

Statewide Clean Boating Survey and Outreach 2022 Report



Prepared February 2022 for:



Alaska Department of Environmental Conservation (ADEC)

and

Alaska Sea Grant

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Acknowledgments: This project was completed under coordination between the Alaska Department of Environmental Conservation and the Alaska Sea Grant. Without the support of Sarah Apsens and Ginny Eckert this project would not have been possible. We also appreciate all the Native Organizations and Fishing Organizations that shared links and information to their respective communities: Bristol Bay Economic Development Corporation, Bristol Bay Native Association, Ninilchik Traditional Council, Alaska Federation of Natives, Sea Alaska, Upper Cook Inlet Drift Association, Alaska Longline Fishermen’s Association, Bristol Bay Fishermen’s Association, Young Fisherman’s Association, Alaska Fishermen’s Network, Alaska Marine Conservation Council, United Fishermen of Alaska, Cordova District Fishermen United, Kenai Peninsula Fishermen’s Association, Bristol Bay Regional Seafood Development Association, Cook Inlet Aquaculture Association, Center for Alaskan Coastal Studies, Salmon State, Trout Unlimited, Southwest Alaska Salmon Habitat Partnership, Southeast Alaska Dive Fisheries Association, Alaska Salmon Alliance, Kenai Watershed Forum, Cook Inletkeeper, Sierra Club and many others. We are also grateful for the news organizations that shared the information about the surveys: KDLG, KDLL, Anchorage Daily News, Fish Radio, Reel Times, and Kodiak Daily Mirror. Much appreciation for River City Books and the Homer Brewing company for the donations of space and goods.

This project has been funded wholly or in part by the United States EPA under assistance agreement number AA-01J87401 to the Alaska Department of Environmental Conservation. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does EPA endorse trade names or recommend the use of commercial product mentioned in this document.

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Cover Photograph: Homer Harbor

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Summary

The Alaska Department of Environmental Conservation (ADEC) teamed with Alaska Sea Grant to create a Fellowship tasked with exploring existing marine vessel sewage management practices, identifying approaches to encourage compliance with federal and state regulations, reminding boaters of their existing options, and piloting a new sewage management approach in one harbor or fishing ground. The timeline for these tasks were from May 2021 to June 2022. The project was developed due to concern raised by communities regarding improper sewage disposal in small harbors and large fishing grounds. Originally it was intended to focus the surveys to the Ninilchik community and harbor users, as there is no harbormaster or entity in charge of enforcing rules at the harbor. The survey also focused on Dillingham harbor, as that is the location where the Fellow fishes and the harbormaster is very involved and interested in proper waste management practices. After initial undertaking the decision was made to expand the focus to the rest of Alaska. Surveys were created to better understand the opinions of communities regarding the state of pollution in their harbor.

Three different surveys were developed: Harbor Staff, Community Members, and Harbor Users. The Harbor Staff survey was designed to determine current sewage pump-out use, infrastructure needs, and potential barriers to pump-out use. For the Community Members' survey, the underlying goal was to determine if people perceived proper sewage management to be an issue in their local harbor and if it was a concern, what would be the best ways to address it. The survey directed at Harbor Users was created to identify current sewage handling practices, factors needed to utilize more environmentally responsible practices, and which options are viable or desirable.

The questions covered similar topics and themes for all three surveys, but the scope of the questions varied based on the audience. The surveys covered both qualitative (non-numerical) and quantitative (numerical) research questions. Both data sets will be explored in more detail in the Results section. Interviews were also conducted either via phone calls or in-person. During these interviews, participants had the opportunity, if they wanted, to converse without the surveys and to address issues they felt were most important. These interviews have been incorporated in this report using quotation marks.

To encourage as wide a spread of responses as possible the surveys were shared through a variety of means. With the help of local media outlets, such as KDLG in Dillingham, KDLL on the Kenai Peninsula, and Alaska Fish Radio throughout Alaska, the word was spread both online and on the radio. Multiple fishing organizations (UCIDA, ALFA, UFA, BBFA, etc), Native Organizations (NTC, BBEDC, BBNA, etc), and Conservation Organizations (Cook Inletkeeper, Ak Marine Conservation Council, etc) shared links to the surveys via social media and/or their newsletters. Several surveys were conducted over the phone or in person at different harbors. The Harbor Staff survey was conducted in person at the annual conference for the Alaska



Tav Ammu, Julie Matweyou, and Gabe Dunham at the PME, Seattle

Association of Harbormasters and Port Administrators (AAHPA) October 24-29, 2021. Because COVID was a concern, the opportunity to conduct large group outreach and surveys was limited but did occur at the 2021 Pacific Marine Expo (PME) in Seattle.

At the end of the survey there had been 86 Harbor User participants, 99 Community Member participants, and 28 Harbor Staff participants. The majority of Harbor Users (71%) believed that 'Routine small spills/leaks' was the biggest pollution concern in their harbor ([Figure 20](#)). 'Improper sewage disposal' was 4th on the list at 48% of those surveyed. In a later question, 47% of participants thought that sewage was not an issue in their harbor, compared to 45% who thought that it was an issue ([Figure 23](#)). Of those surveyed, the highest amount 33% used a 'honey bucket' as their main form of restroom onboard ([Figure 26](#)).

To encourage proper/better sewage disposal, 77% of participants thought that more 'signs on the rules/regulations about sewage' would help ([Figure 35](#)). The next highest score (40%) was 'more/better onshore restroom facilities' ([Figure 35](#)). Many Harbor Users were skeptical about filling out surveys, therefore a concerted effort was made to communicate either in person or on the phone. The conversations generally communicated the important topics from the survey but were also free-form and open to cover any issues not included in the survey. During interviews, if the Harbor User was not interested in conducting a survey then the information was not included in the final results, if however, they were open to including their responses, that information was inputted into the survey in the appropriate section.

The Community Members that participated in the survey had some similar opinions to the Harbor Users. The Community Members also believed that 'Routine small spills/leaks' were the biggest pollution concern (68%) ([Figure 10](#)). 'Improper sewage disposal' was 3rd on the list at 52% of those surveyed ([Figure 10](#)). In a later question, 45% of participants considered sewage to be an issue in their harbor, compared to 35% that did not think it was an issue ([Figure 16](#)).

Like the other two surveyed groups, the Harbor Staff also considered 'Routine small spills/leaks' to be the biggest pollution concern in their harbor (75%) ([Figure 5](#)). Second place was 'Discharge of dirty bilge water' (68%) and third was 'Improper sewage disposal' (54%) ([Figure 5](#)). 'Pump-out stations' were available at 58% of the harbors, while 'restrooms/outhouses' were available at 81% of the harbors that participated in the survey ([Figure 4](#)). Signs directing proper sewage disposal were available at 42% of the harbors. The majority of harbormasters (52%) thought that having a mobile pump-out station would improve sewage disposal ([Figure 6](#)). The facility considered to be the next most beneficial (48%) was to have 'more/better onshore restroom facilities'. 88% of Harbor Staff thought that 'signs around the boat harbor' were the best way to communicate with boaters ([Figure 7](#)). The second best way was considered to be 'face to face communication' at 72% ([Figure 7](#)).

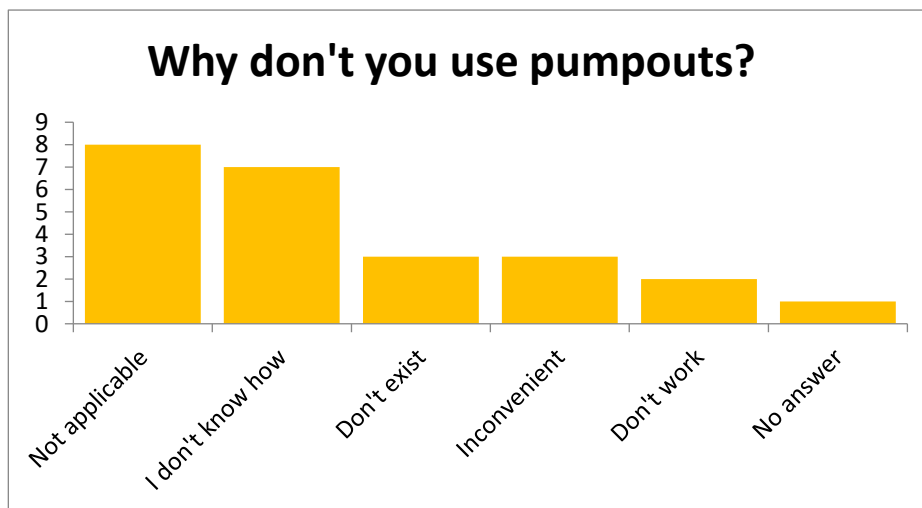
All three groups (Harbor Users, Community Members, and Harbor Staff) considered improper sewage disposal to be an issue as indicated by approximately 50% of the participants ([Figures 20, 10, 5](#)). During interviews several individuals expressed skepticism about whether more pump-out stations (facilities that suck sewage out of a boat's holding tanks) would significantly contribute to better wastewater management practices. The majority of participants thought that the best way of communicating information about proper sewage disposal were signs around the boat harbor followed by face-to-face communication ([Figures 35 & 7](#)).

Introduction

The Alaska Department of Environmental Conservation teamed up with the Alaska Sea Grant to address concern raised by a community member about the condition of Ninilchik Harbor. As Ninilchik Harbor has shared jurisdiction between the Department of Transportation (DOT) and the Department of Natural Resources (DNR), as well as no Harbormaster, there has been no single point of contact for issues or concerns.

Most harbors have a harbormaster that is the focal point for ensuring harbors are clean and safe. One of the nationally recognized standards for ensuring harbors are maintained is through the [Alaska Clean Harbors Program](#) (known in the lower 48 as the “Clean Marinas” program). This program is an optional certification that stems from following certain Best Management Practices (BMPs) aimed at seven key areas. Initially a harbor pledges to become a Clean Harbor, then over a period of time, that harbor demonstrates that they are abiding by the BMPs. Some examples of the expectations in the BMPs are to “provide adequate trashcans or dumpsters” as well as “prohibit discharge of untreated human and pet waste within the harbor basin and grounds”. After proving that these practices and others are being followed, the harbor’s application is reviewed by the Alaska Clean Harbors Advisory Committee. As Ninilchik does not have a harbormaster, the opportunity to follow these Best Management Practices is much more complicated.

To better understand the scope of opinions about the state of the harbor the three different surveys were created and distributed. Those users that are in the vicinity of each harbor are the best sources for information about the state/condition of the harbor. Therefore, communicating with as many Harbor Users and Community Members as possible in any given area would improve the data points and have a better overall understanding of the status of harbors around the state.



A survey conducted by Cook Inletkeeper in 2015 focused on sewage handling by recreational boaters and the best methods of communicating rules and regulations. Using this survey as a background guide, ADEC and Alaska Sea Grant worked together to develop the questions most pressing for harbors.

Figure 1: Graph from Great Alaskan Sportsman Survey, 2015, Conducted by Cook Inletkeeper

Lord, R. (2015). 2015 Great Alaska Sportsman's Show Survey. Anchorage; Alaska.

Methods

The ADEC and Alaska Sea Grant worked together to create survey questions that fulfilled certain goals. For the surveys directed at Harbor Users, these questions were aimed at determining current sewage handling practices, factors needed to utilize more environmentally responsible practices, and which options are viable or desirable. The surveys directed at Harbor Staff were aimed at determining current pump-out use, infrastructure needs, and potential barriers to pump-out use. While creating the surveys we decided a third survey, directed at Community Members, would help get a more thorough understanding of perceived issues by the community at large. Because the focus of the survey was explicitly about sewage and proper waste management, we encouraged directing the conversation towards these issues but also were open to discussing other topics that participants deemed important.

During the creation of the survey, it was decided to expand the breadth of the surveys to the rest of Alaska instead of solely focusing on Ninilchik and Dillingham. Having a baseline of information about different harbors and communities would allow different organizations to better allocate resources to areas that were both in need of and amenable to assistance to prevent or reduce harbor pollution.

After the commercial fishing season concluded in Dillingham, July 2021, an in-person preliminary survey was given to fishermen to better gauge thoughts and opinions on the formatting, phrasing and overall questions. After talking with eight fishermen, the survey was re-organized and changed to reflect those suggestions. Multiple fishermen expressed reluctance to discuss issues due to a distrust of government, distrust of surveys or because of other reasons. Therefore, whenever possible a face-to-face discussion was offered in an informal setting.

One method of outreach that was initiated in Ninilchik was physically going door to door. As this method was perceived as intrusive and relatively ineffective, the approach was redirected to cold-calling via phone. Harbor Users were the hardest group to obtain input from, therefore effort was made to

communicate directly with them. Phone numbers of Harbor Users were mostly received from local conservation groups (Cook Inletkeeper) or fishing organizations (UCIDA). Willing interviewees would frequently share phone numbers of other Harbor Users that they thought would be open to talking. These interviews had the option of following the format of the surveys and the information being inputted by the interviewer, or, were informally conducted and allowed the interviewee to direct the conversation. If the free-flowing conversations discussed sewage directly those results were added to the survey by the interviewee in the appropriate section and if the conversation drifted into a different area that information was inputted into the open-ended portions of the survey.



Alaska Sea Grant Fellow Tav Ammu at River City Books, Soldotna

Despite COVID concerns there were some opportunities to meet with a decent number of Harbor Users and Community Members in person. Every year Alaska Sea Grant has a booth at the Pacific Marine Expo (PME) in Seattle. At this year's expo in November 2021, flyers were placed with QR codes on a pedestal with free swag to entice filling out the survey on an available iPad, or their own personal smartphones. As many Alaskan fisherfolk and community members attend the PME there was a good amount of outreach.

In Soldotna, space was given at River City Books. Those who filled out the survey had their names put into a hat and winners that were drawn had a book donated to them by the bookstore. Homer Brewing Company offered space, as well as the same system as River City Books but donated beers instead of books.

To cast as wide a net as possible our outreach focus also used social media and online outreach. We published a [blog post](#) on the Alaska Sea Grant and ADEC websites as well as the ADEC twitter account. The information was also included in Alaska Sea Grant’s monthly Fishlines newsletter. From there we were able to share that blog post (and surveys) with news outlets, fishing organizations, social media in particular communities, and Native organizations (Table 1). Distributing and posting flyers (Figure 2) with QR codes that linked to surveys in shops, at holiday bazaars, and other gathering spaces such as libraries or community centers throughout communities on the Kenai Peninsula and Dillingham was one way of minimizing face-to-face interactions but encouraging participation.

<u>Native Organizations</u>	<u>Fishing or Conservation Groups</u>	<u>News Organizations</u>
United Tribes of Bristol Bay	Upper Cook Inlet Drift Association	KDLG
Bristol Bay Native Association	Alaska Long Line Fishermen’s Association	KDLL
Ninilchik Traditional Council	Bristol Bay Fishermen’s Association	ADN
Alaska Federation of Natives	Young Fishermen of Alaska	Fish Radio
Ahtna	Alaska Fishermen’s Network	Reel Times
Sealaska	Alaska Marine Conservation Council	Kodiak Daily Mirror
Bering Straits	United Fishermen of Alaska	Pacific Fishing Magazine
Calista	Cordova District Fishermen United	
Chugach Alaska Corporation	Kenai Peninsula Fishermen's Association	
CIRI	Bristol Bay Regional Seafood Development Association	
Doyon Limited	Cook Inlet Aquaculture Association	
NANA	Center for Alaskan Coastal Studies	
Aleut Corporation	Southeast Alaska Regional Dive Fisheries Association	
	Salmon State	
	Trout Unlimited	
	Southwest Alaska Salmon Habitat Partnership	
	Alaska Salmon Alliance	
	Sierra Club	
	Kenai Watershed Forum	
	AK Center	
	Cook Inletkeeper	
	Bristol Bay Economic Development Corporation	

Table 1. Groups and organizations reached out to that were willing to spread the surveys to their communities

Sea Grant
Alaska

**NINILCHIK
WE WANT
TO HEAR
FROM YOU!**

**Clean Harbors
Program**

Is pollution a problem?

Community Members

Boat Users

I am a commercial fisherman and an Alaska Sea Grant fellow working on clean harbors. The focus is mainly on human waste in harbors and how to better facilitate understanding and proper waste management practices.

Tav Ammu (907)631-8361
tammu@alaska.edu

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
★ FIFTIETH ANNIVERSARY 1971-2021 ★

Figure 2. Flyers used in different communities to encourage participation in surveys

Results

Harbor Staff

The Harbor Staff survey was conducted in person during the Alaska Association of Harbormasters and Port Administrators (AAHPA) annual meeting in Anchorage on October 26, 2021. There were 18 Harbormasters or Harbor Staff that took the survey live and responses were broadcast onto a projector that was shared immediately with all in attendance. One of the Harbormasters that didn't attend the annual meeting had a booth at the Pacific Marine Expo in Seattle and took the survey at that time. After the annual conference, calls and emails with links to the survey were sent to the remaining 27 Harbormasters that are a part of the AAHPA. In total 28 Harbormasters or Harbor Staff took the survey. No interviews were conducted in person or over the phone for the Harbor Staff therefore all data that was accrued came from the surveys themselves. As anonymity was accepted to encourage a more open and honest discussion, 12 of the 28 Harbor Staff did not indicate which harbor they were a part of.

The vast majority of harbors took in 'Greater than 200 boats' throughout the year. The Harbor Staff participant that chose 'Other' stated that they harbor more than 1500 throughout the year (Figure 3).

How many boats/boaters use your harbor throughout the year?

Answered: 28 Skipped: 0

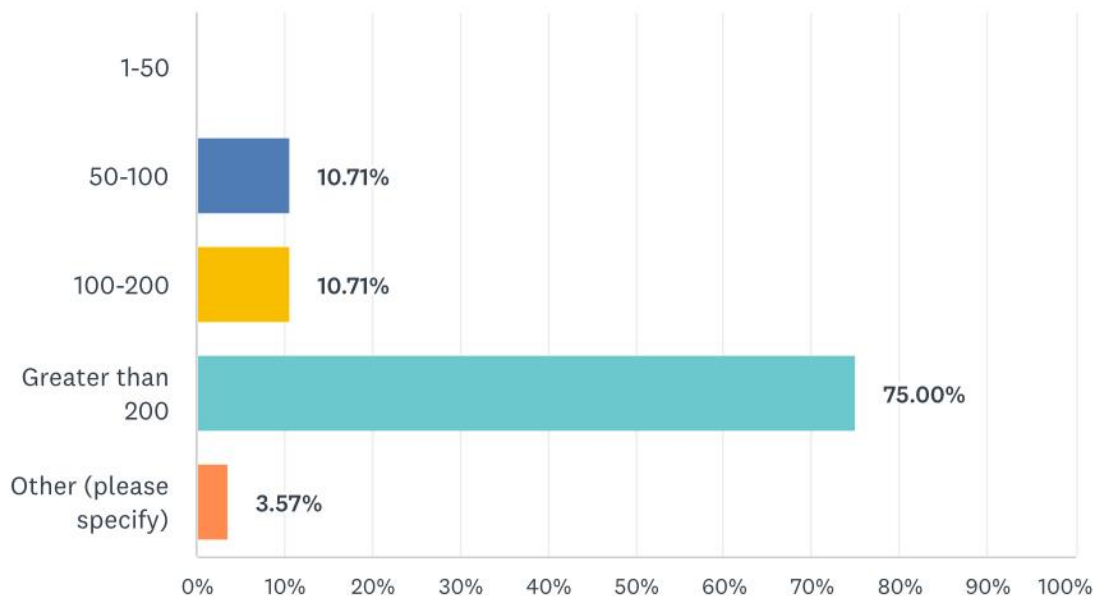


Figure 3: How many boats/boaters use your harbor throughout the year?

Which resources are available to properly dispose of human waste in your harbor?

Answered: 26 Skipped: 2

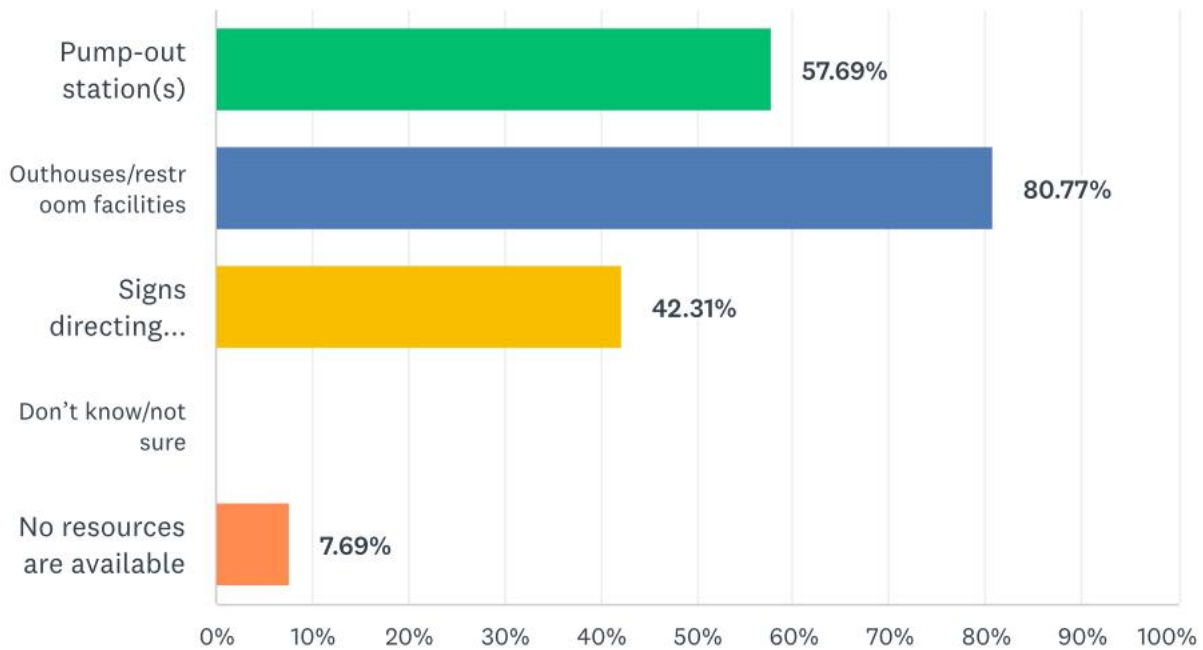


Figure 4: What resources are available to properly dispose of human waste in your harbor?

81% of Harbor Staff participants said that ‘Outhouse/restroom facilities’ were available in their harbor (Figure 4). The second highest were ‘Pump-out station(s)’ at 58% and third was ‘Signs directing proper sewage disposal’ at 42% (Figure 4). The two comments under ‘No resources are available’ mentioned that the “Pump out cart is in very poor condition” or that this question was “not applicable” to them.

The biggest concern for most Harbor Staff was ‘Routine small spills/leaks’ at 75%. The second biggest concern was ‘Discharge of dirty bilge water’ at 68%. In third place was ‘Improper sewage disposal’ at 54% (Figure 5).

In your opinion, what are the biggest concerns for boater pollution in your harbor? Check as many as apply

Answered: 28 Skipped: 0

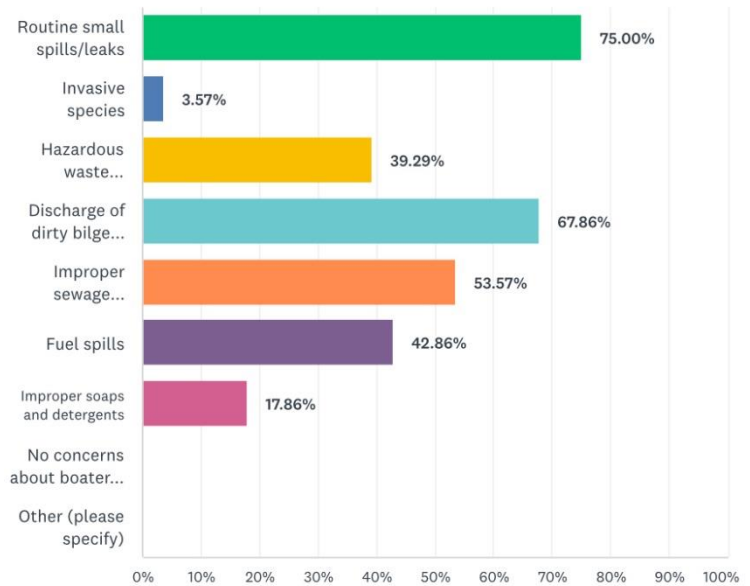


Figure 5: What are the biggest concerns for boater pollution in your harbor?

52% of Harbor Staff thought that ‘A mobile pump-out station’ would be the best thing to improve sewage disposal in their harbor. The second highest choice (48%) was ‘More/better onshore restroom facilities’. The next two highest scoring options were tied at 44%, ‘A stationary sewage pump-out station’ and ‘Signs on rules/regulations on sewage disposal’ (Figure 6).

Which facilities do you think would assist in proper/better sewage disposal in your harbor? Please check all that apply

Answered: 27 Skipped: 1

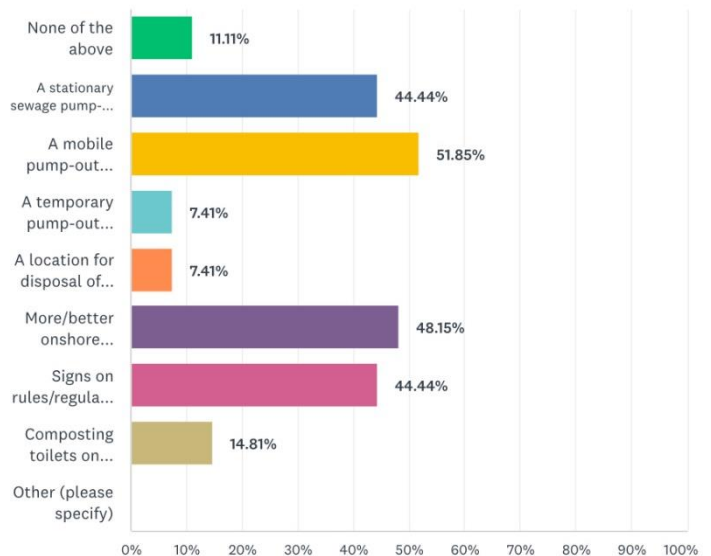


Figure 6: Which facilities do you think would assist in proper/better sewage disposal in your harbor?

The following survey question was “Would a permanent or temporary pump-out station benefit your harbor? Why or why not?”. 24 of the 28 Harbor Staff answered this question and 17% of those that did respond had ambiguous answers that were hard to decipher. 46% of the Harbor Staff that responded said “Yes” in one form or another. Some participants mentioned how currently, harbor users “have to either go far offshore to pump out, or request a pump truck to come down”, or that it would benefit the “large seasonal fishing fleet”. Some thought a pump-out station could be beneficial if it was done with a fee. 36% of the Harbor Staff participants answered “No”. Some said so because “We already have 3 permanent stations, and are adding a 4th” or “it’s not really a problem”. If the “No” answer was expanded upon it was frequently explained because pump-out stations were already present in the harbor.

88% of the participants considered ‘Signs around the boat harbor’ to be the best method to communicate with boaters. The second best (72%) was deemed to be ‘Face to face communication; and tied for third at 44% were ‘Radio public service announcements’ and ‘Online information’ (Figure 7). This was a surprising outcome because, as can be seen in Figure 4, only 42% of Harbor Staff participants said there were currently ‘Signs directing proper sewage disposal’.

92% of Harbor Staff participants currently communicate ‘In person in the office’ or ‘In person on the docks’. Only 61% of the participants communicated ‘Indirectly through signs’ (Figure 8). This is again a bit unexpected, because as signs were considered to be the best form of communication, one would assume it would have a higher response. Those that selected ‘Other’ included several options that were overlooked by the survey. For example, “texting”, “flyers” and “newsletters” were three other ways to communicate with boaters that were mentioned by participants.

The subsequent survey question was “Is your harbor certified or pledged as an Alaska Clean Harbor? Why or why not?” 21 of the 28 participants answered this question. Of those 21 that answered, 33% said “Yes”,

What are the best ways to communicate with boaters?

Answered: 25 Skipped: 3

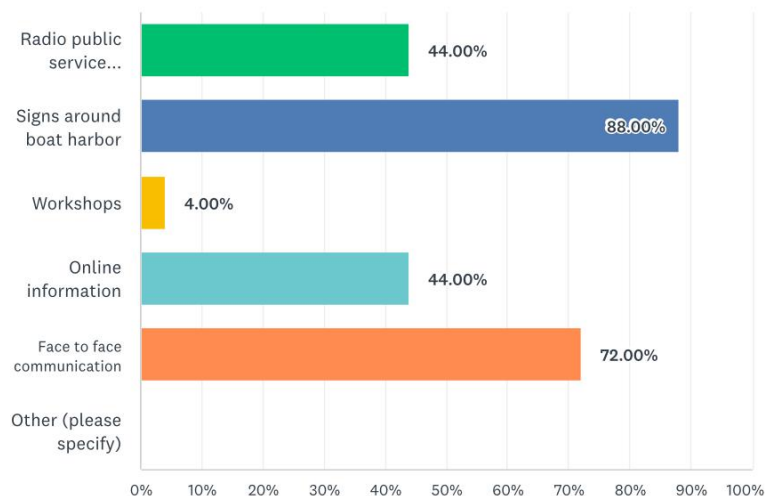


Figure 7: What are the best ways to communicate with boaters?

How do you currently communicate with harbor users?

Answered: 26 Skipped: 2

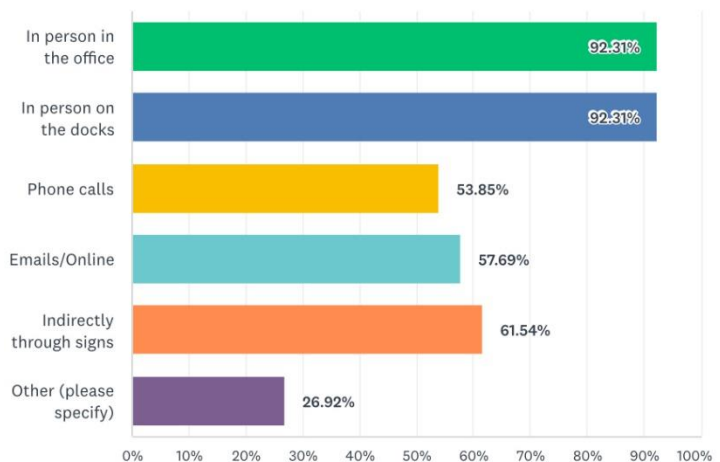


Figure 8: How do you currently communicate with harbor users?

that they were either certified or pledged to work towards becoming certified. 43% were neither certified, nor pledged. 14% of those that participated in this question were unsure if they were either certified or pledged as an Alaska Clean Harbor and 10% said that this question was not applicable to them. Those that said “Yes”, mentioned that it was the right thing to do. Some of the participants that answered “No” were unsure why that was the case, others thought that “some of the criteria is unattainable”. A participant that was unsure about whether they were pledged or certified stated that they “never get too many complaints of dirty bilge in the harbor”.

The next survey question directed at Harbor Staff was “What mitigation actions or best practices do you currently use to combat boater pollution?” Several Harbor Staff participants mentioned having free pump-out facilities as well as waste-oil collection points. Communication through a variety of means, flyers, in person, signs at every ramp, were also considered important reminders to educate the boating community. Multiple participants mentioned fines as being a useful tool to deter pollution. One participant talked of following marine best practices, which is also information shared by the [Alaska Clean Harbors](#) program. Two participants mentioned having established policies that have different requirements for live-aboards versus those that are just in for a short time.

There were a variety of responses when the survey asked Harbor Staff participants “What mitigation actions would you like to employ to combat boater pollution but do not currently? What barriers are preventing implementation?” Some participants mentioned being able to offer more varieties of disposal. Others wanted a greater number of cameras in order to document which boats and people are polluting. Increased funding, assistance from the United States Coast Guard (USCG) and education for boaters were also important factors to combat boater pollution.

The final question in the Harbor Staff survey was open to discuss any comments or suggestions about boating and sewage management in Alaska. One participant brought up the Clean Water Act and their financial assistance for improvement to pump-out facilities and/or equipment. Another talked about their concern with the contamination that can occur from grey water dumping, particularly that from large cruise ships. In the United States, grey water (used water from sinks, showers, etc) is allowed to be dumped within the three nautical mile limit from land, unlike black water (toilet water), which must be pumped beyond three nautical miles from land. The final participant to answer this prompt encouraged the use of positive reinforcement incentives for those that use pump-out stations or conduct clean practices.

Community Members

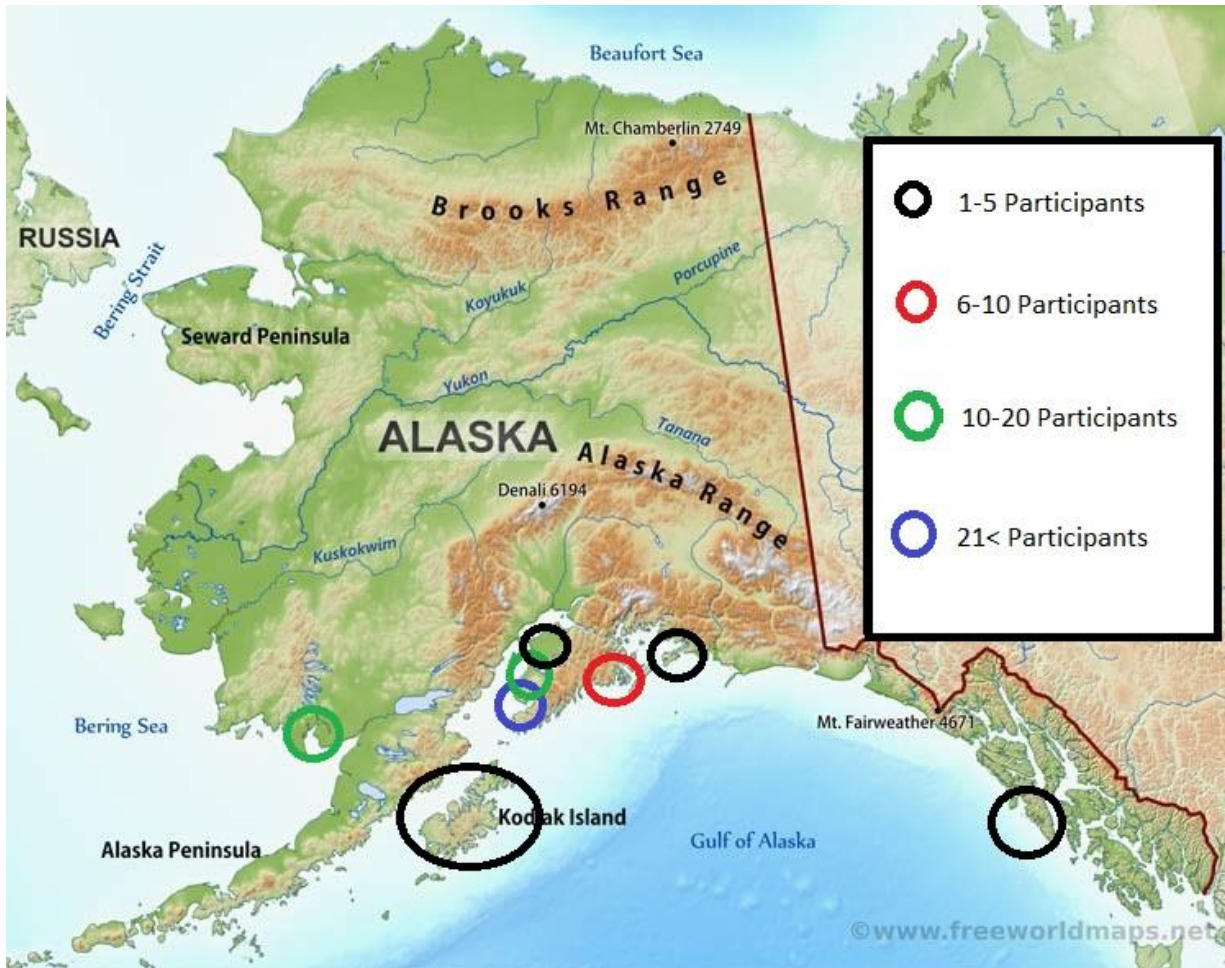


Figure 9: Map of the locations of Community Members survey participants. Different colors of circles represent the different amount of participants in each location

Figure 9 shows the locations of participants and the harbor they are nearest to. Community members were the largest group of participants (99) and of this group 1/3 of them (33) were from the Homer area. There were also 18 participants from Ninilchik and 14 from Dillingham. As these were the main focal areas for the survey this was not particularly surprising. Fortunately, all the participants in the survey were coastal with a harbor near their community. Because there was a good amount of Community Member survey participants (99), no interviews were sought out specifically for this demographic but still did occur, generally in a face-to-face setting. The results from those conversations were either included in the applicable section of the survey or in the open-ended prompts at the end of the survey.

In your opinion, what are the biggest pollution concerns in your harbor? Check as many as apply

Answered: 98 Skipped: 1

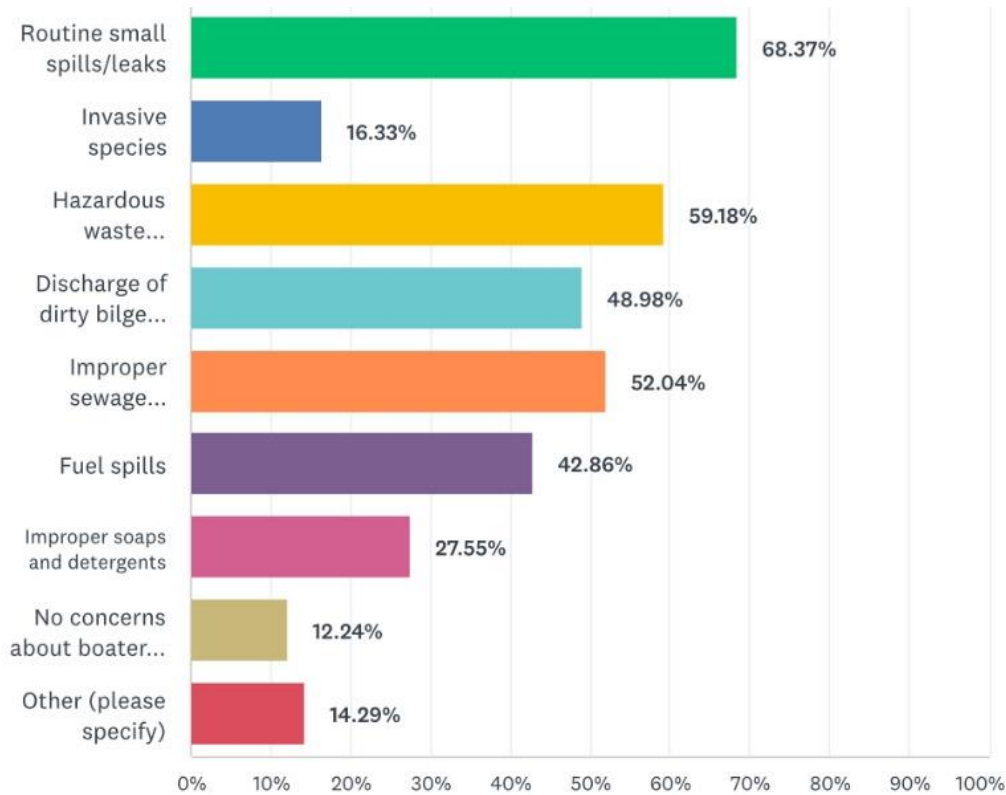


Figure 10: Question 2- In your opinion, what are the biggest pollution concerns in your harbor?

'Routine small spills/leaks' were considered the biggest pollution concern overall by Community Members (Figure 10). 'Hazardous waste (such as solvents and antifreeze) discharges' were thought to be the second biggest pollution concern (Figure 10). 'Improper sewage disposal' was the third highest at slightly over half of the participants (Figure 10). One of the possible choices that was not included but multiple participants mentioned in the 'Other' category was improper disposal of trash, plastic and Styrofoam waste.

These responses were very different when only Dillingham or Ninilchik participants were considered. Ninilchik participants had very different appraisals than did Dillingham (Figures 11 & 12 respectively). The biggest concern in Ninilchik was ‘Hazardous waste discharges’ at 57%. The next two highest were tied at 50%, ‘Improper sewage disposal’ and ‘Fuel spills’ (Figure 11). The degree of concern for Ninilchik participants was substantially lower than those in Dillingham. This was a surprising outcome, because as this project came about due to concern about the state of Ninilchik harbor, it was anticipated that a higher percentage of Community Members would have picked some of these prompts.

In your opinion, what are the biggest pollution concerns in your harbor? Check as many as apply

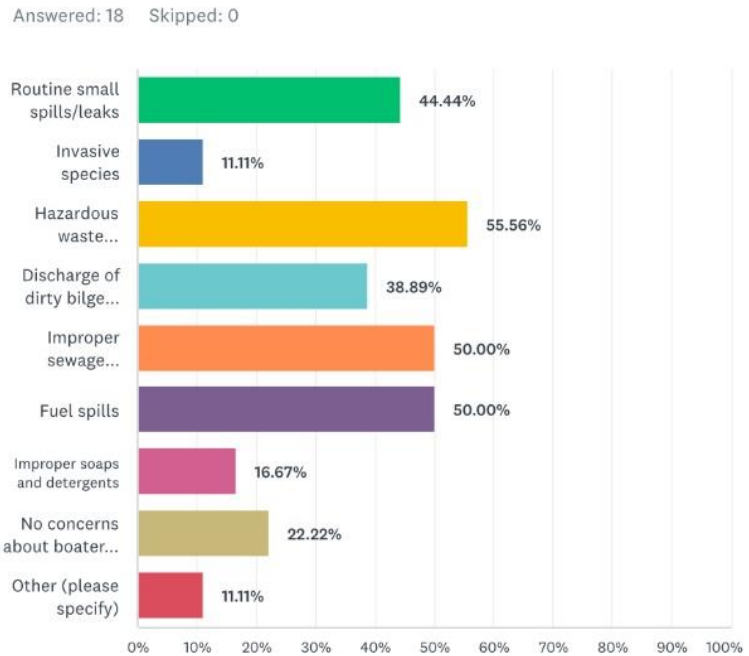


Figure 11: Question 2- Only Ninilchik participants

In Dillingham, 100% of participants considered ‘Routine small spills/leaks’ to be an issue (Figure 12). 85% of participants also believed that ‘Hazardous waste discharges’ and ‘Discharge of dirty bilge water’ were tied for significance of concern (Figure 22). ‘Improper sewage disposal’ was less of a concern but still rather high, 77% (Figure 12). This is a good example of how opinions of participants can be very location dependent. While the issues of concern are still prevalent, the degree of concern is very different between the two areas (Figure 11 & 12).

In your opinion, what are the biggest pollution concerns in your harbor? Check as many as apply

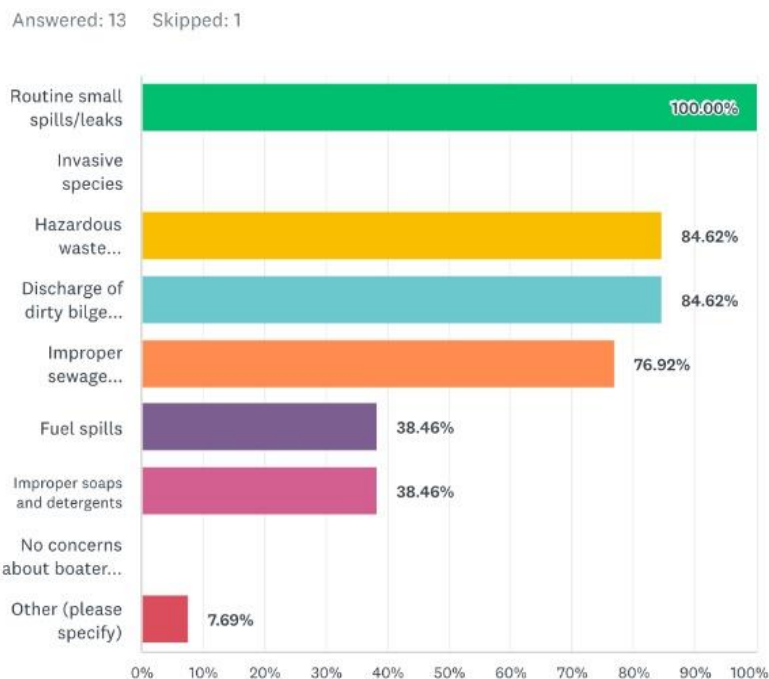


Figure 12: Question 2- Only Dillingham participants

Which resources are available to properly dispose of human waste in your harbor?

Answered: 99 Skipped: 0

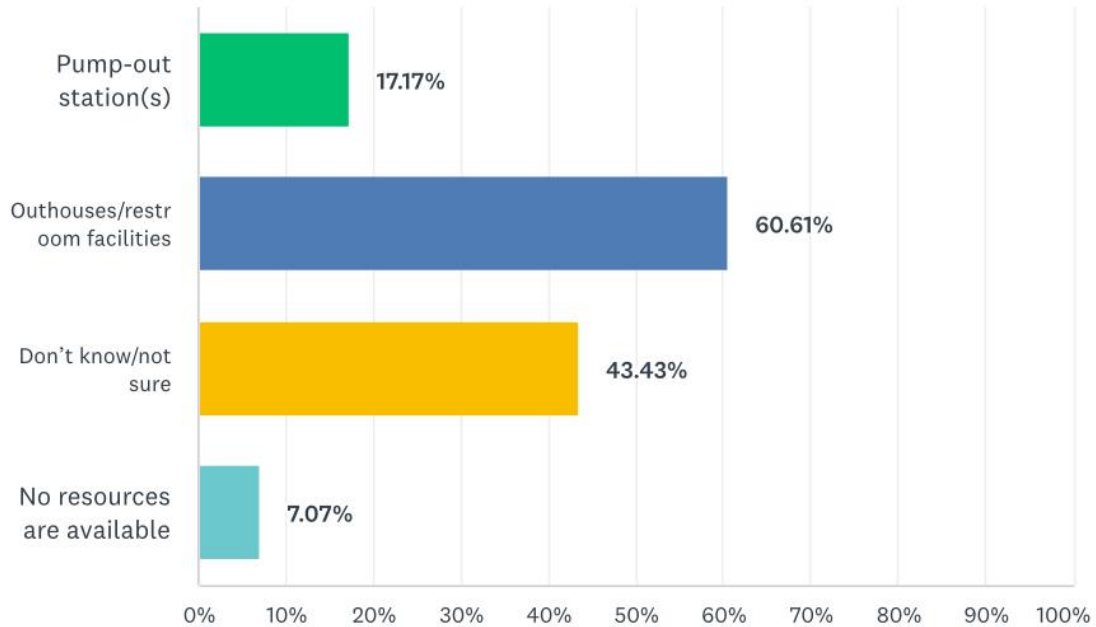


Figure 13: What resources are available to properly dispose of human waste in your harbor?

When all Community Member participants were surveyed, 'Outhouses/restroom facilities' were widely considered to be available at harbors (61%), 'pump-out stations' (17%) were not (Figure 13). A large portion of participants also were unaware of what resources were available (43%). 8% of participants chose to elaborate on this question. Of those that chose to elaborate 25% wrote that although restrooms do exist they are often locked and therefore unavailable. Another 25% commented that even though pump-out(s) do exist at their harbor, they are in inconvenient location and therefore probably not used.

In Ninilchik and Dillingham, these responses were again quite different (Figures 14 & 15). In the Ninilchik Community, the majority of participants (67%) 'don't know/not sure' what resources exist to dispose of human waste in their harbor (Figure 24). 22% of participants did know that 'Outhouses /restroom facilities' were available (Figure 14).

Which resources are available to properly dispose of human waste in your harbor?

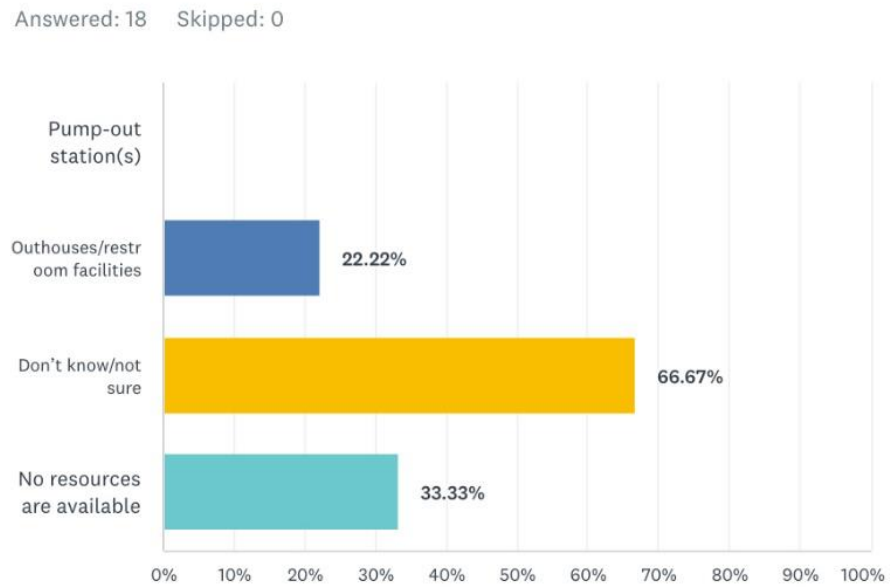


Figure 14: Question 3- Only Ninilchik participants

The participants in Dillingham once again had very different responses. 94% of Dillingham residents knew that 'Outhouses/restroom facilities' were available (Figure 15). 21% 'don't know/not sure' what resources were available (Figure 15). 7% of participants said that a 'Pump-out station' was available, although this is not the case (Figure 15). One participant mentioned that "waste oil/fluids are accepted at harbormaster offices" while another one stated "Restrooms couldn't be farther away from the highest boat harbor traffic."

Which resources are available to properly dispose of human waste in your harbor?

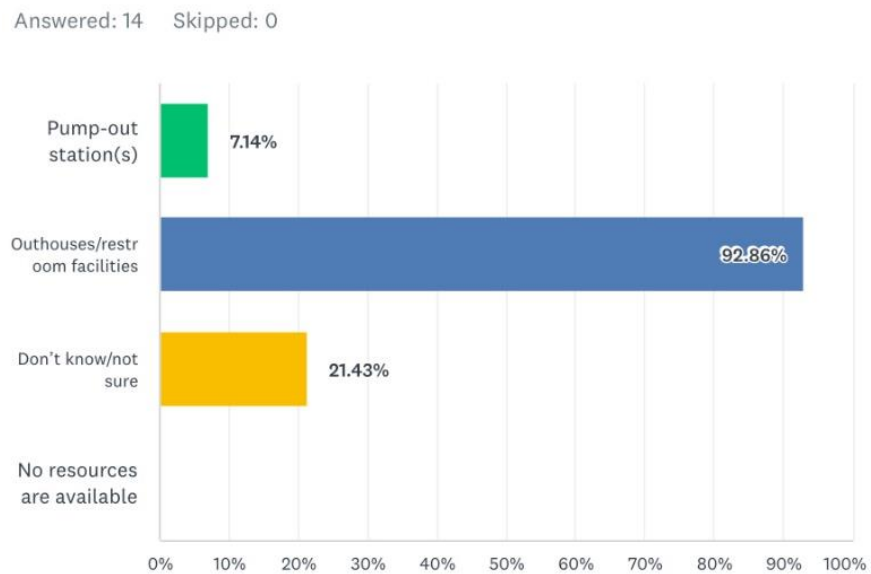


Figure 15: Question 3- Only Dillingham participants

Do you consider human waste (blackwater) to be an issue in the harbor?

Answered: 98 Skipped: 1

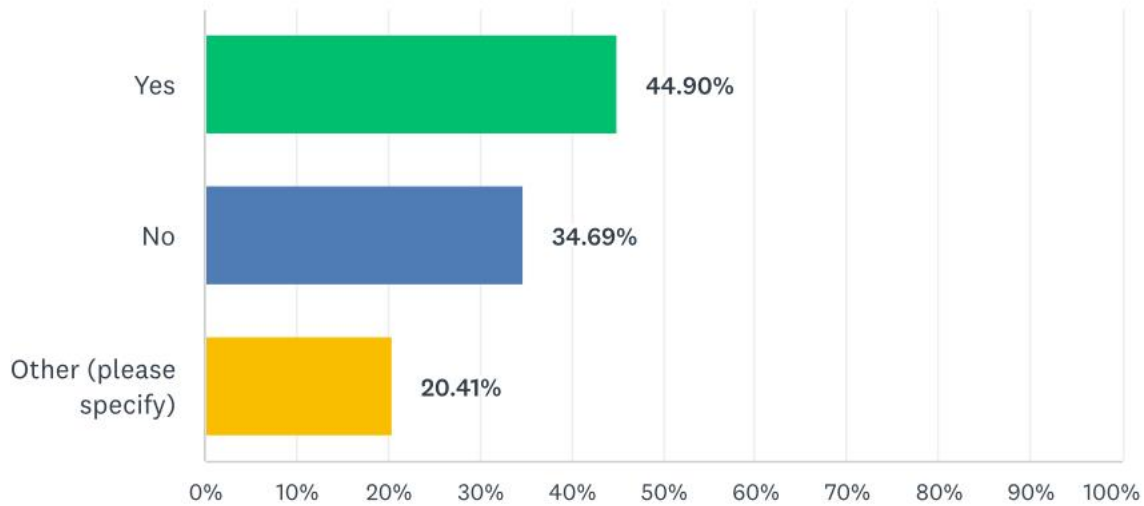


Figure 16: Question 4- Do you consider human waste (blackwater) to be an issue in the harbor?

Overall, of the participants taking the Community Members survey, less than half of those surveyed (45%) considered human waste to be an issue in the harbor (Figure 16). Several of the 'Other' answers stated things such as, "I wouldn't want to swim there", "I didn't think about it before but now it concerns me" or simply, "not sure". During face-to-face interviews, several participants repeated the idea that it wasn't a subject that they spent much amount of time concerned about but could be an issue.

In Ninilchik, it was split exactly evenly between those that thought that human waste was an issue and those that thought it wasn't (Figure 17). Of those that put other, some did not consider themselves knowledgeable enough about the subject to have an opinion, but others thought it was "worth a study and proactive measures to avoid".

In Dillingham, concern about human waste being an issue was significantly higher than the participants from Ninilchik, as well as the overall average (Figures 16, 17, & 18). These responses are quite different than Ninilchik and once again shows how opinions about the state of the harbor can be location dependent. During one interview a participant mentioned that they, as a teacher, had planned on getting mud and clay from the harbor to be used in a school project but other members of the staff suggested she get the materials from elsewhere. While their decision to get mud and clay from another source than the harbor was not solely based on human waste, it was a contributing factor.

The next question was "Would a permanent or temporary pump-out station benefit your harbor? Why or why not?". Participants got the opportunity to write in detail their thoughts on this subject. 60% of the participants that answered this question said "Yes", a permanent or temporary pump-out station would benefit their harbor. The degrees of belief in efficacy of the pump-out station varied greatly. One person, a diver, said that while diving approximately one mile away from the harbor they came across a large holding tank being dumped. Had there been pump-out facilities available at the harbor, this large and illegal discharge may not have occurred. Other participants talked about how current pump-out stations were in a bad location and therefore underutilized.

Do you consider human waste (blackwater) to be an issue in the harbor?

Answered: 18 Skipped: 0

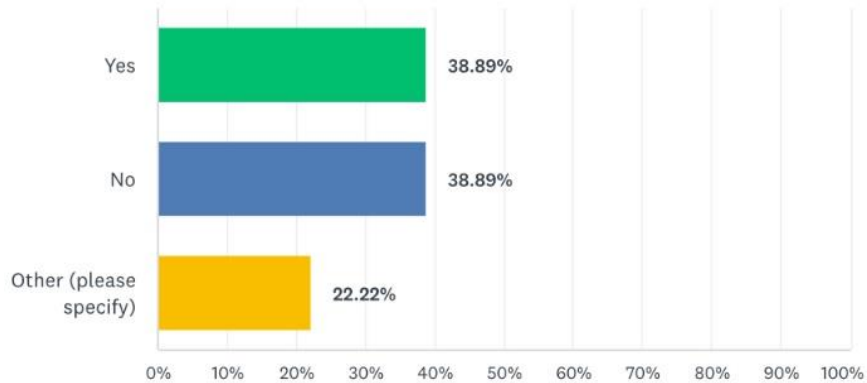


Figure 17: Question 4- Only Ninilchik participants

Do you consider human waste (blackwater) to be an issue in the harbor?

Answered: 13 Skipped: 1

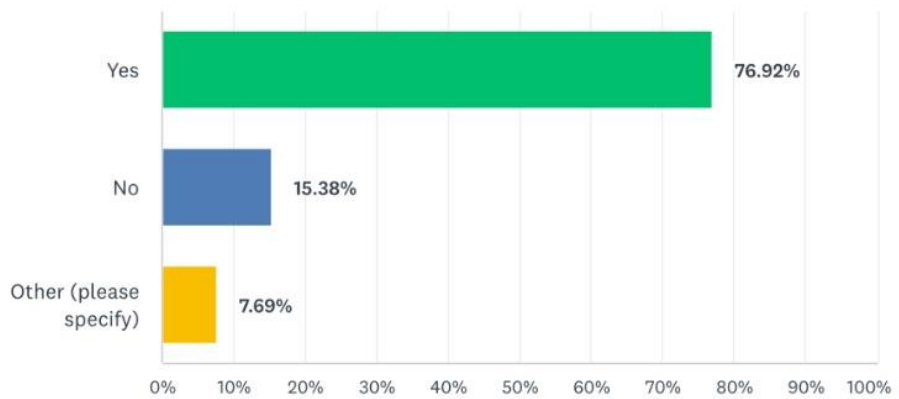


Figure 18: Question 4- Only Dillingham participants

35% of participants said either “No” or “Not sure” about pump-out stations benefiting their harbor. Few participants elaborated more on the subject but of those that did, one doubted that pump-out stations would be used, another said that the ocean, through its tides, “pumps out the bilge”, while one stated that there was no room to accommodate for a pump-out station, regardless of the benefit.

The remaining 5% answered in ways that were hard to decipher and were therefore put in the “other” category. One participant responded with “I’m not an engineer but I’d appreciate a study”, and “the boats use 5 gallon buckets”. While the latter may imply that a pump-out station is not necessary as boats do not use them, it would be presumptuous to assume intention.

When narrowing the focus to particular locations, 71% of Ninilchik participants said “Yes”, again with varying degrees of positive impact. Some mentioned that the more resources available, the more likely the harbor would stay clean. Others saw that it could provide some benefit but were concerned about vandalization or cost.

In Dillingham, 75% said “Yes”. While the positive characteristics of a pump-out station were noted, several participants recognized that staffing and budget were constraints. The 25% of participants that said “No”, had two reasons for saying so, most boats just use a 5-gallon bucket or old habits are hard to break.

At the end of the survey participants were given the opportunity to ‘provide us with any additional comments or suggestions you have about boating and sewage management in Alaska.’ Of the 99 participants, 62 of them answered this question. Most were addressing issues specific to their community, but some had general comments as well. One participant was surprised that there was not better enforcement of regulations, “...in Cook Inlet... When it rains the whole yard looks like oil spill and it’s all flowing to rivers. I don’t know how they don’t get fined or half (sic) to clean it up. But there’s a lot of things wrong with Cook Inlet, I just think no one cares.” Another expressed concern, “how do you incentivize doing the right, and more expensive thing when the free thing has an almost zero chance of getting caught and no apparent impact to the ocean?” One participant pointed to the possibility of using port-o-potties as an inexpensive and effective way of helping address sewage problems in harbors. This sentiment was shared by another participant that thought blackwater sewage isn’t as much a concern in the ocean but “doesn’t become an issue unless concentrated in the harbor”.

Multiple participants stated in one form or another that education was the most important vehicle for change, advocating for educating harbor users and conducting radio public service announcements about boating and sewage management. The need for “environmentally-responsible boating” was addressed by one participant who thought that “placards or signage might help raise awareness... If enough parties are aware of the environmental expectations, perhaps more accountability can be cultivated on a person-to-person basis.” Many of the participants felt they were not educated on the subject, and therefore didn’t want to speak about a topic they weren’t familiar with. Even so, several participants appreciated the heightened awareness provided by participating in the survey.

Harbor Users

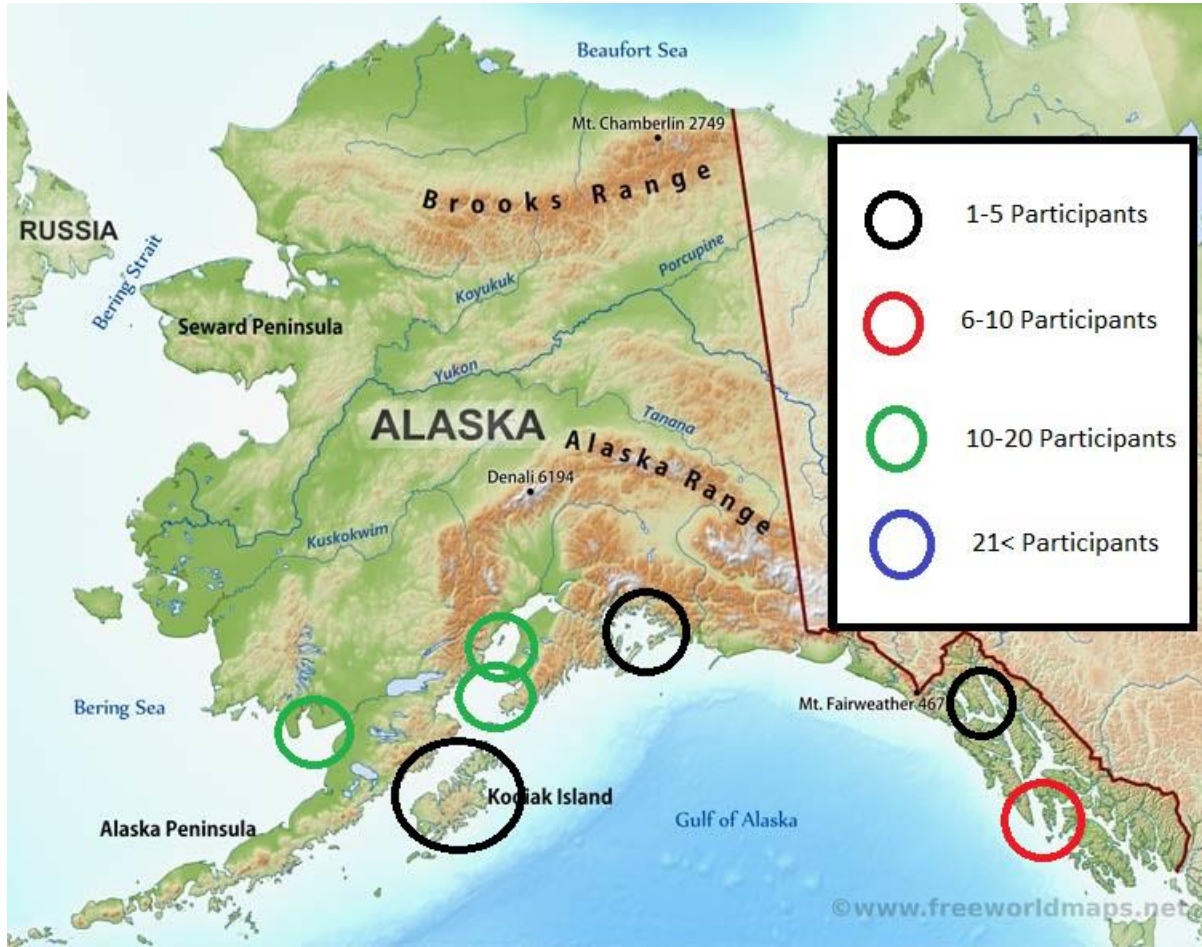


Figure 19: Map of the locations of Harbor Users survey participants. Different colors of circles represent the different amount of participants in each location

Figure 19 shows the locations of participants and the harbor they are nearest to. Harbor Users were the largest group of participants (86). There were 15 participants from Ninilchik and 12 from Dillingham. As these were the main focal areas for the survey this was not particularly surprising. Fortunately, all the participants in the survey were coastal with a harbor near their community. As it was difficult getting Harbor Users to take the survey, extra effort was made to call fishermen. The results from those conversations were included in the applicable section of the survey or in the open-ended area at the end of the survey. The data and graphs include the comprehensive results from interviews and individuals that took the surveys themselves.

In your opinion, what are the biggest pollution concerns in your harbor? Check as many as apply

Answered: 84 Skipped: 2

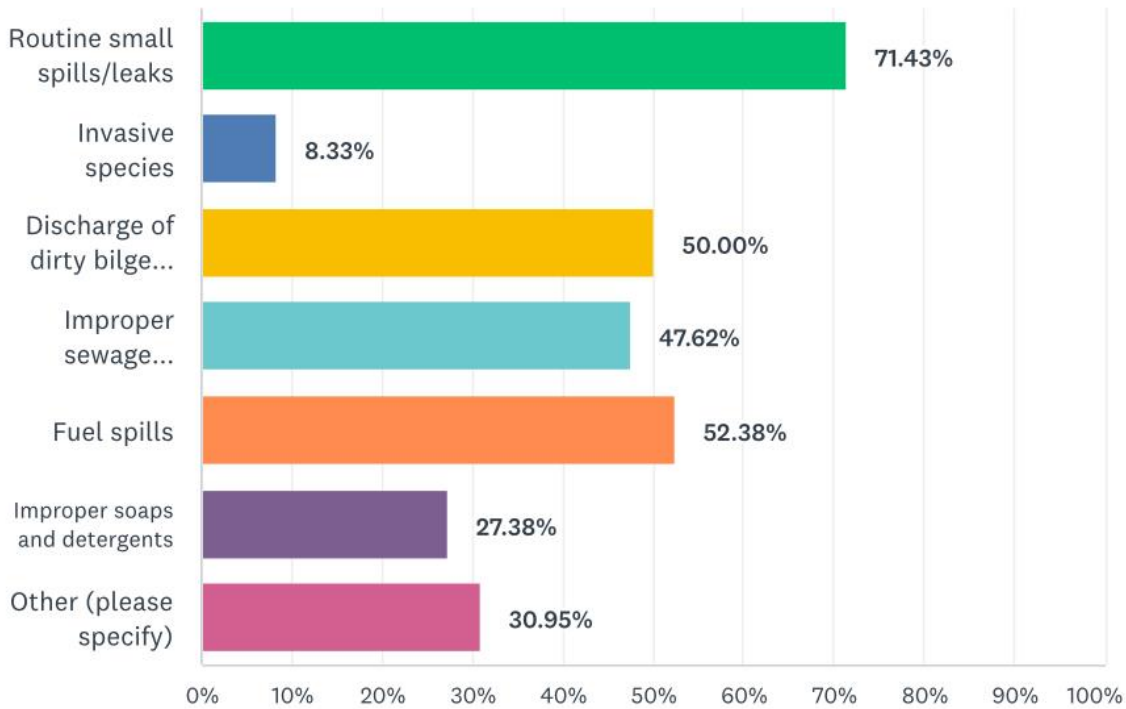


Figure 20: Question 4- What are the biggest pollution concerns in your harbor?

The biggest concern for Harbor Users was ‘Routine small spills/leaks’ (71%) followed by ‘Fuel spills’ (52%) (Figure 20). ‘Improper sewage disposal’ was 4th overall with 48% of participants considering it a pollution concern in their harbor (Figure 20). Some of the ‘Other’ responses included dog poop that isn’t properly cleaned and that if a pump-out station isn’t working properly, that people don’t have time to wait for repairs.

For Ninilchik Harbor Users, the two biggest concerns were also 'Routine small spills/leaks' as well as 'Discharge of dirty bilge water' (both at 57%) (Figure 21). However, in Ninilchik the level of concern was almost 25% lower than that in Dillingham (Figures 21 & 22). This was also the case with Ninilchik's third biggest concern, 'Improper sewage disposal' (50%), again approximately 25% lower than Dillingham participants (Figure 21 & 22). Half of all the Ninilchik participants selected 'Other'. Some wrote about the need for dumpsters or used oil receptacles. Other participants wrote about needing facilities for public safety, such as fire suppression systems. While interviewing fishermen in Ninilchik, some stated that pollution is getting better. As each new generation of fisherfolk come into the field, they recognize the importance of not participating in harmful practices to sustain their livelihoods.

The two biggest concerns for Dillingham Harbor Users were tied at 83%: 'Routine small spills/leaks' and 'Discharge of dirty bilge water' (Figure 22). The next two highest were 'Improper sewage disposal' at 67% and 'Improper soaps and detergents' at 58% (Figure 22). These percentages show that for over half of those surveyed that these were major concerns. While conducting face-to-face conversations in Dillingham one fisherman talked about his biggest concern being people cleaning fish in the harbor and dumping their carcasses or entrails directly overboard.

In your opinion, what are the biggest pollution concerns in your harbor? Check as many as apply

Answered: 14 Skipped: 1

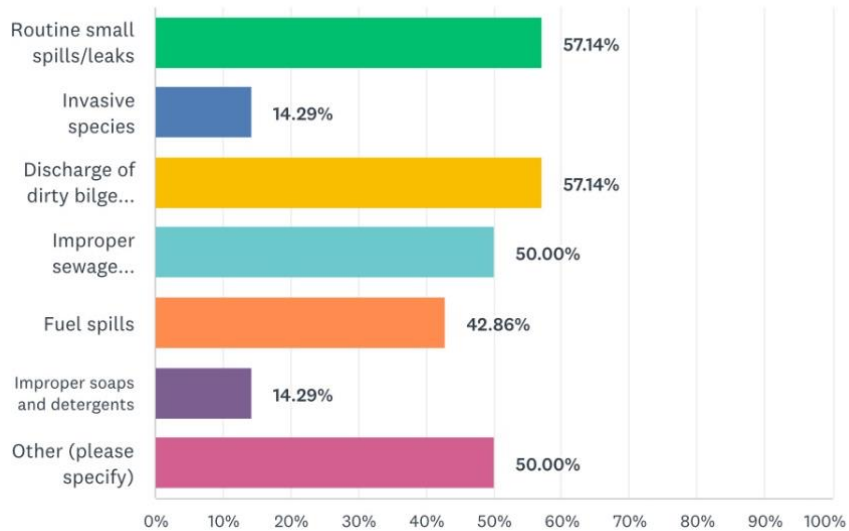


Figure 21: Question 4- Only Ninilchik participants

In your opinion, what are the biggest pollution concerns in your harbor? Check as many as apply

Answered: 12 Skipped: 0

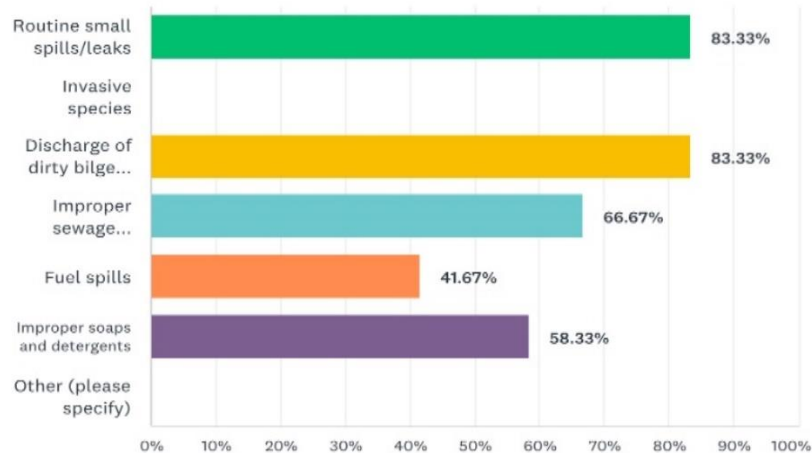


Figure 22: Question 4- Only Dillingham participants

Do you consider human waste (blackwater) to be an issue in the harbor?

Answered: 86 Skipped: 0

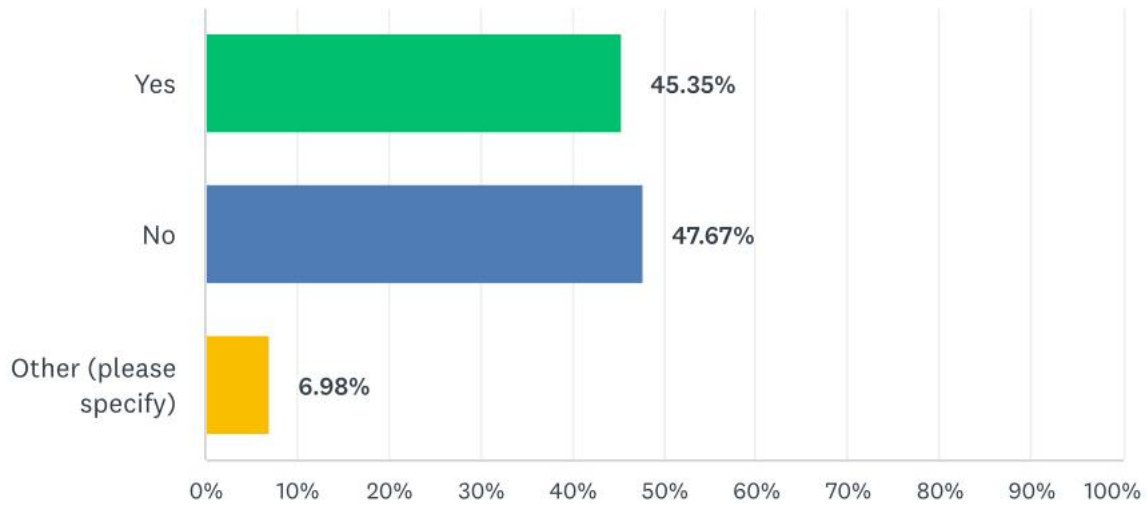


Figure 23: Question 5- Do you consider human waste (blackwater) to be an issue in the harbor?

Overall Harbor User participants were nearly split evenly whether sewage was an issue in the harbor (Figure 23). In opposition to the Community Members survey, more Harbor Users thought it was **not** an issue than thought it was (Figure 16 & 23).

Ninilchik Harbor Users concerns about human waste were at higher percentages than the overall results (Figure 24 & 23). Interviewing those on the phone or in person also showed two different sides. Some were adamant that people certainly dumped honey buckets overboard or discharged their heads and holding tanks directly into the harbor. Others were certain that people cared about the environment, would never dump directly into the harbor, that they went home or to the restrooms to do their business. Some expressed dismay at the fact that the permanent restrooms were 1/3 of a mile away from the harbor and that although there used to be dumpsters and port-o-potties nearby to the harbor, they haven't been there in recent years.

In Dillingham, 50% of participants thought that human waste was an issue, while 42% did not (Figure 25). The participant that chose Other, stated that she/he had not thought about it before but that it could be an issue. Percentage-wise, Dillingham and Ninilchik had similar opinions (Figures 24 & 25).

Do you consider human waste (blackwater) to be an issue in the harbor?

Answered: 15 Skipped: 0

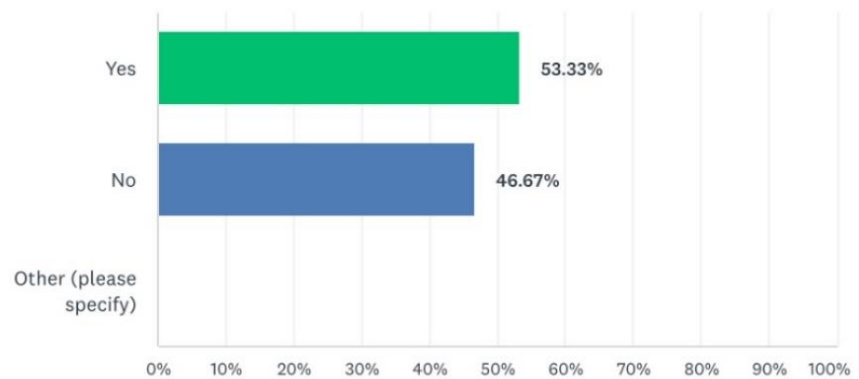


Figure 24: Question 5- Only Ninilchik participants

Do you consider human waste (blackwater) to be an issue in the harbor?

Answered: 12 Skipped: 0

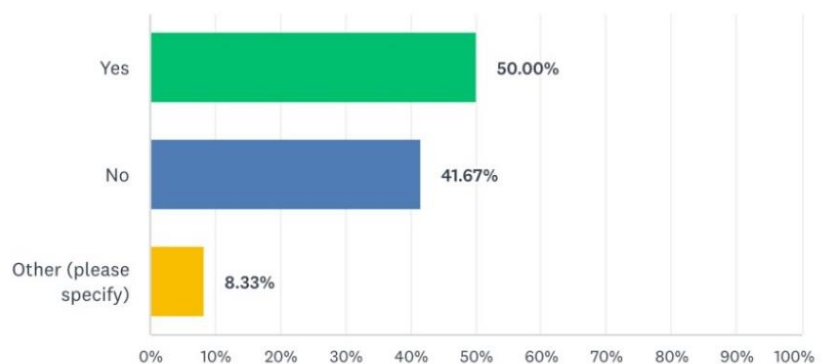


Figure 25: Question 5- Only Dillingham participants

Which sewage management system do you currently use on your boat?

Answered: 81 Skipped: 5

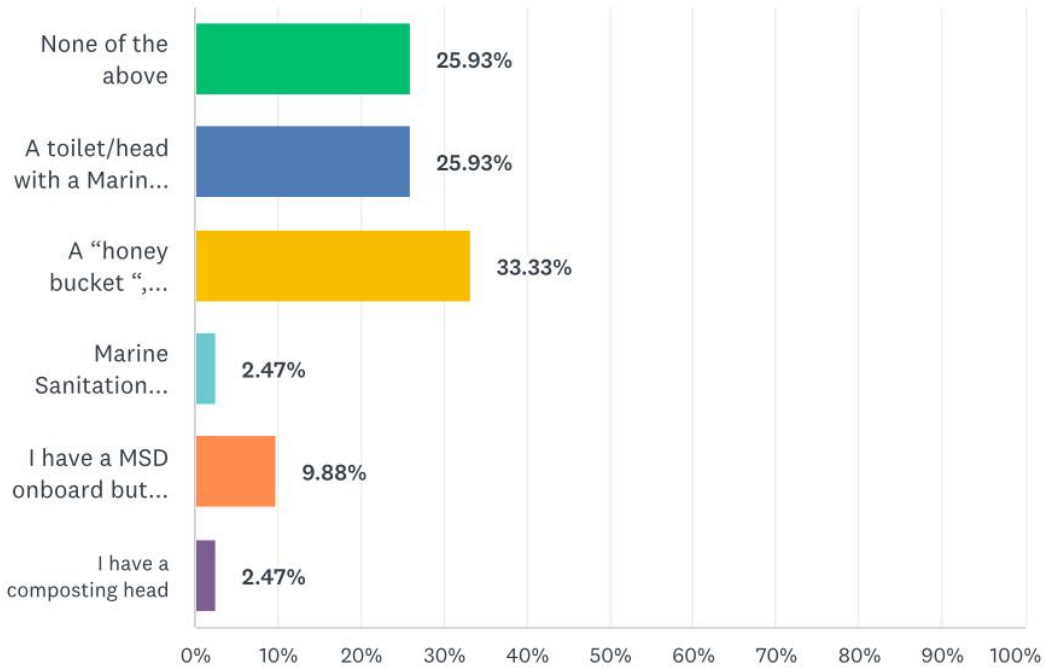


Figure 26: Question 6- Which sewage management system do you currently use on your boat?

1/3 of Harbor User participants use a 'honey bucket, 5-gallon bucket, or camp toilet' (33%) (Figure 26). The next highest two results are tied at 26%: 'A toilet/head with a Marine Sanitation Device (MSD)' and 'None of the above' (Figure 26). Only 10% of participants said that they 'have a MSD onboard but never use it' (Figure 26). While interviewing Harbor Users from Homer, one said that they go out for day trips and for the most part never need to go # 2. Another said that, while his boat does have a head and MSD onboard, after being on the water for the day he puts the boat on a trailer and takes it home. He drains his holding tank and dumps it into his toilet in his home. He found that it is more efficient to dump his waste at home because how rarely the MSD actually gets used and the time it takes to use a pump-out station due to the lines that sometimes exist.

Ninilchik Harbor Users had very different results than the overall opinions (Figure 27 & 26). The two most common were 'None of the above' and 'A toilet/head with a MSD' (both at 36%) (Figure 37). Only two participants use 'A honey bucket, 5-gallon bucket, or camp toilet' (14%) (Figure 27). Some of the participants wrote more on the survey to explain their choice. One participant wrote that they have a "18 gallon holding tank", another wrote, "I use it and dump outside of 3nm", while another wrote "I have a head but don't use it in the harbor. I use the porta potty provided by CICADA". It seems that the CICADA referred to is "Cook Inlet Council on Alcohol and Drug Abuse". A follow up with CICADA confirmed that they have never provided porta potties.

Dillingham Harbor Users also had very different results from both Ninilchik Harbor Users and overall Harbor Users (Figure 28, 27 & 26). 2/3 of all Harbor Users say they use 'A honey bucket, 5-gallon bucket, or camp toilet' (67%) (Figure 28). Only one participant in Dillingham stated that they 'have a MSD onboard but never use it' (8%) (Figure 28). This is a surprising result because when the initial in-person survey with Harbor Users in Dillingham was conducted, over half of those interviewed (5) stated that they had a MSD but didn't use it. One comment from the survey, likely by a participant that chose 'None of the above' (25%), stated that they have a skiff.

Which sewage management system do you currently use on your boat?

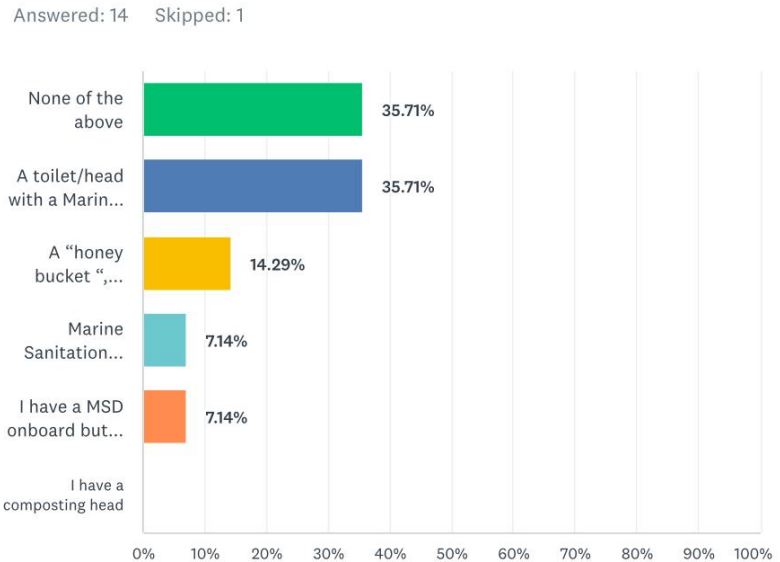


Figure 27: Question 6: Ninilchik participants only

Which sewage management system do you currently use on your boat?

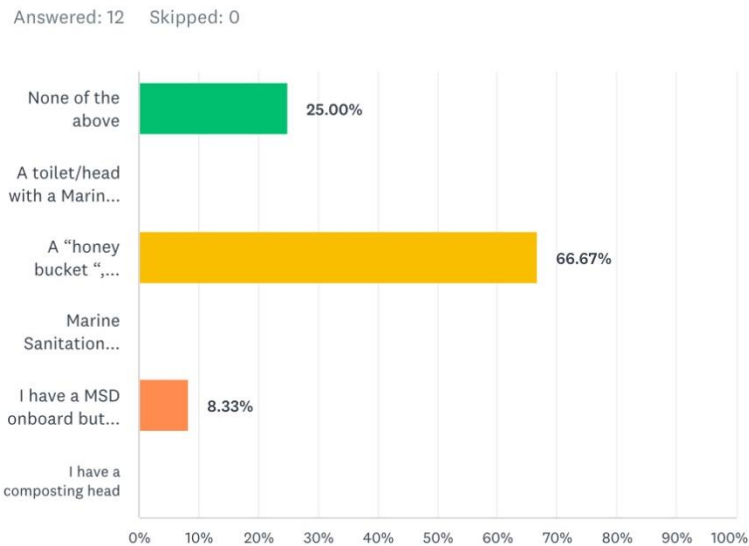


Figure 28: Question 6: Dillingham participants only

Which resources are available to properly dispose of human waste in your harbor?

Answered: 84 Skipped: 2

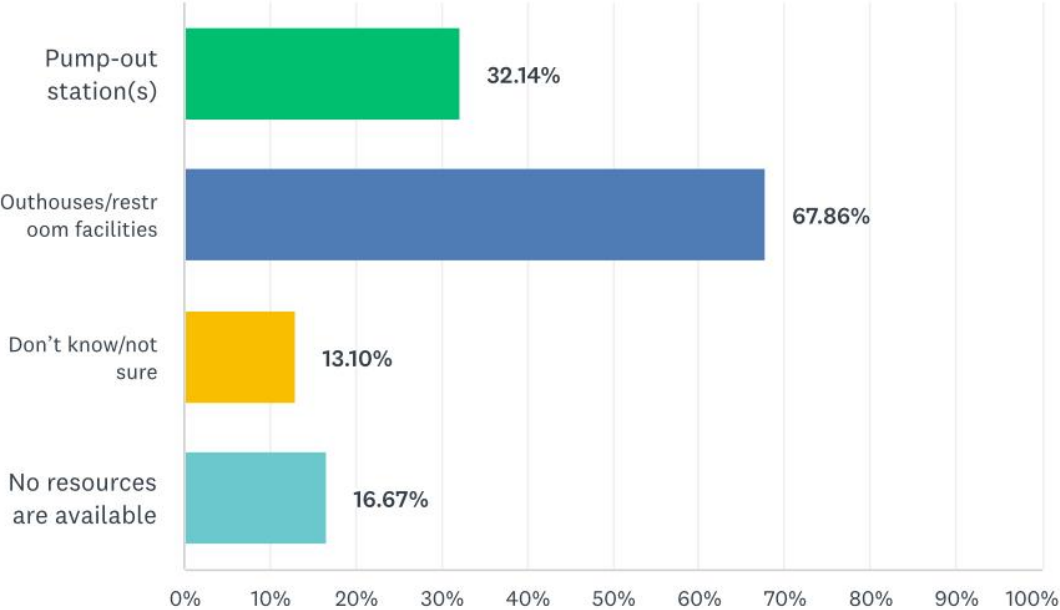


Figure 29: Question 7- Which resources are available to properly dispose of human waste in your harbor?

The results from all Harbor Users shows that 'Outhouses/restroom facilities' were stated as being available over 2/3 of the time (68%) (Figure 29). 'Pump-out station(s)' were only considered available less than 1/3 of the time (32%) (Figure 29). The rest of the participants stated that 'No resources were available' (17%) or they 'didn't know/not sure' (13%) (Figure 29).

The large majority of Harbor Users in Ninilchik knew about the availability of 'Outhouses/restroom facilities' (73%) however those that stated 'No resources are available' (27%) were likely referring to the locations and availability of the restrooms (Figure 30). Several participants wrote about that issue, "sometimes have temporary toilets", "used to be a nice place, most people dump sewage directly (into the harbor), outhouses sometimes but the permanent one is too far". Another participant stated that the state "took port-o-potties (and) dumpsters away, restrooms closed". One person that was interviewed stated that most locals go to their homes when their boat is in the harbor. They lock up their boat and just drive home to wait for the next opener. They therefore bring their garbage home and use the bathrooms at home too. This participant said that, when the dumpsters and port-o-potties existed by the harbor, locals made a point of not using them so that those without vehicles could. Now that the dumpsters and port-o-potties are no longer provided, the harbor users from outside the state must do something.

Which resources are available to properly dispose of human waste in your harbor?

Answered: 15 Skipped: 0

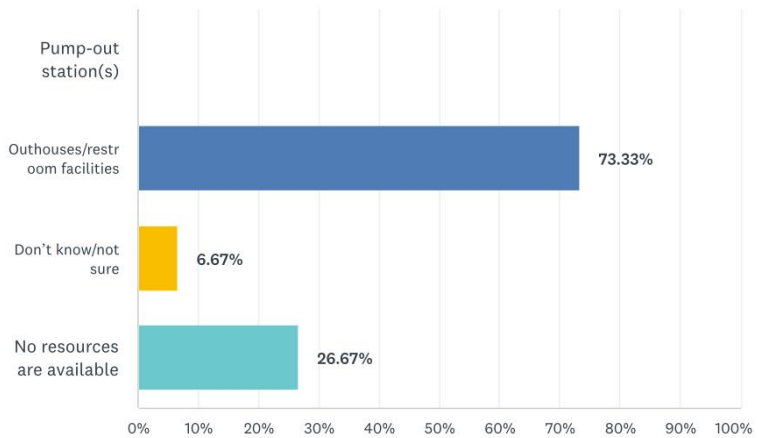


Figure 30: Question 7: Ninilchik participants only

The spread of opinions for Dillingham Harbor Users was much different than in Ninilchik (Figure 30 & 31). 42% of participants recognized that there are 'Outhouses/restroom facilities' available, whereas the exact same number of participants, believed that 'No resources are available' (42%) (Figure 31). This is a very surprising outcome of this survey because there are certainly permanent restrooms available that are visible from every part of the harbor. One participant also believed that 'Pump-out station(s)' were available, which is not accurate. It seems like the results from these two categories, 'No resources are available' and 'Pump-out station(s)' would have been more accurately depicted in the 'Don't know/not sure' category. Similar to the Ninilchik situation, there are many Harbor Users that live in Dillingham and go

Which resources are available to properly dispose of human waste in your harbor?

Answered: 12 Skipped: 0

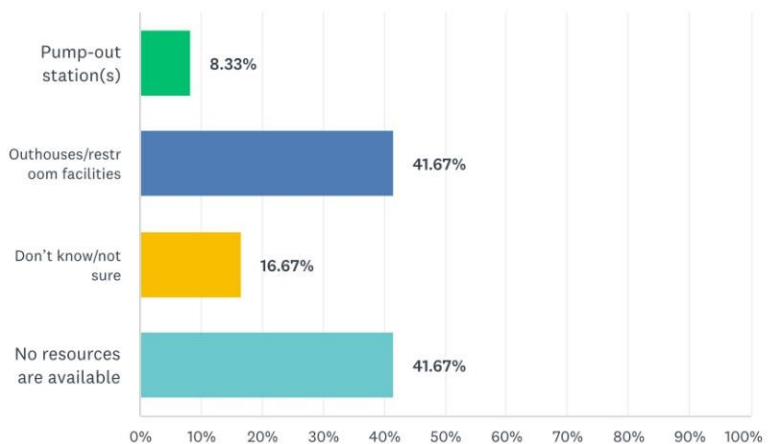


Figure 31: Question 7: Dillingham participants only

home after pulling into the harbor. Therefore, they likely do not need or use the facilities at the harbor. This could possibly account for the responses that indicate inaccurate information.

This was a contentious question for some survey takers because some believed that the phrasing of this question was implying that something was wrong with their harbor and by answering it then they, the Harbor User, was agreeing with that belief. During conversations, over the phone or in-person, there was a concerted effort to assure this was not the case. That this question, and the survey in general, was aimed at better understanding people’s opinions in order to facilitate proper waste management procedures. This was not aimed at getting people or harbors in trouble but to better identify shortcomings and to encourage ways of improvement.

What facilities do you think would assist in proper/better sewage disposal in your harbor? Please check all that apply

Answered: 86 Skipped: 0

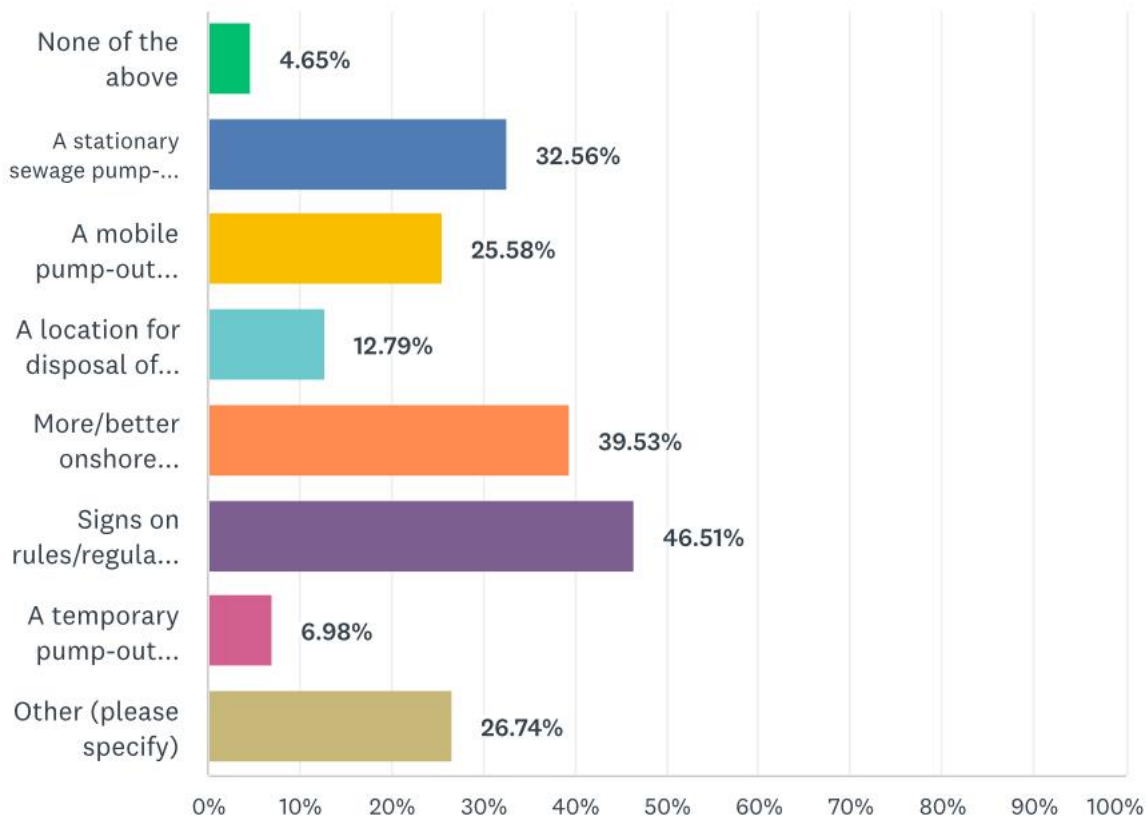


Figure 32: Question 8- What facilities do you think would assist in proper/better sewage disposal in your harbor?

For overall Harbor User participants, the option that got the highest responses was 'Signs on rules/regulations on sewage disposal' (47%) (Figure 32). This was encouraged during interviews as well, even by those that only used harbors in passing. A lot of information was exchanged by passing down from the older generation of fishermen to the younger. During one interview, a Harbor User in Homer recommended that signs should be directed both at the entrance to the harbor for incoming boats, as well as on shore for tourists or people arriving from land. The second highest response was 'More/better onshore restroom facilities' at 40% (Figure 32). Some participants that were interviewed mentioned that just as important as having more restrooms was having them in the right location during the right season. As many harbors in Alaska are only open during the summer season, having extra port-o-potties or extra permanent facilities that are open during that time was considered to be equally important.

The vast majority (87%) of Ninilchik Harbor User participants believed that 'More/better onshore restroom facilities' was the most important way to improve sewage disposal in Ninilchik (Figure 33). The next highest result was 'Other' at 67% (Figure 33). One of the comments from this was that "Overcrowding is the big issue". This was a common opinion during interviews with Ninilchik Harbor Users. Many of those interviewed thought that the root problem was overcrowding, and that improper sewage disposal was a symptom of that. The overcrowding caused boats to tie up in less than ideal locations and during low tides the undredged areas would tilt the boats, causing a variety of unfortunate impacts. The overcrowding was also a concern for safety. Should a fire occur, boats would only be able to leave at high tide and there are not fire suppression facilities near the harbor. Two participants posted in the 'Other' selection included better messaging and information as "a lot of people don't understand the effects fecal matter can have", either communicating this by "a person talking to boat owners before the season or handing out fliers". Several participants mentioned having a dumpster (that is dumped), port-o-potties that are close to the harbor, and places to deposit used oil.

What facilities do you think would assist in proper/better sewage disposal in your harbor? Please check all that apply

Answered: 15 Skipped: 0

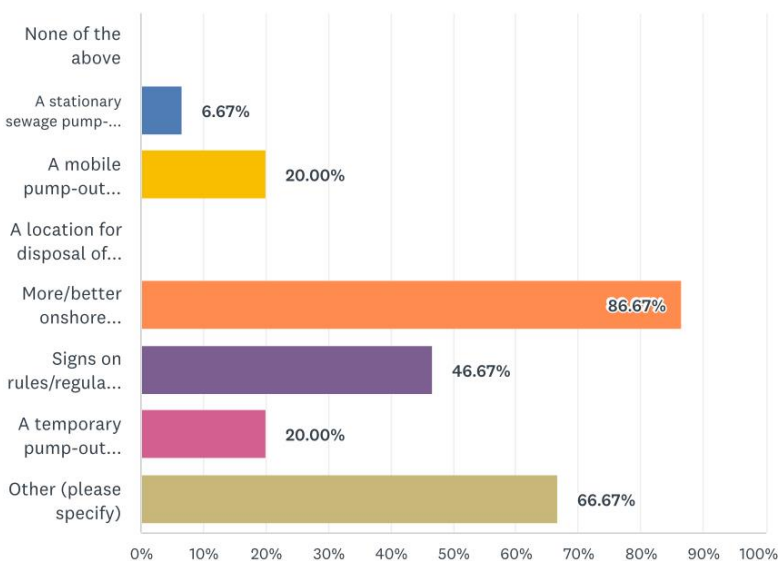


Figure 33: Question 8: Ninilchik participants only

Dillingham Harbor Users had very different opinions than did Ninilchik ones (Figures 34 & 33). 'Signs' were still considered the most important improvement (42%) for improving sewage disposal in the harbor (Figure 34). The next three highest options were all tied at 33% of participants thinking these facilities could improve sewage disposal, 'A stationary sewage pump-out station', 'A mobile pump-out station', 'A location for disposal of camp toilets (5-gallon buckets)' (Figure 34). During an interview with a Harbor User in Dillingham they mentioned the fact that there is no reason for them to get a head and an MSD onboard because there is no pump-out station available to them. As can be seen earlier in the survey, Figure 38, only 8% of those surveyed had heads and MSDs. Therefore, there is the argument of whether a pump-out station is warranted as so few boats have the resources that require a pump-out station contrary to the argument that without a pump-out station, there is no value in boats getting heads and MSDs.

What facilities do you think would assist in proper/better sewage disposal in your harbor? Please check all that apply

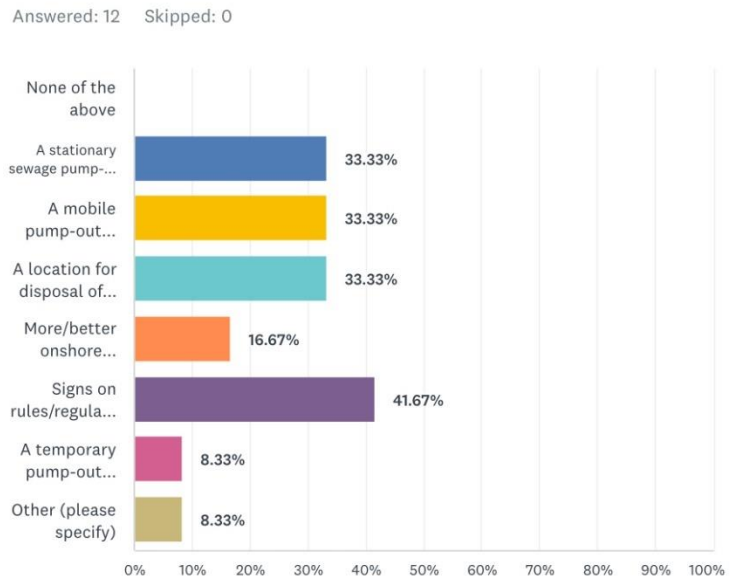


Figure 34: Question 8: Dillingham participants only

The next question from the survey was "Would a permanent or temporary pump-out station benefit your harbor? Why or why not?". Of the 86 Harbor Users that took this survey, 78 answered this question. Overall, 42% of Harbor Users responded with a version of "Yes". One participant stipulated that "if there is no enforcement it would not be worth it". 45% of the participants stated "No" in one form or another. Some were "happy with what we have", or contrarily, "there are pump-outs, but nobody uses them". One participant stated that "the MSDs available for fishing vessels no longer meet CG (Coast Guard) Standards. The Washington based facilities that sold them, no longer do". (Puget Sound, in Washington state is in fact a "No Discharge Zone" and therefore direct discharge from MSDs are not allowed there. However, USCG certified MSDs are still available for sale in Washington and are allowed to be used in Alaska.) 10% of the Harbor User participants thought that a permanent or temporary pump-out station would "maybe" benefit the harbor, and 3% of participants had ambiguous answers.

Of the Ninilchik Harbor Users, all 15 who took the survey answered this question. Of those 66% of the participants said "No", a permanent or temporary pump-out station would not benefit the harbor. One participant included the statement that "People wouldn't use it. (Ninilchik) is a very different community than say Homer". Another participant chimed in saying "Have not used one, would not use one if it was available". 2/3 of survey participants did not think a pump-out station would benefit Ninilchik harbor, the other 1/3 explained why it would be of benefit. "It would encourage boats to upgrade their sanitation devices", said one participant. Another Ninilchik Harbor User that was interviewed said, "some harbor users may never use a pump-out station, but people absolutely won't use it if it doesn't exist".

The Dillingham Harbor Users had a different approach. Of the 12 Harbor Users that took the survey, 11 answered this question. 73% of those that answered this question thought that either seasonal or multiple pump-out stations would be beneficial. 18% thought that it was not a good idea, one stating “there is no way to move around unless all the boats move for an opener”. One participant thought that it might be helpful, but fisherman may not have time to use a pump-out station.

What are the best ways to communicate with boaters?

Answered: 84 Skipped: 2

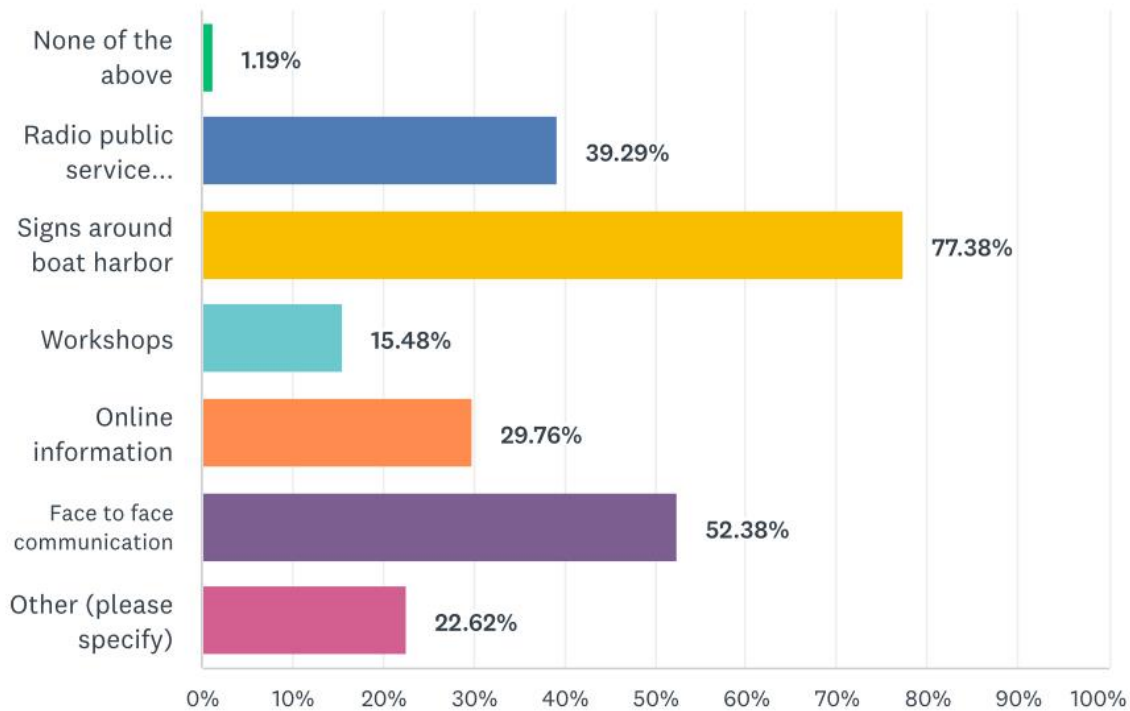


Figure 35: Question 10- What are the best ways to communicate with boaters?

This project is based around the premise of better understanding and encouraging proper waste management procedures for boaters so the hope was to hear from the boaters themselves about the best method of establishing lines of communication and exchanging information. The majority of Harbor Users (77%) thought 'Signs around the boat harbor' was the best method to communicate with boaters (Figure 35). The second highest choice was 'Face to face communication' at 52% (Figure 35). 'Radio public service announcements' was third at 39% (Figure 35).

The results from Ninilchik Harbor Users were very similar to the overall results. The number one position was tied at 73% of Harbor User participants that thought that 'Signs around the boat harbor' as well as 'Face to face communication' were the best methods for communicating (Figure 36). This is particularly difficult in Ninilchik as there is no harbormaster and therefore the 'Face to face communication' is likely from one Harbor User to another or from a subject matter expert to those in the harbor. One person interviewed recommended someone being on the dock before the season talking to Harbor Users and explaining proper waste management practices.

Several participants that chose "Other" recommended reaching out to fishing organizations, such as UCIDA, to get important information disseminated to fisherfolk. Another participant mentioned the value of workshops, like Alaska Marine Safety Education Association (AMSEA), for safety information, and that including important harbor information in trainings like that might be a good way to get information out. Another participant mentioned the value of using CB radios to put this sort of information out on channel 16.

The Dillingham participants thought that 'Signs around the boat harbor' was important enough to be tied for first (58%) with 'Radio public service announcements' (Figure 37). The next highest was 'Face to face communication' at 50% (Figure 37). The participant that chose 'Other' wrote about "email, text, cell phone, Facebook", which may have also been included in the 'Online information' option aside from text.

One of the last questions was "What else, if anything, is important for having clean harbors?" This was an attempt at encouraging Harbor User participants to communicate any issue that they felt needed to be addressed.

What are the best ways to communicate with boaters?

Answered: 15 Skipped: 0

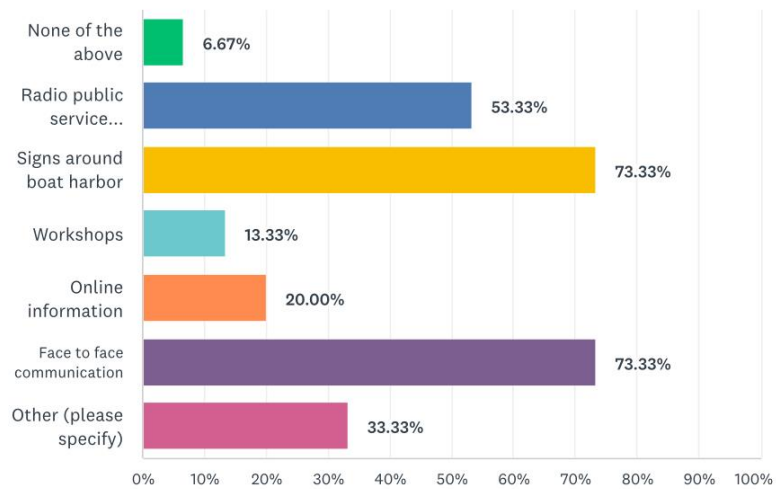


Figure 36: Question 10: Ninilchik participants only

What are the best ways to communicate with boaters?

Answered: 12 Skipped: 0

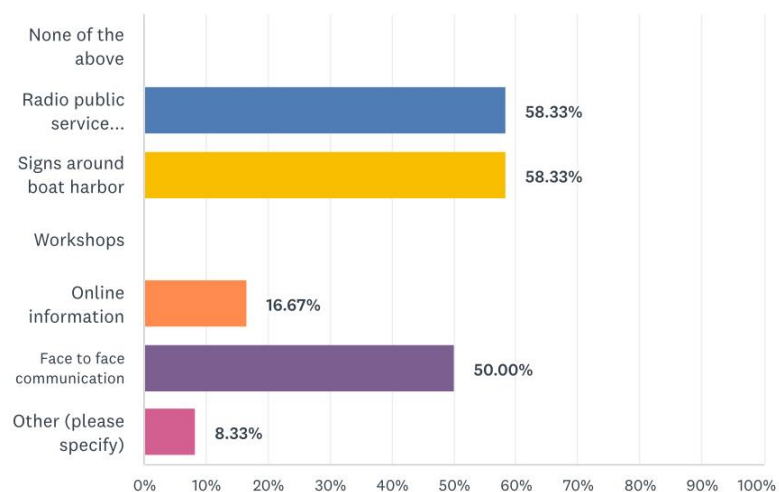


Figure 37: Question 10: Dillingham participants

Of the 86 Harbor Users that took the survey, 60 answered this question. While we can't include every answer to this question, we will highlight similar themes. Some thought that having more accessible dump stations for used oil, used diesel, used antifreeze and any other hazardous materials would encourage proper management of waste. Others were worried about the plastic situation. One person that was interviewed mentioned driving around the fishing grounds after the fishing season and filling up dozens of garbage bags with plastic waste.

During interviews, multiple participants made a point of talking about how involved and invested their harbormaster is, and how much of a difference that makes. Others mentioned about the necessity for a culture shift, where discussing these issues and making "correct use more palatable". Lots of participants spoke specifically about concerns that are occurring at their home harbor and the need to improve education on issues. Encouraging these conversations is vital to correct these concerns sooner rather than later. While multiple participants mentioned increasing enforcement, others mentioned culture shift.

In Ninilchik, 11 of the 15 Harbor User participants responded to this question. One survey participant as well as several Harbor Users that were interviewed thought that the Ninilchik Harbor wasn't that bad and in fact is getting better. They believed that fellow fisherfolk were good at pointing out when someone was engaging in improper waste management procedures. Many interviewed also thought that as the older generation was getting out of the business that the practices were getting more environmentally friendly. Despite these takes, multiple Harbor Users that were interviewed thought that it was worse than it's ever been. That there used to be facilities for Harbor Users to use, such as dumpsters and port-o-potties. Those have since been removed, due to funding issues, and several participants have recognized the danger that this poses. If there aren't dumpsters or used oil facilities available, people will have to do something with their waste, ignoring that concern does not solve the problem. Some fishermen avoid the Ninilchik harbor because of the overcrowding and fuel spills there. They went on to say that the big problem is that Ninilchik is an incredibly desirable location but poorly maintained and that the harbor needs to be expanded and better managed.

In Dillingham, of the 12 Harbor Users that took the survey, six answered this question. One comment was to ensure community buy-in. That with the help of BBRSDA, other fishing organizations and the fisherfolk themselves would go a long way to help with proper waste management practices. As it is a seasonal harbor, ensuring that attention during the summer season is key. One survey participant recommended "sending three text reminders--one pre-season, one mid-season, and one post-season".

Conclusions

There were many take-aways from the survey. They are not included in here in any order of importance. There is rarely a one size fits all solution for any single issue. Working with community members, harbor staff, and harbor users to identify problems and craft solutions that are specific to each harbor is hugely important. Encouraging this communication between stakeholders is the best way to improve or recognize when things are going well.

For example, in Ninilchik, 87% of Harbor User participants thought that 'More/better onshore restroom facilities' was the most important way to improve sewage disposal there (Figure 34). While in Dillingham, 42% (the choice that received the highest number of votes) of the Harbor User participants thought that 'Signs on rules/regulations on sewage disposal' was most important (Figure 33). These Dillingham results most nearly resembled the overall average response for this question. Which just highlights the necessity of holding these discussions and crafting local solutions to ensure the best possible outcome.

One of the biggest take-aways from the survey were that education and information is wanted. People want to do the right thing and may not know what that is. Encouraging education and outreach about proper waste management, even just having a conversation about it, helps remind people that use the harbor as well as ensure that new people to the community are on the same page. Another reason people may not ensure proper waste management techniques is because the available infrastructure at their harbor does not make it easy or feasible. For example, people want to dump garbage and sewage in appropriate receptacles. Unfortunately, shore support services do not always exist in such a way to encourage proper disposal. When restrooms are distant, locked, or non-existent, harbor users must make a difficult decision.

In some cases, the three stakeholders (Harbor Users, Community Members, and Harbor Staff) all expressed similar opinions. The biggest concern for all three was 'Routine small spills/leaks'. This was different than anticipated when the project was started but could help focus future attempts. Even so, about half of all survey participants considered 'Improper sewage disposal' to be a concern in their harbor.

Many participants were thankful for discussing the topic of harbor pollution because it is not frequently talked or thought about in Alaska. It was considered very prevalent and an important focus in the lower 48 but not here. Encouraging these discussions, conducting outreach and having simple, frequent reminders before and during the fishing season would remind harbor users about the right way to do things. One way that was identified as being particularly helpful in communicating important information was through 'signs around the boat harbor'. These were considered the number one way to communicate with boaters by both Harbor User and Harbor Staff participants. Signs are also relatively cheap and easy to maintain.

While the purpose of this project was to get a better understanding of people's opinions about the state of their harbor, it should be emphasized that multiple participants made a point of expressing the positives around their local harbor. That most Harbor Users thought their harbor staff was very intent and engaged which correlated to less pollution. Numerous participants did not think that the state of their harbor was particularly bad. As Alaska has much less boat traffic, more extreme tides, and less land-based traffic than the lower 48, we are in a better position than many harbors in other areas.

Next Steps

These and past surveys (such as the one identified in [Figure 1](#)) identified that creating signs to remind harbor users about proper waste management techniques was the best way of communicating. Therefore, the next stage of this project is going to create signs in Ninilchik and Dillingham encouraging proper waste disposal. Working with schools in both communities, students will design the artwork for the sign. Dillingham students will design the sign and members of the local community will vote on the winner. The same will be done in Ninilchik with local students and local community members voting on the winner. Then the ADEC and Alaska Sea Grant graphic arts teams will work together to incorporate valuable waste management information and create permanent metal signs to be placed in their respective harbor. ADEC and Alaska Sea Grant will also be using the artwork to make stickers and magnets to hand out to the involved communities in order to encourage discussion and reminders.

Presenting the findings from this survey will be done where best to stimulate further conversation and encourage proper waste management procedures. Presentations will be done at two conservation conferences in spring 2022, Alaska Forum on the Environment (online), and COMFISH (in Kodiak). Effort will be made to present findings to communities and organizations that are interested in this work. Particular effort will be made to present in Ninilchik with Ninilchik Traditional Council, as well as in Dillingham with Bristol Bay Native Association. There will also be effort made to present at other forums, such as sports shows, or fishing organizations.

Prior to the summer, this survey write-up will be shared with all members of the AAHPA. Where possible, presentations of the findings will be done to harbor staff in person or via zoom.

In the future it is recommended that the following steps be taken:

- Consult with Harbormasters and staff to determine best means of waste management and disposal for their harbor
- Using information from previous bullet point, conduct education campaigns with harbor users to encourage proper waste disposal
- Conduct water testing and monitoring programs in or near harbors that are concern to communities
- Bolster/improve current infrastructure that addresses clean harbors program ie Sewage disposal systems (port-o-potties, restrooms, pump-outs), used oil disposal, dumpsters, etc)
- Conduct future surveys and/or outreach efforts should aim to:
 - Improve relations and possibility of involvement from communities
 - Document perception about changes occurring and outreach effectiveness
 - Have in-person group sessions to discuss issues, requirements and possible solutions (COVID permitting)
 - Recommended that local community member or harbor staff conduct survey and outreach, folks may be distrustful of outsiders
- Communal outreach to local and regional representatives to secure funding for possible solutions
- Funding is always a limiting factor: Currently the Clean Waters Act (which appropriates funds for sewage pump-out facilities) is only directed at recreational harbors

- Working with communities and the State of Alaska to identify possible grant opportunities to expand facilities for harbor users
 - Expansion or creation of pump-out stations
 - Craft and post signs explaining rules in simple language
 - Seasonal port-o-potties
 - Seasonal dumpsters
 - Cameras to identify those not following rules
 - Enforcement of rules