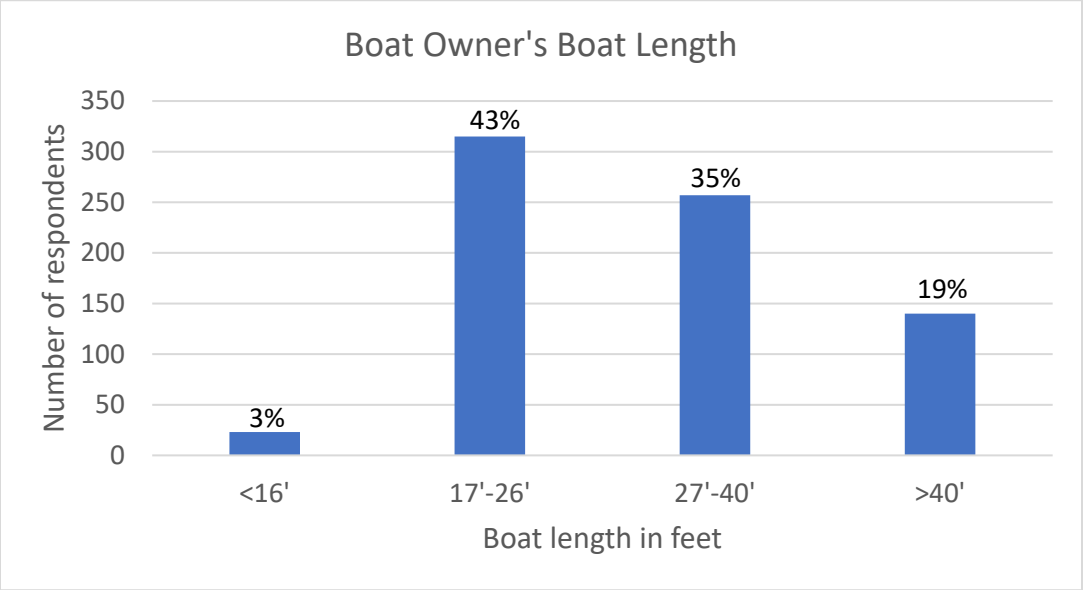

Figure 7. Boat owner's boat length.

Question: *What length is the largest boat you usually rent, in feet?*
This question was only asked to respondents who indicated they rent a boat. The average vessel length of survey respondents is 25 feet, with a standard deviation of 9 feet. (42 responses)

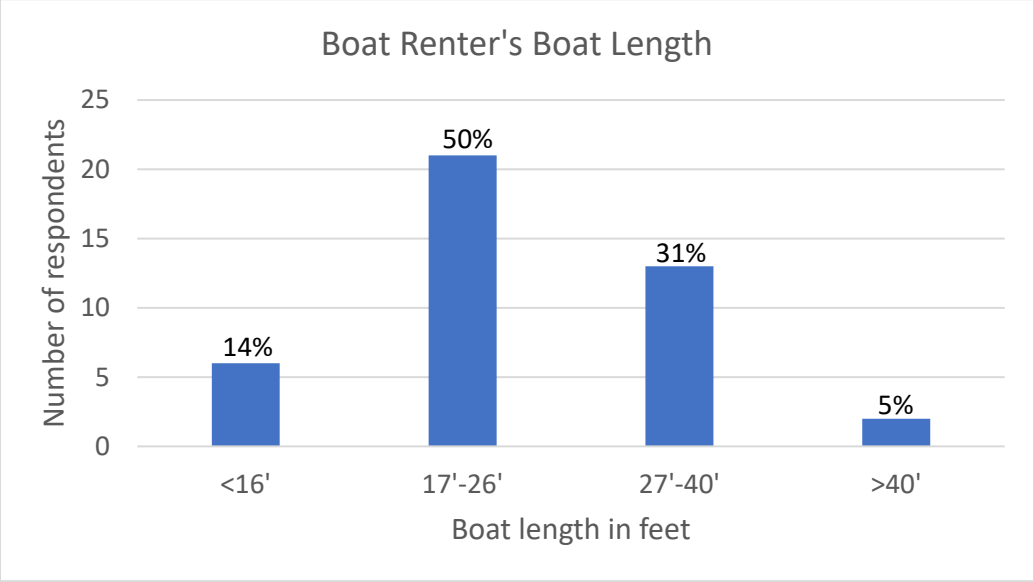

Figure 8. Boat renter's boat length.

Question: *What type of head is on your largest boat? - Head type:*
This question was only asked to respondents who indicated they own a boat or operate a commercial vessel. (721 responses)

Table 8. Boat owner's head type.

Response	Count	Percentage
Installed toilet with a holding tank only	300	41%
Installed toilet with a treatment system and holding tank	99	14%
Installed toilet with a treatment system only	5	1%
Marine composting toilet	7	1%
None	134	18%
None, but I have a designated bucket that can be used, if needed.	91	13%
Port-a-potty	85	12%

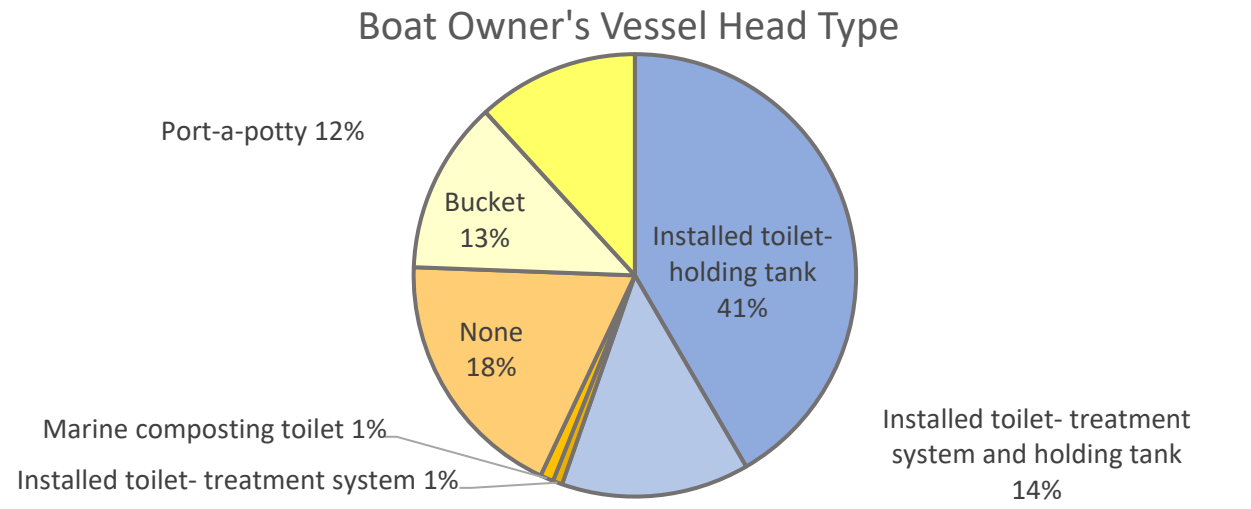

Figure 9. Boat owner's head type.

Question: *What type of head is on your largest boat? - Treatment type:*
This question was only asked to respondents who indicated they own a boat or operate a commercial vessel and have an installed toilet with a treatment system (with or without a holding tank). (104 responses)

Table 9. Boat owner's head treatment type.

Response	Count	Percentage
Not sure what type of treatment system.	22	21%
Type I MSD- uses maceration & disinfectants such as chlorine.	57	55%
Type II MSD- uses bacteria to break down waste followed by disinfection.	25	24%

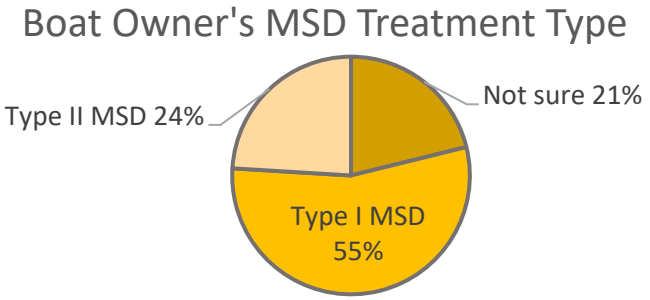

Figure 10. Boat owner's head treatment type.

Question: *What type of head is on the largest boat you usually rent? - Head type:*
This question was only asked to respondents who indicated they rent a boat. (40 responses)

Table 10. Boat renter's head type.

Response	Count	Percentage
Installed toilet with a holding tank only	9	22.5%
Installed toilet with a treatment system and holding tank	4	10%
Installed toilet with a treatment system only	2	5%
Marine composting toilet	1	2.5%
None	14	35%
None, but I have a designated bucket that can be used, if needed.	8	20%
Port-a-potty	2	5%

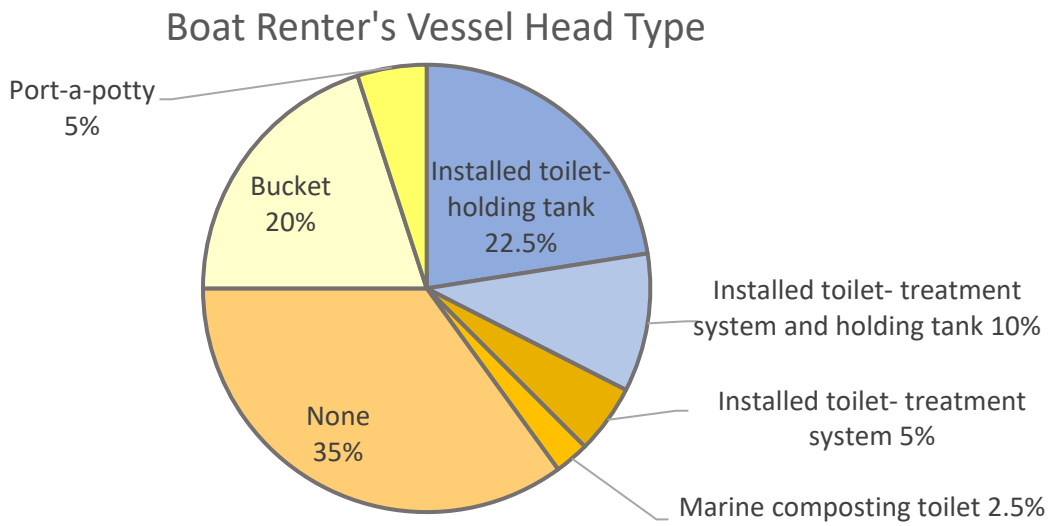

Figure 11. Boat renter's head type.

Question: *What type of head is on the largest boat you usually rent? - Treatment type:*
This question was only asked to respondents who indicated they rent a boat. (6 responses)

Table 11. Boat renter's head treatment type.

Response	Count	Percentage
Not sure what type of treatment system.	3	50%
Type I MSD- uses maceration & disinfectants such as chlorine.	2	33%
Type II MSD- uses bacteria to break down waste followed by disinfection.	1	17%

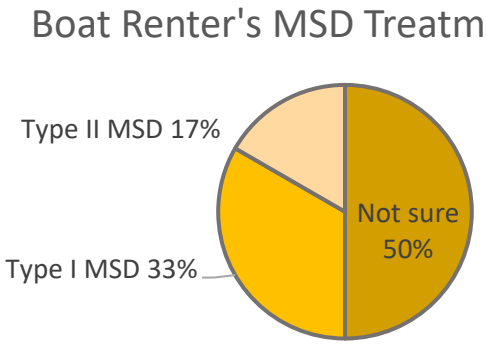

Figure 12. Boat renter's head treatment type.

Question: *Where do you typically store your largest boat?*
This question was only asked to respondents who indicated they own a boat or operate a commercial vessel. The "other" response sometimes did not include an explanation, sometimes it was a combination of the above responses, and nine responses included at anchor. (738 responses)

Table 12. Boat owner's vessel storage location.

Response	Count	Percentage
Trailer at home or a storage facility, without direct access to the water	232	31%
Home dock	186	25%
Marina/yacht club wet slip	176	24%
Marina/yacht club dry storage or trailer	65	9%
Other	29	4%
Mooring	26	4%
Condominium wet slip	24	3%

Question: *Where is it legal to discharge untreated boat sewage? (check all that apply)*
Untreated sewage is any which has not passed through a US Coast Guard approved type I or II Marine Sanitation Device.
There were 236 participants (32%), who correctly identified both the Atlantic and Gulf coast waters. (744 responses which included 1032 items)

Table 13. Respondents' knowledge of legal discharge locations for untreated sewage.

Response	Count	Percentage
Any waterway	11	1%
Ocean and coastal waterways, but not inland waterways.	28	4%
On Florida's east (Atlantic) coast waters, beyond the following miles from shore:	342	46%
On Florida's west (Gulf) coast waters, beyond the following miles from shore:	306	41%
No Discharge Zones	27	4%
Nowhere	164	22%
I do not know	154	21%

Green highlighted rows are the correct answers. If selected, the respondent was then asked to fill in a text box with the miles from shore that it is legal to discharge untreated waste.

Question: *On Florida's east (Atlantic) coast waters, beyond the following miles from shore:*
(342 responses)

Table 14. Respondents' knowledge of legal discharge limit for untreated sewage on the Atlantic coast.

Response	Count	Percentage
Other: less than 3 miles- incorrect response	4	1%
3 miles – correct response	268	78%
Other: more than 3 miles- incorrect response	70	21%

Question: *On Florida's west (Gulf) coast waters, beyond the following miles from shore:*
(306 responses)

Table 15. Respondents' knowledge of legal discharge limit for untreated sewage on the Gulf coast.

Response	Count	Percentage
3 miles- incorrect response	151	50%
Other: less than 9 miles (not including 3 miles)- incorrect response	34	11%
9 miles – correct response	71	23%
Other: more than 9 miles- incorrect response	50	16%

Question: *Where is it illegal to discharge sewage that has been treated through a type I or type II Marine Sanitation Device? (check all that apply)*
(419 responses which included 2,008 items)
Table 16. Respondents' knowledge of illegal discharge locations for treated sewage.

Response	Count	Percentage
Freshwater lakes, reservoirs, and impoundments	352	84%
Rivers that cannot be accessed from the ocean, Gulf, or the waterways of other states.	329	79%
Over shellfish beds	331	79%
Waters with low flow or circulation	315	75%
Marinas and yacht clubs	328	78%
No Discharge Zones	353	84%
None of the above	0	0%
I do not know	0	0%

Green highlighted rows are the correct answers.

Question: *Where do you usually dispose of marine composting toilet solid waste?*
This question was only asked to respondents who indicated their boat (or the boat they rent) has a marine composting toilet. (8 responses)
Table 17. Respondents' disposal location of marine composting toilet solid waste.

Response	Count	Percentage
Public or marina trash	4	50%
Home trash	3	37.5%
Other:	1	12.5%

Question: *Where do you usually dispose of marine composting toilet liquid waste?*
This question was only asked to respondents who indicated their boat (or the boat they rent) has a marine composting toilet. (8 responses)
Table 18. Respondents' disposal location of marine composting toilet liquid waste.

Response	Count	Percentage
Public or marina trash	2	25%
Port a potty dump station	2	25%
Home toilet	2	25%
Overboard	1	12.5%
Other:	1	12.5%

Question: *Where do you usually dispose of sewage waste?*
This question was asked to respondents who indicated their boat has a port-a-potty, or designated bucket. Four participants who chose the 'other' option wrote in trash or dumpster. (178 responses)
Table 19. Respondents' disposal location of waste from a port-a-potty or bucket.

Response	Count	Percentage
Home toilet	85	48%
Public or marina toilet	27	15%
Port-a-potty dump station	22	13%
Overboard, in our waterways	20	11%
A sewage pumpout	13	7%
Other:	11	6%

Question: *In a perfect world, if all ways to dispose of boat sewage were FREE, what would you choose?*
This question was asked to respondents who indicated their boat has a port-a-potty, designated bucket, or marine composting toilet. (180 responses)

Table 20. Respondents' preferred disposal location of waste from a port-a-potty, bucket, or marine composting toilet.

Response	Count	Percentage
Home toilet	49	27%
Port-a-potty dump station	48	27%
Stationary pumpout	28	15%
Public or marina toilet	24	13%
Mobile pumpout vessel	16	9%
Other:	7	4%
In-slip service	5	3%
Overboard, in our waterways	3	2%

Questions: *For each of the statements listed, please indicate the extent of your agreement or disagreement.*
This question was only asked to respondents who indicated their boat (or the boat they rent) has an installed toilet with a holding tank (with or without a treatment system) OR if respondents indicated they usually dispose of sewage waste from their port-a-potty, bucket, or marine composting toilet through a sewage pumpout. The agreement levels were ranked 1 through 5, respectively (Strongly Agree=1; Strongly Disagree =-5). The average score (or ranking) for each statement is shown in the last column of the table. A score of 3 indicates that most respondents neither agree nor disagree; a score less than 3 denotes an overall tendency to agree with the statement, and a score greater than 3 denotes an overall tendency to disagree with the statement.
(398-402 responses)

Table 21. Respondents' opinions regarding pumpout facilities.

Statement	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Score
There are an adequate number of pumpout stations where I operate my boat.	14%	25%	12%	25%	24%	3.19
Pumpout facilities are conveniently located.	13%	26%	16%	26%	19%	3.14
Pumpout facilities are usually open when I want to use them.	16%	29%	24%	18%	13%	2.82
Pumpout facilities are easy to use.	20%	36%	23%	14%	7%	2.51
I usually have to wait only a short time to use the pumpout facilities.	20%	30%	33%	13%	4%	2.52

Shaded cells indicate most respondents generally agreed (when totaling somewhat and strongly) or disagreed (when totaling somewhat and strongly) with the given statement.

Question: *In the past year how often did you discharge boat sewage into each of the four categories listed?*

(545-566 responses)

Table 22. Respondents' locations and frequency of sewage discharge based on locations.

Statement	Always	Sometimes	Seldom	Never
A landside facility, such as a pumpout, port-a-potty dump, landside toilet, etc.	43%	14%	10%	33%
Waters LESS than 3 miles offshore or inland waterways	2%	2%	5%	91%
Waters between 3 and 9 miles offshore	2%	15%	12%	71%
Waters MORE than 9 miles offshore	4%	14%	14%	68%

Question: *For each of the following statements about the environment, please indicate the extent of your agreement or disagreement.*

The agreement levels were ranked 1 through 5, respectively (Strongly Agree=1; Strongly Disagree =-5). The average score (or ranking) for each statement is shown in the last column of the table. A score of 3 indicates that most respondents neither agree nor disagree; a score less than 3 denotes an overall tendency to agree with the statement, and a score greater than 3 denotes an overall tendency to disagree with the statement. (684-689 responses)

Table 23. Respondents' agreement or disagreement with environmental statements.

Statement	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Score
Nutrients from sewage in the water CAN trigger harmful algal blooms that can kill plants and animals.	74%	18%	6%	1%	1%	1.364
Raw sewage discharged into the water from recreational boats is NOT significant enough to cause people to get sick.	5%	13%	10%	18%	54%	4.04
High concentrations of sewage in an area CAN seriously deplete dissolved oxygen in the water.	75%	15%	6%	1%	3%	1.40

Shaded cells indicate most respondents generally agreed (when totaling somewhat and strongly) or disagreed (when totaling somewhat and strongly) with the given statement.

Question: *Rank which sources of information you would use to find the location of a sewage pumpout station?*

This question was only asked to respondents who indicated their boat (or the boat they rent) has an installed toilet with a holding tank (with or without a treatment system) OR if respondents indicated they usually dispose of sewage waste from their port-a-potty, bucket, or marine composting toilet through a sewage pumpout. This section also allowed for participants to type in their own response. Fourteen participants wrote in web or internet search.

(430 responses)

Table 24. How respondents with a holding tank find sewage pumpout locations.

Rank	Staff at a marina or yacht club	Navigation guides in onboard electronics or mobile apps	Ask a fellow boater	Pumpout Nav mobile app	State agency: FWC, FDEP, etc.	Cruising guide (printed)	Staff at a boat yard	US Coast Guard, USCG Auxiliary, US Power Squadron	Staff at a marine supply store
Rank 1	107	113	68	34	27	50	7	15	4
Rank 2	87	64	55	98	23	40	25	22	16
Rank 3	67	44	47	23	78	36	25	16	10
Rank 4	18	9	33	23	52	19	18	13	10
Rank 5	13	9	11	35	10	13	22	4	9
Rank 6	8	5	9	6	4	7	9	10	11
Rank 7	2	2	4	3	7	4	13	6	16
Rank 8	5	0	7	3	11	5		11	4
Rank 9	3	1	6	2	11	5		5	7
total	310	247	240	227	223	179	119	102	87

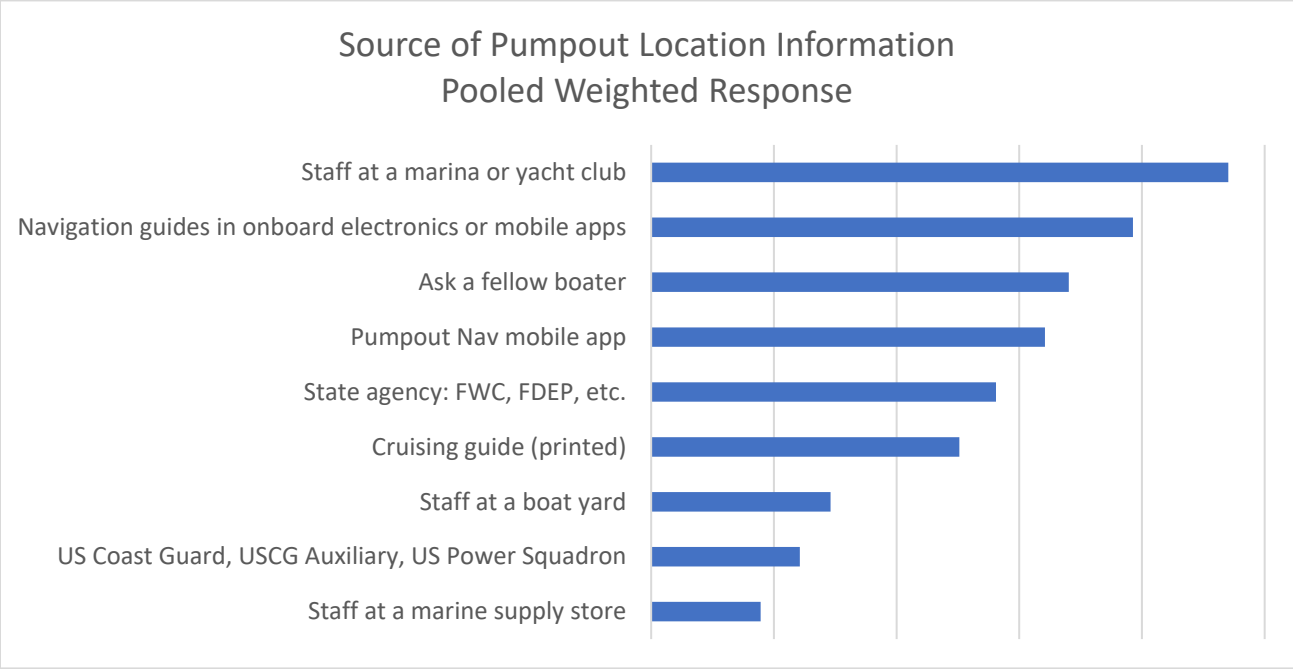

Figure 13. How respondents with a holding tank find sewage pumpout locations.

For ease of viewing, data were weighted by multiplying the number of responses ranked 9 by 1, ranked 8 by 2, etc. and totaling the score for each category.

Question: *Rank which sources of information you would use to find boating information.*
This question was only asked to respondents who indicated their boat (or the boat they rent) does not have an installed toilet with a holding tank and if respondents indicated they do not dispose of sewage waste from their port-a-potty, bucket, or marine composting toilet through a sewage pumpout.
(116 responses)

Table 25. How respondents without a holding tank find boating information.

Rank	Internet Search	State agency: FWC, FDEP, etc.	US Coast Guard, USCG Auxiliary, US Power Squadron	Ask a fellow boater	Magazines, newspaper, newsletters, press	Staff at a marina or yacht club	Cruising guide (paper/ electronic)	Social Medi	Staff at a marine supply store	Staff at a boat yard	Boat shows and boating events
1	38	27	22	10	6	3	2	4	1	2	1
2	21	27	25	13	4	6	4	2	1	2	1
3	15	19	8	9	9	8	7	5	3	1	3
4	5	3	6	10	4	4	5	6	5	2	3
5	3	3	5	4	4	2	2	1	2	2	0
6	0	0	1	2	3	1	2	0	3	2	2
7	0	1	0	1	2	2	0	1	3	1	1
8	0	0	1	1	0	1	1	2	1	2	0
9	0	0	0	1	1	1	0	1	0	1	1
10	0	0	0	0	0	1	0	0	0	1	3
11	0	0	0	1	0	0	2	1	1		0
Total	82	80	68	52	33	29	25	23	20	16	15

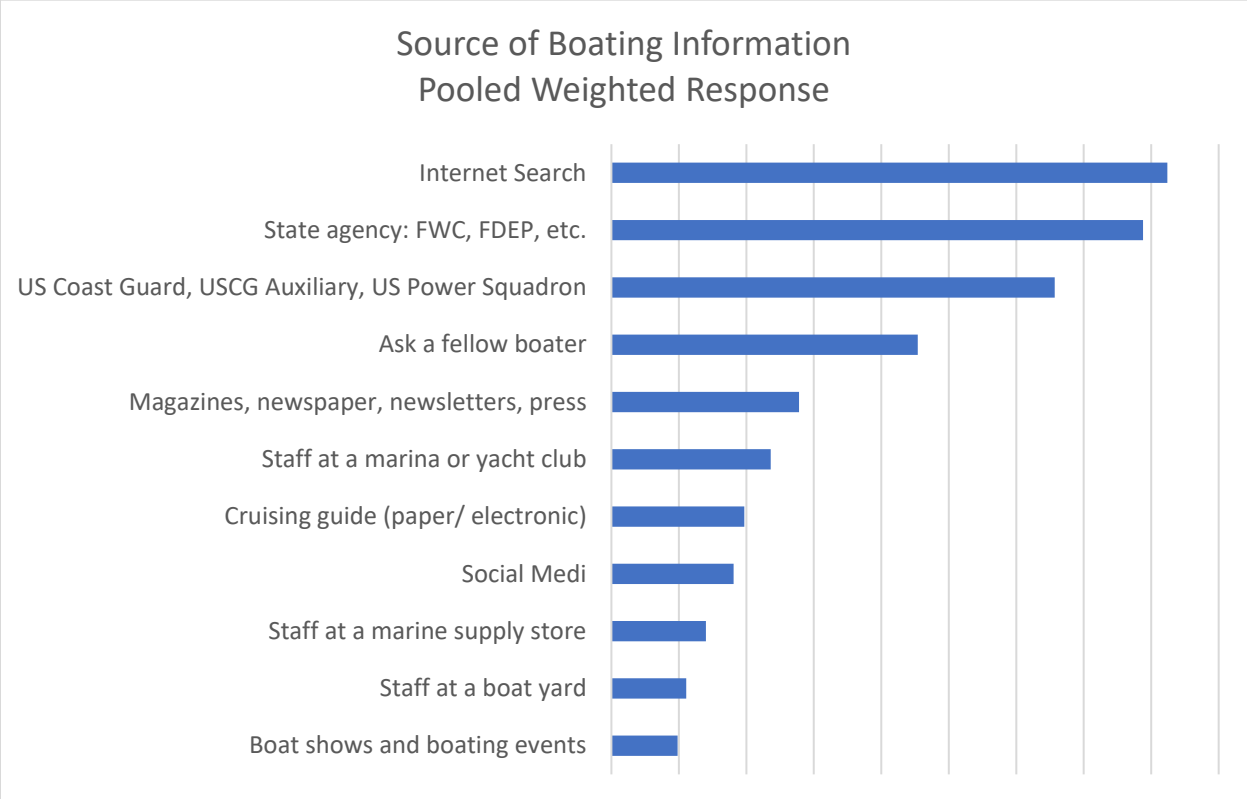

Figure 14. How respondents without a holding tank find boating information.

For ease of viewing, data were weighted by multiplying the number of responses ranked 9 by 1, ranked 8 by 2, etc. and totaling the score for each category.

Question: *If you saw sewage being illegally discharged from a boat, would you report it?*
(689 responses)

Table 26. If respondents would report illegal sewage discharge.

Response	Count	Percentage
Yes.	482	70%
No.	34	5%
I don't know.	173	25%

Question*: If yes, who would you report it to:*
(419 responses, which included 505 items)

Table 27. Who respondents would report illegal sewage discharge to.

Response	Percentage
FWC	43%
Coast Guard	35%
local authorities/ Local marine patrol/ Local police	5%
Marine Patrol/ Marine Police	4%
Other	4%
DEP	3%
Marina/ Harbormaster/ Dockmaster/ etc.	3%
I don't know	2%
EPA	1%

Question: *How many years have you been boating?*
(690 responses)

Table 28. Respondents' years boating.

Response	Count	Percentage
over 20 years	526	76%
between 11 and 20 years	75	11%
between 6 and 10 years	48	7%
between 1 and 5 years	37	5%
less than 1 year	4	1%

Question: *What do you consider your race?*
(670 responses, 680 selections)

Table 29. Respondents' race.

Response	Count	Percentage
White	570	84%
Prefer not to say	65	9%
Self described	18	3%
American Indian/ Alaska Native	12	2%
Asian	6	1%
Black/ African American	6	1%
Hawaii Native/ Pacific Islander	3	0%

Question: *What do you consider your ethnicity?*
(662 responses)
Table 30. Respondents' ethnicity.

Response	Count	Percentage
Non-Hispanic/ Non-Latino/ Non-Latina	542	82%
Prefer not to say	82	12%
Hispanic/ Latino/ Latina	38	6%

Question: *What gender are you?*
(672 responses)
Table 31. Respondents' gender.

Response	Count	Percentage
Male	515	77%
Female	111	16%
Prefer not to say	40	6%
Self-describe:	6	1%

Question: *Do you have any other comments you'd like to share, regarding recreational boating, in Florida?*
This question was open ended to provide participants an opportunity to respond in their own words. The responses were categorized based on topics. The overall theme, as it relates to CVA was the need for more pumpouts that work, are free, and are assessable (55 comments), as well as mobile pumpout vessels especially for anchorages and mooring fields (23 comments). Additionally, 24 comments expressed concern for the environment or a statement of the respondent's commitment to being environmentally responsible. A boating license, safety, or education was expressed to be important by 34 respondent's comments with several conveying their desire for a mandatory license with regular renewals. The desire for enhanced enforcement of existing laws or the discouragement of new laws was expressed by 19 respondent's comments.
(233 responses)
Table 32. Respondents' comments based on topic.

Topic	Count
More/Working/Free/ Accessible POs	55
Boating License/ Safety/ Education	34
Access/ Overcrowding	26
Environmental Statement/ Concern	24
Mobile PO, moorings/anchorages	23
Other Pollution Issues	20
Existing Laws Good/Enforce	19
Thank you	12
Derelict/Sunken	9
Fisheries	9
Personal Watercraft	5
Navigation	2

Respondent Language

Language data was automatically collected based on if the participant selected to take the survey in English or Spanish.

Table 33. Respondents' language.

Language	Count	Percentage
English	799	99%
Spanish	9	1%

Respondent Location

Participants were asked for their home zip code. Zip codes were mapped using Google to visualize the location of respondents. The same zip code data was represented by Florida resident status (full time resident, part-time resident, visitor) and by boat ownership type (own, rent, operate a commercial boat). Click the map below to link to the interactive Google map.

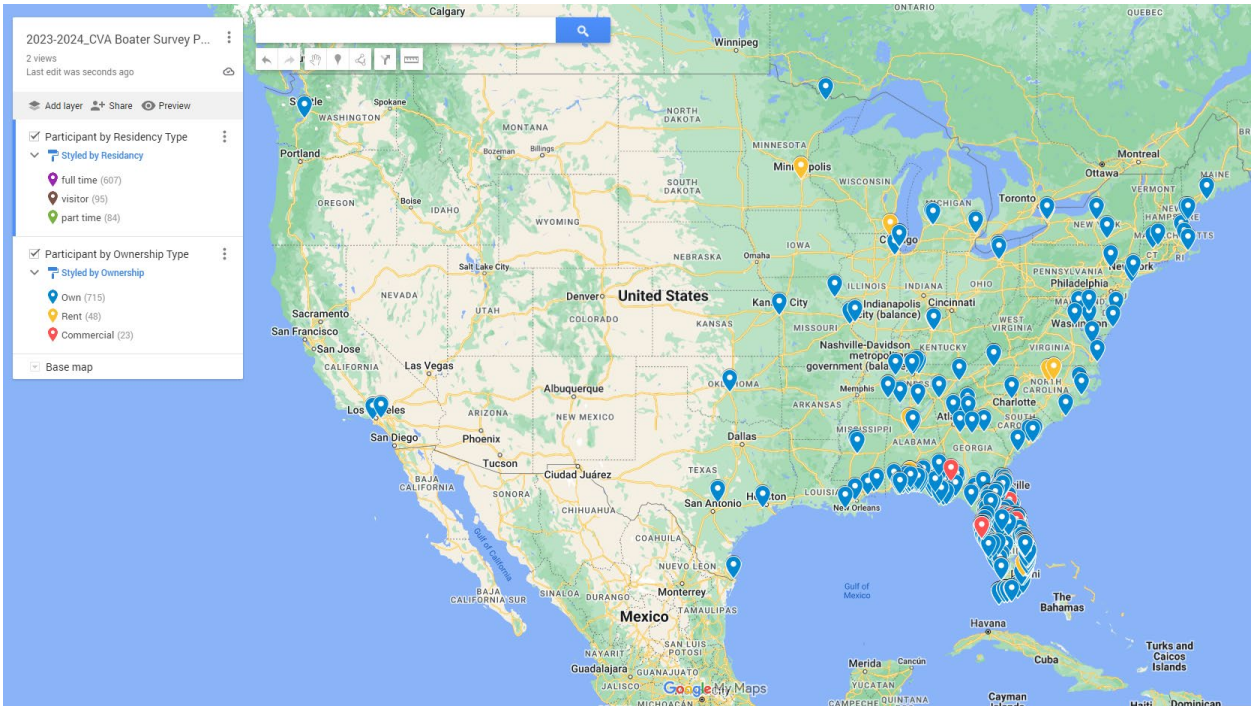

Figure 15. Location of respondents' home zip code mapped.

APPENDIX 2. PUMPOUT INFRASTRUCTURE ASSESSMENT TABLE

Table 34. Florida county pumpout infrastructure data assessment and needs.

Region	County	Accom. for boats ≥ 26'	Accom. ≥ 26' with access to a private pumpout	Private Pumpouts	Public Pumpouts	Pumpout Ratio	Additional Inland Pumpouts Needed	Additional Coastal Pumpouts Needed	Boating Facilities without Pumpouts	Total Boating Facilities
NE	Brevard	7,567	748	8	15	455	0	0	10	30
NE	Clay	810	195	1	2	307	0	0	0	3
NE	Duval	4,791	470	3	11	393	0	0	10	22
NE	Flagler	1,521	0	0	3	507	0	1	0	3
NE	Indian River	2,121	193	2	5	386	0	0	11	16
NE	Lake	1,620	50	1	2	785	2	0	13	16
NE	Martin	6,703	295	3	9	712	0	4	22	31
NE	Nasau	810	47	1	3	254	0	0	2	5
NE	Okeechobee	417	0	0	0		1	0	2	2
NE	Orange	399	0	0	0		1	0	2	2
NE	Osceola	275	0	0	1	275	0	0	2	3
NE	Putnam	1,059	0	0	4	265	0	0	9	12
NE	Saint Johns	2,930	425	1	7	358	0	0	9	16
NE	Saint Lucie	3,091	564	4	6	421	0	0	2	12
NE	Seminole	537	260	2	2	139	0	0	2	5
NE	Volusia	4,020	475	4	14	253	0	0	22	33
NW	Bay	3,510	203	2	7	472	0	0	12	20
NW	Citrus	1,627	0	0	3	542	0	1	4	7
NW	Dixie	385	0	0	1	385	0	0	2	3
NW	Escambia	3,354	873	6	6	413	0	0	13	28
NW	Franklin	1,227	235	2	2	496	0	0	8	12
NW	Gulf	440	300	1	1	140	0	0	1	3
NW	Hernando	837	0	0	0		0	2	6	6

Region	County	Accom. for boats ≥ 26'	Accom. ≥ 26' with access to a private pumpout	Private Pumpouts	Public Pumpouts	Pumpout Ratio	Additional Inland Pumpouts Needed	Additional Coastal Pumpouts Needed	Boating Facilities without Pumpouts	Total Boating Facilities
NW	Levy	223	0	0	2	112	0	0	3	5
NW	Marion	250	0	0	0		1	0	1	1
NW	Okaloosa	4,508	602	3	9	434	0	0	14	24
NW	Santa Rosa	1,035	8	1	1	1,027	1	1	4	5
NW	Taylor	427	0	0	0		1	0	3	3
NW	Wakulla	860	54	1	2	403	0	0	6	8
NW	Walton	1,069	0	0	2	534	1	0	2	4
SE	Broward	11,731	1,336	11	21	495	0	0	27	52
SE	Dade	12,231	1,708	24	21	501	1	0	16	57
SE	Monroe	15,291	2,056	39	32	414	0	0	52	102
SE	Palm Beach	10,469	1,372	13	16	568	1	2	23	46
SW	Charlotte	7,067	78	3	5	1,398	2	7	8	15
SW	Collier	10,584	1,554	16	13	695	0	6	19	44
SW	Glades	809	215	2	1	593	1	0	4	7
SW	*Hendry			1			0		1	1
SW	Highlands	489	0	0	0		1	0	9	20
SW	Hillsborough	5,068	467	3	9	511	0	1	32	53
SW	Lee	11,584	859	5	16	670	3	3	10	21
SW	Manatee	6,331	826	8	8	688	1	3	6	9
SW	Pasco	2,794	0	0	3	931	0	3	37	64
SW	Pinellas	14,731	1,261	7	23	585	1	3	6	6
SW	Polk	753	0	0	0		2	0	16	30
SW	Sarasota	6,959	889	7	14	433	0	0	10	30
	State-wide	175,322	18,618	185	302		21	37	463	867

*Hendry county has less than 250 accommodations, however it was included in this table, to recognize the availability of a private pumpout.

Cells highlighted in red, indicate counties that need additional pumpouts to meet the recommended ratio of 1 pumpout for every 500 boats ≥ 26.