



October 2017

COAST GUARD

Actions Needed to Close Stations Identified as Overlapping and Unnecessarily Duplicative

Accessible Version

GAO Highlights

Highlights of [GAO-18-9](#), a report to the Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate

Why GAO Did This Study

The Coast Guard, within the Department of Homeland Security (DHS), is charged with preventing loss of life, injury, and property damage in the maritime environment through its SAR mission. It maintains over 200 stations with various assets, such as boats and helicopters (depending on the station), along U.S. coasts and inland waterways to carry out this mission, as well as its other missions such as maritime security. Resource limitations and changes to operations require the Coast Guard to periodically reexamine the need for these stations. GAO was asked to review these efforts.

This report addresses, among other objectives, the extent to which the Coast Guard has (1) a sound process for analyzing the need for its boat stations and (2) taken actions to implement its boat station process results. GAO reviewed Coast Guard laws, standards, and guidance; analyzed Coast Guard data on station locations and SAR coverage; and analyzed the process and criteria used to evaluate its station needs and compared it with established evaluation design practices and internal control standards. GAO also interviewed Coast Guard officials.

What GAO Recommends

GAO is making three recommendations, including one recommendation that the Coast Guard close unnecessarily duplicative stations that its analysis identified. DHS concurred with the recommendations and stated it plans to act to eliminate unnecessary duplication.

View [GAO-18-9](#). For more information, contact Jennifer Grover at (202) 512-7141 or GroverJ@gao.gov.

October 2017

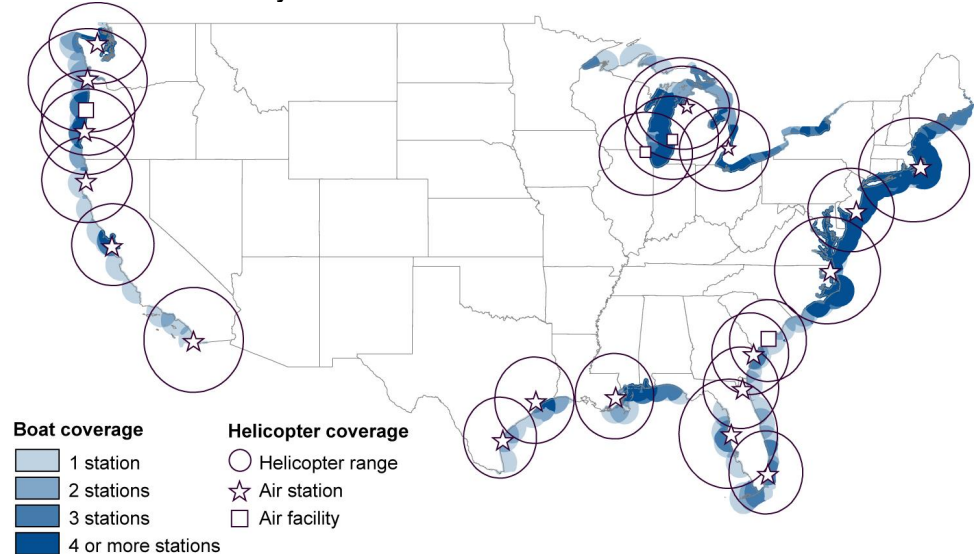
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What GAO Found

GAO found that the U.S. Coast Guard has a sound process for analyzing its boat stations that includes clear and specific steps for analyzing the need for stations using terms that can be readily defined and measured. In 2013, following this process, the Coast Guard and its contractor identified 18 unnecessarily duplicative boat stations with overlapping coverage that could be permanently closed without negatively affecting the Coast Guard's ability to meet its 2-hour search and rescue (SAR) response standard and other mission requirements. The process was designed to ensure the Coast Guard met or exceeded requirements to maintain SAR coverage and to account for such factors as boat downtime and surge capacity to respond to certain incidents. Further, the boat station analysis did not consider potential SAR responses by the Coast Guard's air stations and facilities, which can provide additional overlapping coverage. Coast Guard officials said that the closures would, among other things, help improve operations by consolidating boat station caseloads to help ensure personnel were active enough to maintain training requirements.

Overlap of Coast Guard Search and Rescue Coverage Provided by Boat Stations, Air Stations, and Air Facilities as of May 2017



Source: GAO analysis of U.S. Coast Guard information; MapInfo (maps). | GAO-18-9

In 2017, the Coast Guard affirmed that its leadership believes the 2013 study remains valid, but so far the agency has not taken actions to implement the closures identified by its sound process. Instead, the Coast Guard is recommending conversion of some year-round stations to seasonal stations that would operate during the summer. Coast Guard officials stated that seasonal closures are preferable to no action, given its limited resources, the significant overlapping SAR coverage, and potential to improve operations. However, permanently closing unnecessarily duplicative stations may better position the Coast Guard to improve its operations. It could also achieve up to \$290 million in cost savings over 20 years, if stations were permanently closed.

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Abbreviations

ACCAM	Aviation Capability and Capacity Assignment Module
BBEDCA	Balanced Budget and Emergency Deficit Control Act
BCA	Budget Control Act
cgSARVA	Coast Guard Search and Rescue Visual Analytics
D1	Coast Guard District 1
D5	Coast Guard District 5
D9	Coast Guard District 9
DHS	Department of Homeland Security
FY	fiscal year
MISLE	Marine Information for Safety and Law Enforcement
SAR	search and rescue
SMC	SAR mission coordinator
Stations (small)	seasonally operated detached sub-units of larger parent stations
U.S.C.	United States Code
9-Step Process	Coast Guard's 9-step station optimization process

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October 26, 2017

The Honorable John Thune
Chairman
Committee on Commerce, Science, and Transportation
United States Senate

Dear Mr. Chairman:

The United States Coast Guard (Coast Guard), within the Department of Homeland Security (DHS), is the principal federal agency charged with preventing loss of life, injury, and property damage in the maritime environment through its search and rescue (SAR) mission, which it conducts along with 10 other missions including marine environmental protection and drug interdiction.¹ To fulfill its SAR responsibilities, along with its other missions, the Coast Guard maintains multimission boat stations, air stations, and air facilities, with associated assets such as boats, helicopters, and fixed wing aircraft, along our coasts and inland waterways.² While some missions conducted out of these stations, such as ports, waterways, and coastal security, have increased in recent years, annual Coast Guard search and rescue caseloads have decreased from about 32,000 cases per year in 2004 to about 17,000 in 2016, a reduction of 47 percent. The need to balance a broad array of missions, while operating under constrained budgets in recent years, underscores the importance for the Coast Guard to ensure its stations are needed and optimally located.³

Many factors help determine the placement of stations and the allocation of Coast Guard resources for their operations. These include population,

¹The Coast Guard's 11 statutory missions are (1) ports, waterways, and coastal security, (2) migrant interdiction, (3) defense readiness, (4) drug interdiction, (5) other law enforcement, (6) search and rescue, (7) living marine resources, (8) aids to navigation, (9) ice operations, (10) marine environmental protection, and (11) marine safety. 6 U.S.C. § 468(a).

²The Coast Guard refers to its stations as multimission because of the various missions performed out of these stations. Multimission stations include boat stations that operate boats, and air stations and air facilities that operate aircraft. When discussing multimission stations in general in our report, we refer to them as stations.

³For example, the Coast Guard's total discretionary budget fluctuated from almost \$9.6 billion in fiscal year 2010 to about \$9.0 billion in fiscal year 2015, and \$9.1 billion in fiscal years 2016 and 2017.

historical factors, environmental conditions such as water temperature, and the availability of other rescue resources and partners. For example, some geographic regions have boat stations in closer proximity because when many of them were established, the crews used rowboats (which moved at slow speeds for shorter distances) to conduct search and rescue cases. In 1990, we reported that the Coast Guard and its predecessor agencies had established over 400 stations since 1844, and that about 200 of these stations had since been closed, destroyed by storms, or transferred to other government entities.⁴ Since that 1990 report, the Coast Guard has attempted to close additional stations it considered unnecessary, but met resistance from impacted communities and others. Following the terrorist attacks of September 11, 2001, the Coast Guard was tasked with expanded security-related mission responsibilities and subsequently established eight additional stations. However, the need for stations at particular locations has generally decreased with changes in boating activity, boating equipment, and the capabilities of other search and rescue providers such as local police and fire departments.

Changes to Coast Guard operations, such as additional mission requirements to address emerging security issues, and resource limitations, require the Coast Guard to periodically review the allocation of these resources, including those directed toward stations to ensure they are positioned to meet the Coast Guard's missions while not unnecessarily duplicating efforts. Given the importance of the Coast Guard's SAR and other missions, you asked us to review whether its efforts to optimize station locations and allocate resources were sound (i.e., defensible). This report addresses the extent to which the Coast Guard (1) has a sound process for analyzing the need for its boat stations, and the outcomes of the process; (2) has a sound process for analyzing the need for its air stations and air facilities, and the outcomes of the process; and (3) has taken actions to implement the results of its process for analyzing the need for stations.

To identify the extent to which the Coast Guard has a sound process for analyzing the need for its boat stations, we reviewed laws, policies, and procedures related to its SAR mission. We reviewed Coast Guard documentation of processes it used to analyze the need for boat stations,

⁴GAO, *Coast Guard: Better Process Needed to Justify Closing Search and Rescue Stations*, [GAO/RCED-90-98](#) (Washington, D.C.: Mar. 6, 1990).

including a 2013 study documenting a contractor analysis that followed the Coast Guard process, reviewed resource and budget factors, and analyzed station activity levels.⁵ We also reviewed prior GAO reports on the Coast Guard's previous attempts to close stations.⁶ To verify and validate the Coast Guard's specific analytical process used to determine overlapping SAR coverage among these stations, we obtained and analyzed the Coast Guard's analytical assumptions, the operational parameters of the assets assigned to the stations (e.g., boat speeds), and station locations. This analysis also allowed us to verify the soundness of the Coast Guard's model used to identify overlap. We then independently recreated and visually depicted overlapping SAR coverage provided by the boat stations, based on Coast Guard data, assumptions, and documentation, and compared it with SAR case data by geographic area. We then analyzed Coast Guard data on single-boat SAR responses (sorties) by station for fiscal years 2010 through 2016, the most recent data available at the time of our review.⁷ We visited a nongeneralizable sample of 12 boat stations we selected from within Coast Guard districts where the Coast Guard had identified overlap, and interviewed Coast Guard officials to identify local policies, station characteristics, local coordination with emergency responders and federal agencies, and local input to the Coast Guard's process for assessing station needs and implementing changes to the locations of boat stations, if any. We compared Coast Guard actions to evaluate boat stations against criteria for sound evaluation design practices established in GAO's Designing

⁵We obtained search and rescue case data, such as the number of single- and multi-boat responses by station and by fiscal year, from the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) system, for fiscal years 2010 through 2016.

⁶GAO, *Coast Guard: Improved Process Exists to Evaluate Changes to Small Boat Stations*, [GAO/RCED-94-147](#) (Washington, D.C.: Apr. 1, 1994); [GAO/RCED-90-98](#).

⁷In some locations, more than one Coast Guard station may initiate a search and rescue response due to the close proximity of the stations or other factors. Because about 29 percent of these SAR cases (22,322 out of 77,953) could be duplicative if attributed to individual stations, we focused our analyses on single-boat responses (55,631 cases) where we could accurately attribute the cases to individual stations.

Evaluations guidance,⁸ the Coast Guard's SAR response standard,⁹ and statutory requirements to conduct public outreach.¹⁰

To assess the reliability of Coast Guard SAR data, we interviewed knowledgeable officials, reviewed documentation, and electronically tested the data for obvious errors and anomalies. We interviewed Coast Guard officials to discuss the reliability issues we identified, and officials informed us of ongoing actions to resolve the issues. We determined that the data are sufficiently reliable for the purposes of this report to demonstrate selected station caseloads. Details of our scope and methodology are described in appendix I.

To identify the extent to which the Coast Guard has a sound process to analyze the need for its air stations and air facilities, we reviewed laws, policies, and procedures related to its SAR mission. We reviewed Coast Guard documentation of processes it used to analyze the need for selected air facilities in 2014. We obtained and analyzed Coast Guard air station and air facility locations and assumptions made for determining overlapping SAR coverage in 2014 and used a mapping program to visually depict overlapping coverage provided by aviation assets, based on Coast Guard data, assumptions, and documentation. Additionally, we

⁸GAO, *Designing Evaluations 2012 Revision*, [GAO-12-208G](#) (Washington, D.C.: January 2012). This report addresses the logic of program evaluation design, presents generally accepted statistical principles, and describes different types of evaluations for answering varied questions about program performance, the process of designing evaluation studies, and key issues to consider toward ensuring overall study quality. This report is one of a series of papers whose purpose is to provide guides to various aspects of audit and evaluation methodology and indicate where more detailed information is available. It is based on GAO reports and program evaluation literature. To ensure the guide's competence and usefulness, drafts were reviewed by selected GAO, federal, and state agency evaluators, and evaluation authors and practitioners from professional consulting firms. This publication supersedes *Government Operations: Designing Evaluations*, [GAO/PEMD-10.1.4](#) (Washington, D.C.: May 1, 1991).

⁹The Coast Guard establishes its response standard based on a macro analysis of expected survival times of people in the water, including regional variances (e.g., cold water versus warm, resource-rich port areas versus remote locations), and calls for its stations to plan to arrive to the scene of the SAR distress cases within their area of responsibility within 2 hours (including up to 30 minutes of preparation prior to launch). U.S. Coast Guard, *U.S. Coast Guard Addendum to the United States National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual*, COMDTINST M16130.2F (Washington, D.C.: January 2013).

¹⁰14 U.S.C. § 675 requires the Coast Guard to provide an opportunity for public comment and for public meetings in the area of the station or subunit with regard to the decision to close the station or subunit.

interviewed Coast Guard officials to obtain information on the extent to which the Coast Guard used findings and recommendations from selected studies, strategies, and plans in its analyses of the need for and locations of its air stations and air facilities. We also compared Coast Guard actions to evaluate air stations and air facilities against criteria established in GAO's Designing Evaluations guidance.¹¹

To determine the extent to which the Coast Guard has taken actions to implement the results of its analyses of its need for stations, we analyzed Coast Guard documents and reports to identify proposals put forth by the Coast Guard for permanently or seasonally closing stations it has identified as overlapping and unnecessary. We analyzed these proposed actions to determine whether proposed plans or decisions regarding permanent and seasonal station closures aligned with the results of the Coast Guard analyses. Specifically, we reviewed the 2013 contractor study, memoranda detailing field input on the results of the study and their verification of the stations the study identified as unnecessarily duplicative, and compared the recommended closures from the various analyses to determine if the outcomes were consistent. We also compared Coast Guard actions against its response standard and statutory requirements for conducting public outreach. Finally, we reviewed documents and information on these proposals and compared them against criteria in Standards for Internal Control in the Federal Government¹² and leading practices identified in the Project Management Institute's Standard for Program Management.¹³

We conducted this performance audit from July 2016 through October 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

¹¹[GAO-12-208G](#).

¹²GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014).

¹³Project Management Institute, Inc., *The Standard for Program Management*®, Third Edition (Newton Square, Pa.: 2013). *The Standard for Program Management*® describes, among other things, how resource planning, goals, milestones, performance measures, and program monitoring and reporting are good practices that can enhance management for most programs.

Background

The Coast Guard is required to develop, establish, maintain, and operate rescue facilities for the promotion of safety and may aid distressed persons, and protect and save property in waters subject to the jurisdiction of the United States.¹⁴ To carry out its responsibilities, the Coast Guard maintains a search and rescue system on the Atlantic, Pacific, and Gulf coasts; the Great Lakes; and other inland lakes and waterways. This system consists of about 190 boat stations, 183 of which are located in the contiguous United States. The Coast Guard also operates aircraft from 24 air stations and four air facilities.¹⁵ As of August 2017, these stations and facilities operated about 700 boats and about 200 aircraft. In fiscal year 2016, the Coast Guard reported that its SAR operations saved 5,174 lives and protected more than \$63 million in property from loss.

Laws Governing the Optimization of the Coast Guard's Boat Station, Air Station, and Air Facility Locations

The Coast Guard's boat stations, air stations, and air facilities are subject to laws which require the Coast Guard to maintain specific minimum capabilities—such as a requirement to maintain at least one vessel at each station that is fully capable of operating within the prevailing weather and marine conditions in that station's area of responsibility.¹⁶ In addition to maintaining capabilities requirements, if the Coast Guard reevaluates its station location needs and intends to close a boat station, air station, or air facility, it also must follow a statutorily defined process, which includes making a determination that adequate SAR coverage will remain

¹⁴14 U.S.C. § 2. See also 14 U.S.C. § 88.

¹⁵The Coast Guard owned and operated these air stations and air facilities as of May 2017. Generally, air stations operate year-round. An air facility operates as a subunit (i.e., detachment) of an air station in a separate location. Air facilities may or may not operate year-round.

¹⁶14 U.S.C. § 674.

in place.¹⁷ To close an air facility, the Coast Guard must also submit a proposal to close the facility to Congress in the President's annual budget and notify members of Congress who represent the impacted communities, as well as certain committees.¹⁸

The Coast Guard's Structure and Stations That Conduct Search and Rescue

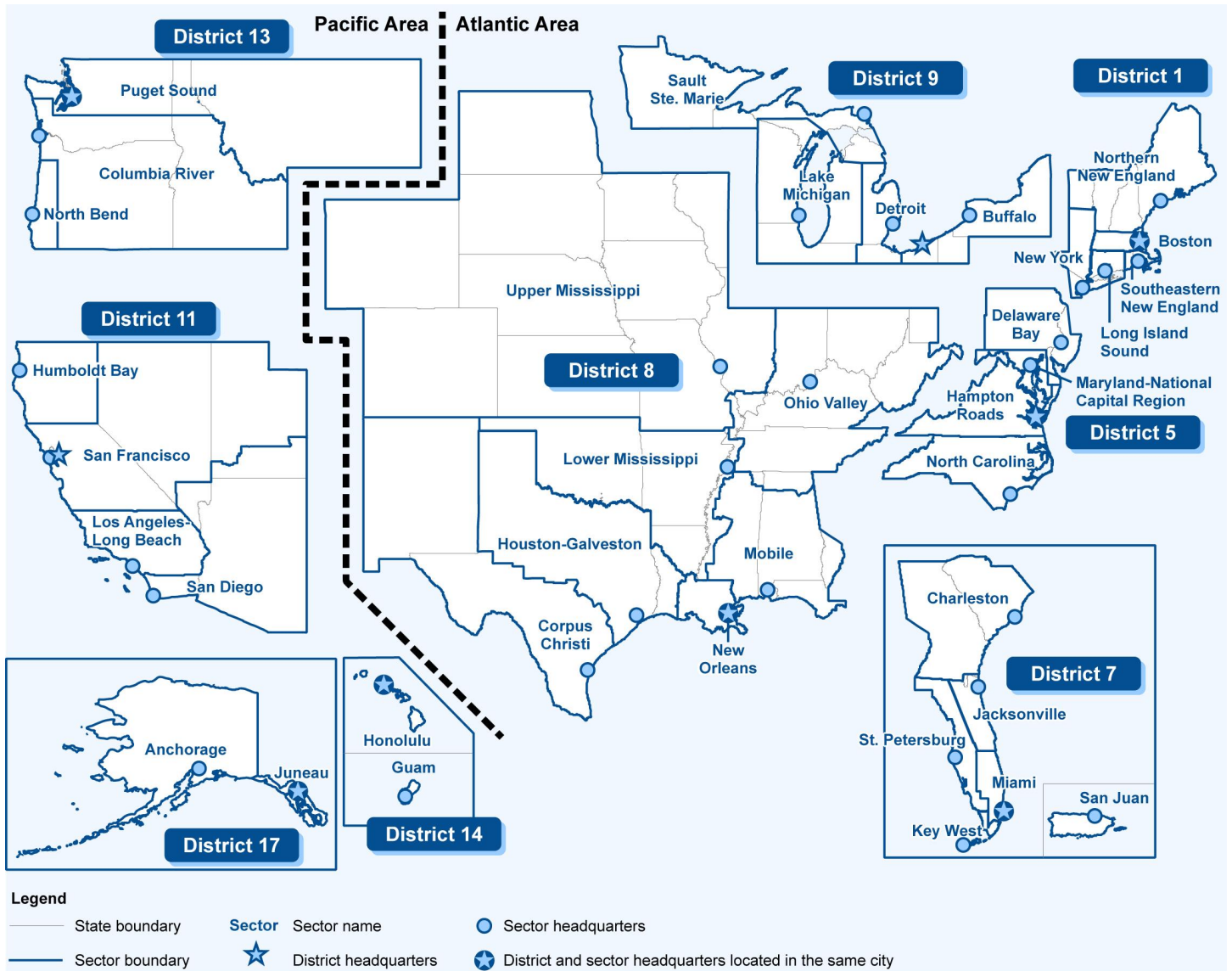
The Coast Guard's field structure is divided into two Area Commands, Atlantic and Pacific, within which are nine Districts consisting of 37 Sectors and the stations within them (see figure 1).¹⁹

¹⁷For a boat station closure, 14 U.S.C. § 675 requires the Secretary of Homeland Security to determine that the Coast Guard's remaining boat stations will maintain the safety of the public in the area of the boat station; weather and marine conditions do not require the continued operation of the station; and the Coast Guard will still be able to meet its response time standards once the boat station is closed. Additionally, the Coast Guard must provide an opportunity for public comment and public meetings held in the area near the boat station.

¹⁸14 U.S.C. § 676a.

¹⁹We use D for district when associated with a specific district number (e.g., D9).

Figure 1: Coast Guard's Field Structure



Source: GAO analysis of U.S. Coast Guard data; MapInfo (map). | GAO-18-9

Stations are traditionally associated with search and rescue but they may perform the full range of Coast Guard missions. Coast Guard personnel live and work at or near their stations so they can rapidly respond to emergencies as they arise. This model facilitates the Coast Guard's search and rescue response resource planning standard. Under this SAR

standard, Coast Guard plans for its units with SAR responsibilities to arrive on the scene of a case within 2 hours of receiving a distress call.²⁰ Stations vary in their mission mix and pace of operations (i.e., operational tempo) by geographic region or District, and by season. For example, Coast Guard boat stations in D7 (Florida, Puerto Rico, South Carolina, and the Caribbean) commonly conduct migrant interdiction operations, whereas boat stations located along the Great Lakes (D9) rarely conduct this mission. In some locations, SAR cases may be more common during the summer boating season than in the winter. Stations in D9 have a shorter boating season than stations in D7. According to Coast Guard officials, while D7 has more total SAR cases than D9, cases in D9 are concentrated in a shorter time period than in D7 (i.e., shorter boating season). Boat stations also vary widely in size and function. For example, Station New York in New York City has an authorized strength of 88 personnel, whereas Station Frankfort in Frankfort, Michigan, has an authorized strength of 15 personnel.²¹ Both stations perform SAR and other missions, but Station New York also conducts a high level of homeland security missions, while Station Frankfort provides ice rescue capability during the winter. Additionally, the Coast Guard operates 18 seasonal boat stations called “Stations (Small),”²² which are detached subunits of larger parent stations; the Coast Guard generally operates these during the summer boating season.²³

²⁰Coast Guard guidance calls for its stations to plan to arrive to the scene of the SAR distress cases within their area of responsibility within 2 hours (including up to 30 minutes of preparation prior to launch).

²¹Authorized personnel strengths are as of July 2016.

²²This number of Stations (Small) is as of August 2017.

²³The Coast Guard also has five auxiliary stations in the Great Lakes region that are open only during the boating season. Auxiliary stations are operated by volunteers and conduct missions such as maritime safety patrols. Auxiliary station operations are beyond the scope of this review.

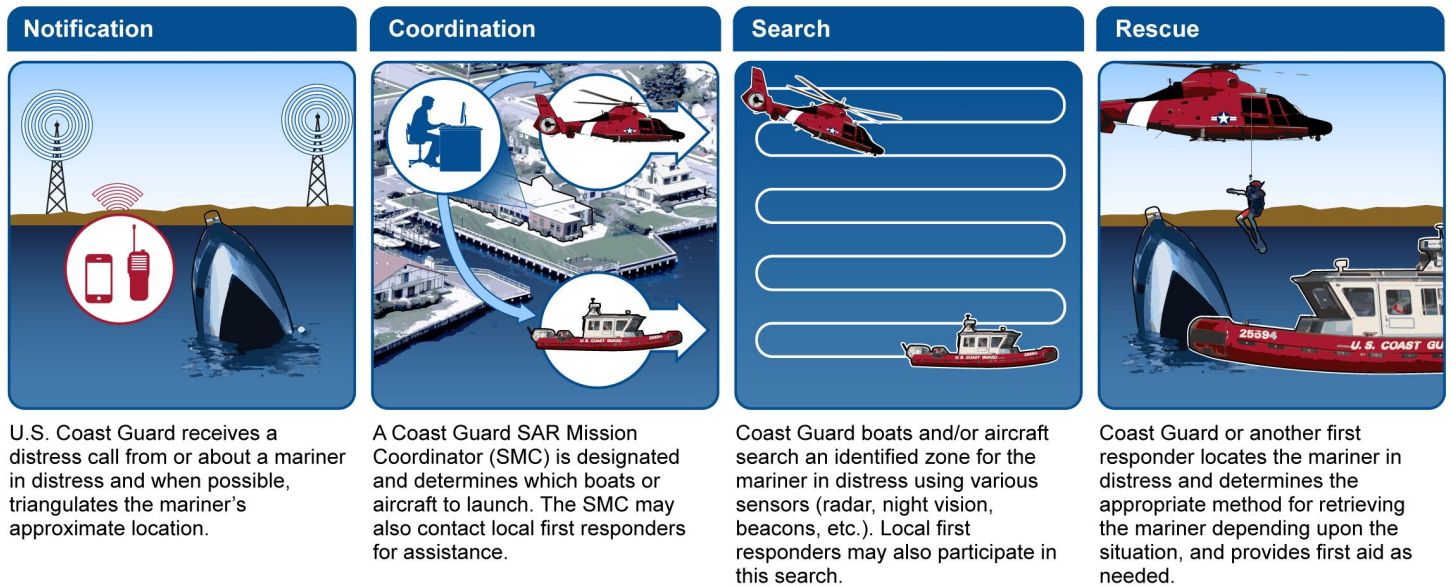
How the Coast Guard Conducts a Search and Rescue Mission

When the Coast Guard receives notification of a distressed mariner,²⁴ a search and rescue mission coordinator evaluates the case and assigns assets, such as boats or aircraft, to respond.²⁵ Cases may involve multiple assets depending on the complexity of the case, such as the need to locate a mariner whose position is only generally known or to operate in severe weather conditions. Figure 2 depicts the general steps for conducting a SAR case.

²⁴Mariners in distress may request assistance from the Coast Guard using radio and satellite communications systems, such as very high frequency radios or Emergency Position-Indicating Radio Beacons. The Coast Guard also operates the Rescue 21 communications system, which is also used to communicate with and locate boaters in distress. This system is a network of radio towers that receive distress calls in the coastal waters and rivers of the continental United States, Hawaii, and U.S. territories. A system similar to Rescue 21 is being deployed in Alaska.

²⁵Rescue operations may also be conducted to prevent the loss of property on the ocean and other waterways. If a boat or ship is disabled, for example, the Coast Guard can tow it to port or provide materials for repairing the vessel. The Coast Guard is generally not responsible for salvaging boats or ships unless the people aboard are in danger or if the boat poses an environmental or navigational hazard.

Figure 2: How the Coast Guard Conducts a Search and Rescue (SAR) Case



Source: GAO analysis of U.S. Coast Guard information; U.S. Coast Guard (adapted images). | GAO-18-9

The Coast Guard uses several different types of assets to carry out its search and rescue and other missions. These assets include boats, rotary wing aircraft (helicopters), fixed wing aircraft (planes), and cutters (including patrol boats and ships). Additional details regarding some of these assets, including boat speeds, are described in appendix II.

Prior GAO Work on Station Optimization

Over time, the need for Coast Guard stations at particular locations has changed due to changes in Coast Guard asset capabilities, boating activity, boating equipment, safety technology, and the capabilities of other search and rescue service providers, such as private towing firms. However, the Coast Guard's decisions to close or reduce operations at boat stations based on changing conditions or budget reductions have been sensitive. We previously reported that these sensitivities were based on the perception that reducing operations or closing stations would reduce the agency's ability to save lives and property. In 1990, we reported that the Coast Guard's attempts to close stations in 1988 were not successful because the Coast Guard did not have policies or procedures for what criteria should be used or how the criteria should be

applied, and because the Coast Guard applied its evaluation criteria to a limited universe—only 34 stations instead of all stations.²⁶ We also found that the Coast Guard did not adequately address how closing stations would impact the Coast Guard's effectiveness in saving lives or performing other missions.

In 1994, we reported that the Coast Guard had created a new process for determining the need for boat station changes.²⁷ We also found that the new process included detailed criteria to evaluate the appropriate need for stations, such as boating and economic trends and the availability of alternative SAR resources. The Coast Guard then unsuccessfully attempted to close stations in 1995 using this process, and again in 2008, efforts which we describe later in this report.

Prior Work on Fragmentation, Overlap, and Duplication

In 2010, federal law required that we identify programs, agencies, offices, and initiatives with duplicative goals and activities within departments and government-wide, and report annually.²⁸ The annual reports describe areas in which we have found evidence of fragmentation, overlap, or duplication among federal programs and have resulted in \$136 billion in financial benefits for the federal government. Figure 3 outlines the definitions we have used since 2011 in our work to address fragmentation, overlap and duplication.

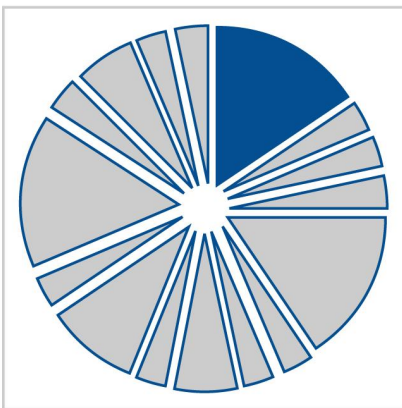
²⁶[GAO/RCED-90-98](#).

²⁷[GAO/RCED-94-147](#).

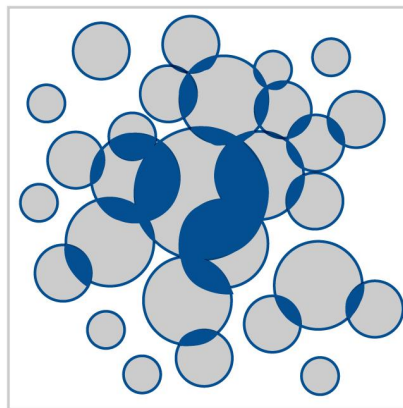
²⁸Pub. L. No. 111-139, § 21, 124 Stat. 29 (2010), 31 U.S.C. § 712 Note. See GAO's Duplication and Cost Savings web page for links to the 2011 to 2017 annual reports: <http://www.gao.gov/duplication/overview>.

Figure 3: GAO Definitions of Fragmentation, Overlap, and Duplication

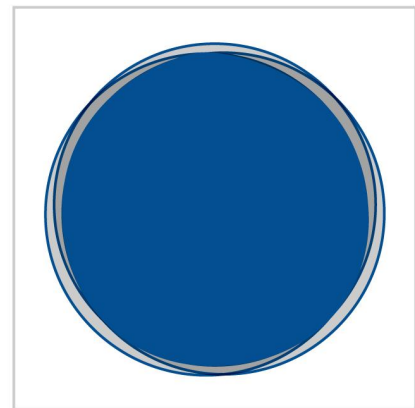
Fragmentation refers to those circumstances in which more than one federal agency (or more than one organization within an agency) is involved in the same broad area of national need and opportunities exist to improve service delivery.



Overlap occurs when multiple agencies or programs have similar goals, engage in similar activities or strategies to achieve them, or target similar beneficiaries.



Duplication occurs when two or more agencies or programs are engaged in the same activities or provide the same services to the same beneficiaries.



Source: GAO. | GAO-18-9

Coast Guard Has a Sound Process for Analyzing the Need for Boat Stations and the Results Identified Overlap and Unnecessary Duplication

The Coast Guard has a sound process for analyzing the need for boat stations that is consistent with GAO’s Program Evaluation guidance, which calls for choosing well-regarded criteria against which to make comparisons in order to achieve strong, defensible conclusions.²⁹ The primary criteria Coast Guard subject matter experts established, consistent with statutory requirements that the Coast Guard make a determination that adequate SAR coverage would remain in place,³⁰ were (1) a minimum threshold of overlapping SAR coverage had to be maintained and (2) the Coast Guard’s ability to meet its nationwide 2-hour

²⁹GAO-12-208G.

³⁰14 U.S.C. § 675.

SAR response standard had to be maintained.³¹ By applying these criteria, the Coast Guard's process identified overlapping search and rescue coverage where three or more stations can respond to a single SAR case within 2 hours, and unnecessary duplication where stations could be closed without negatively impacting the Coast Guard's ability to meet mission requirements, such as its 2-hour SAR response standard.

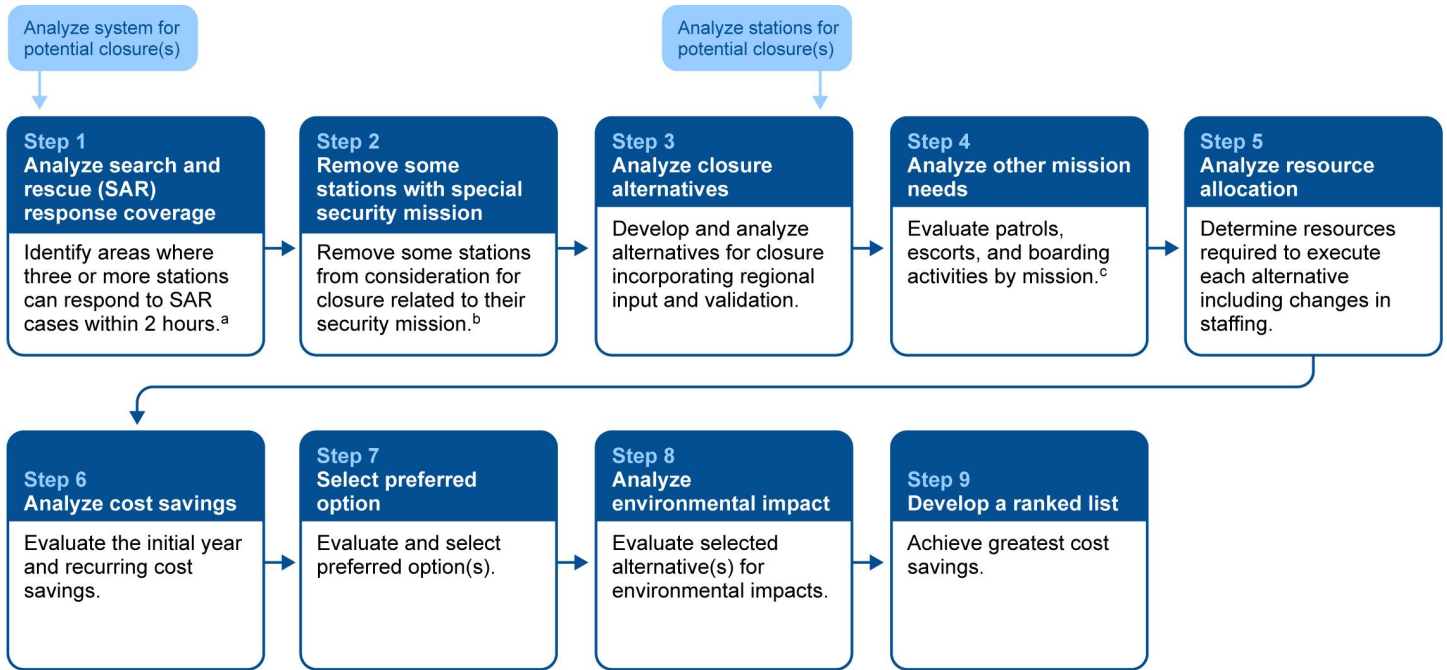
In June 2012, the Coast Guard established a Station Optimization Process Charter that called for the Coast Guard to develop a defensible process with criteria for analyzing stations for potential closure. The charter stated and Coast Guard officials confirmed that the process was developed to ensure that closure recommendations would be based on solid justifications for stations selected, and would stand up to rigorous scrutiny. The charter called for (1) the process to be data driven; (2) criteria to be applied consistently; (3) consideration of previous GAO recommendations on assessing stations for closure; and (4) adherence to statutory requirements to conduct outreach to affected communities.³²

The Coast Guard then established a working group of subject matter experts who developed a Station Optimization Process with nine analytical steps. The Station Optimization Process included criteria for analyzing the need for boat stations based on data analysis, consistent application of criteria, and legal requirements. Figure 4 shows the Station Optimization Process and its nine steps.

³¹U.S. Coast Guard, *U.S. Coast Guard Addendum to the United States National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual*, COMDTINST M16130.2F (Washington, D.C.: January 2013).

³²14 U.S.C. § 675 requires the Coast Guard to provide an opportunity for public comment and for public meetings in the area of the station or subunit with regard to the decision to close the station or subunit. It must also determine that (1) remaining SAR capabilities are maintained in the area, (2) regional and local conditions are considered that do not require the continued operation of the station, and (3) SAR standards are met.

Figure 4: Coast Guard’s 9-Step Station Optimization Process with Criteria to Analyze the Need for Boat Stations



Source: GAO analysis of U.S. Coast Guard information. | GAO-18-9

^aCoast Guard guidance calls for its stations to plan to arrive to the scene of the SAR distress cases within their area of responsibility within 2 hours (including up to 30 minutes of preparation prior to launch).

^bAt the time the study was conducted, certain stations were excluded from further consideration for closure based on security requirements that were in place at that time but which have since been removed.

^cThe optimization steps include assessing the impact of station closure on the Coast Guard’s 11 statutory missions.

Coast Guard Used Its Station Optimization Process to Analyze Boat Stations and Identified Overlap and Unnecessary Duplication

In April 2013, the Coast Guard initiated its 9-step Station Optimization Process to analyze its boat stations, and the results identified 18 stations that could be closed because they provide overlapping and unnecessarily duplicative SAR coverage. The Coast Guard hired a contractor to carry out the analysis and identify potential cost savings from permanent closures of such stations. Although focused on SAR coverage, the process also included consideration of all Coast Guard missions carried

out at these stations.³³ The contractor followed the 9-step process, with certain steps conducted by the Coast Guard—such as step 1, which analyzed the system and identified overlapping SAR coverage—and developed and ranked different closure options to maximize cost savings. Coast Guard officials provided additional district input on unique characteristics of certain stations to further refine the closure options. The final study identified 18 stations for closure that it estimated would achieve cost savings without impeding the Coast Guard’s ability to meet its SAR response standard and carry out its other missions. We discuss this further later in this report.

The Coast Guard considers some overlap or redundancy to be necessary, to account for such things as operational challenges, boat maintenance downtime, personnel training requirements, and the need for surge capacity to respond to certain incidents. Therefore, the Coast Guard directed the contractor to analyze areas with triple or greater station coverage as its baseline for analyzing whether stations were unnecessarily duplicative. Based on the Coast Guard’s review of this coverage, it determined that the greatest extent of overlapping coverage existed in Districts 1, 5, and 9, and directed the contractor to focus on stations in those areas. Figure 5 shows the extent of overlapping Coast Guard boat station SAR coverage as of September 2013 that was used for the contractor study and is still accurate as of May 2017. It shows for Districts 1, 5, and 9, up to quadruple or greater SAR coverage provided by boat stations with overlapping response capabilities.³⁴ According to the Coast Guard, in an attempt to be conservative in maintaining SAR coverage, the optimization process did not consider the use of Coast Guard air assets such as helicopters—an additional layer of coverage—nor did it consider the availability of some local agencies that respond to SAR cases, such as police departments and emergency responders. Therefore, overlapping coverage depicted in figure 5 excludes air asset responses and any responses or assistance provided by state and local

³³According to documentation we reviewed, the contractor study analyzed information provided by the Coast Guard, such as search and rescue coverage maps, closure scenarios, and financial data. Coast Guard officials reviewed the contractor’s draft report with recommended closures and provided field-level input on unique characteristics of certain stations, which the contractor analysis then incorporated into its final report.

³⁴We recreated the map of overlapping search and rescue coverage by following the same parameters the Coast Guard used when it provided the map to the contractor in 2013. The extent of overlapping coverage identified in 2017 is the same overlap identified in the Coast Guard’s 2013 contractor study. Appendix III shows overlapping SAR coverage provided by boat stations in the contiguous United States.

agencies. The extent of coverage in 2017 was the same as the Coast Guard's 2013 contractor study reported.

Figure 5: Extent of Search and Rescue Coverage Provided by Coast Guard Boat Stations in Districts 1, 5, and 9 Reported in September 2013 (Current as of May 2017)



Source: GAO analysis of U.S. Coast Guard information; MapInfo (maps). | GAO-18-9

We determined that the actions taken to complete the station optimization process are sound, consistent with our Program Evaluation guidance which calls for, among other things, evaluating programs based on well-regarded criteria to achieve strong, defensible conclusions. In addition to using the 2-hour response standard as a criterion, the optimization steps identified actions to systematically analyze quantitative measures using a documented ranking system to remove critical stations from consideration for closure. For example, step 4 of the process evaluated the number of security boardings conducted by selected stations, among other metrics,

and removed certain stations for consideration from closure based on a systematic application of criteria related to other mission responsibilities. Further, as described in table 1, the process began with consideration of all boat stations in the contiguous United States, included steps to ensure that data were reliable and appropriate, clearly identified limitations of the analysis, and conducted simulations to assess how well the Coast Guard would be prepared to carry out its responsibilities under different closure alternatives, such as whether a station closure reduces or changes the Coast Guard’s ability to meet its response standard—all actions included in our Program Evaluation guidance. Table 1 provides details of actions taken by the contractor and the Coast Guard to complete the 9-step station optimization process.

Table 1: Coast Guard’s 9-Step Boat Station Optimization Process, Criteria, and Actions Taken for Each Process Step

Optimization process (and criteria applied)	Action(s) taken for each optimization step
<p>Step 1: Analyze search and rescue (SAR) response coverage Criterion: Identify areas where three or more stations can respond to SAR cases within 2 hours.^a</p>	<ul style="list-style-type: none"> • Coast Guard analyzed the search and rescue capability range of all stations and identified areas of redundancy or overlap where multiple stations could respond to a SAR case, based on the station’s boat cruising speed in moderate weather, for 5 years of SAR responses (fiscal years 2008 through 2012). • Coast Guard focused on areas with triple or greater station coverage as its baseline for unnecessary duplication. • Based on the findings of response overlap, Coast Guard directed the contractor to focus on Districts 1, 5, and 9 to analyze how SAR response times would change if certain stations were not operated year-round or were permanently closed.
<p>Step 2: Remove some stations with special security mission^b Criterion: Remove some stations from consideration for closure related to their security mission.</p>	<ul style="list-style-type: none"> • Coast Guard directed the contractor to exclude 88 stations with mounted automatic weapons from consideration for closure, to maintain certain homeland security functions at those stations.
<p>Step 3: Analyze closure alternatives Criteria: Meet 2-hour SAR standard and maintain at least 90 percent double coverage.</p>	<ul style="list-style-type: none"> • Contractor analyzed 762 closure scenarios for remaining stations within Districts 1, 5, and 9 using modeling software to show the extent to which the 2-hour SAR response standard would be met with varying combinations of station closures. <ul style="list-style-type: none"> • Contractor identified some data inconsistencies and took steps to address them.^c • Contractor eliminated certain stations from closure based on established criteria such as not meeting the 2-hour SAR response standard and maintaining at least 90 percent double coverage. • Contractor obtained regional input and validation from Coast Guard district officials.
<p>Step 4: Analyze other mission needs Criteria: Evaluate patrols, escorts, and boarding activities by mission.^d</p>	<ul style="list-style-type: none"> • Coast Guard used the contractor results identified in Step 3 to systematically determine Coast Guard’s port security and law enforcement responsibilities for these stations. • Coast Guard analyzed the amount of security activity conducted by these stations, such as the number of activities by mission (e.g., alien migrant interdiction or drug interdiction operations) and ranked these activities using a systematic scoring methodology. • Coast Guard removed certain stations from closure consideration where the process determined that the station was crucial to its port security or law enforcement missions.

Optimization process (and criteria applied)	Action(s) taken for each optimization step
Step 5: Analyze resource allocation Criterion: Determine resources required to execute each alternative.	<ul style="list-style-type: none"> Contractor analyzed asset and personnel hours, and applied a formula-based workload reallocation process to analyze the expected impact on stations receiving the additional SAR workload from stations that would be closed, and determined a reallocation of personnel and assets to receiving stations.
Step 6: Analyze cost savings Criterion: Evaluate the initial year and recurring cost savings.	<ul style="list-style-type: none"> Contractor identified recurring and nonrecurring costs of stations under consideration for closure and developed cost savings estimates. Cost savings estimates excluded proceeds from selling the properties.
Step 7: Select preferred option Criterion: Evaluate and select preferred option(s).	<ul style="list-style-type: none"> Contractor analyzed additional factors, such as scenarios in which seasonally operating stations would need to take on SAR cases from closed stations, and focused permanent closure options on those stations that would allow the Coast Guard to continue to meet its mission requirements.
Step 8: Analyze environmental impact Criterion: Evaluate selected alternative(s) for environmental impacts.	<ul style="list-style-type: none"> Contractor reviewed environmental and historical impacts, such as whether hazards such as asbestos or lead required mitigation. At the time of the study, five closure candidate stations were identified for related site restoration work. 29 of 51 potential closure candidate stations were 50 years or older in 2013, which would have required an additional assessment step to determine if the station would be categorized as a historic property prior to its closure. 33 of 51 stations considered for potential closure had known environmental liabilities. Contractor did not consider property divestiture proceeds but noted that these properties would typically be transferred or sold "as is." Contractor noted that additional and more detailed assessments would be needed to determine property divestiture.
Step 9: Develop a ranked list Criterion: Achieve greatest cost savings.	<ul style="list-style-type: none"> Contractor ranked stations to close first based on greatest cost savings, excluding property sale proceeds. Contractor presented draft recommendations to Coast Guard for validation and to obtain additional district input on unique characteristics of some stations, such as surf rescue capability. Contractor revised station rankings based on this additional input. Contractor recommended 18 permanent station closures that it estimated could achieve cost savings of about \$290 million in 2015 dollars, over a 20-year period, if necessary personnel and assets from closed stations were reallocated to adjacent stations and remaining personnel and assets were eliminated, excluding proceeds from selling the property.

Source: GAO analysis of U.S. Coast Guard documents and discussions with U.S. Coast Guard officials. | GAO-18-9

^aCoast Guard guidance calls for its stations to plan to arrive to the scene of the SAR distress cases within their area of responsibility within 2 hours (including up to 30 minutes of preparation prior to launch).

^bAt the time the study was conducted, certain stations were excluded from consideration for closure based on security measures that were in place at that time but which have since been removed.

^cContractor identified data inconsistencies (incorrect SAR location data) with roughly 5 percent or fewer of SAR case locations. To address this, the contractor developed a workaround in its scenario modeling. Specifically, when a station was being considered for closure in the model, the SAR cases it would have conducted if it were open were allocated to adjacent stations based on the model, and cases with incorrect locations were proportionally allocated to stations adjacent to the station being considered for closure. This workaround was used to determine whether the station closure would have an unacceptable impact on the ability to meet the 2-hour SAR standard for responses.

^dThe optimization steps include assessing the impact of station closure on the Coast Guard's 11 statutory missions.

Additional District Input Helped Refine List of Closure Recommendations

Consistent with the 9-step optimization process and to validate the closure scenario results, the contractor and Coast Guard Headquarters obtained regional input from district officials to gain context about the stations under consideration for closure such as unique rescue characteristics that were not quantifiable. Coast Guard officials within Districts 1, 5, and 9 generally supported the contractor recommendations to close some stations, with a few exceptions.³⁵ For example, District 1's input stated that one station recommended for closure by the contractor analysis had a unique surf rescue capability that was not available at adjacent or other nearby stations and thus this station did not provide unnecessarily duplicative SAR coverage since no nearby station could provide this capability. Thus, District 1 recommended that the station remain open. Given this input, the contractor removed this station from consideration for closure. In another example, District 5 officials reported that closure of one of its stations would increase response times from adjacent stations due to the presence of shoaling and barrier island conditions that could not be accounted for in the quantitative modeling. Therefore, the contractor eliminated that station from consideration for closure and recommended an alternative station for closure. This process of obtaining regional input and validation from district officials was carried out such that if a station identified for closure would negatively impact critical missions, it was removed from closure consideration. This additional district input resulted in a final contractor study that recommended station closures that would achieve the greatest cost saving without negatively impacting the Coast Guard's ability to meet mission requirements.

In addition to identifying stations with unique characteristics that warranted keeping them open, additional district input also confirmed contractor recommendations that some stations should be permanently closed. For example, District 5's input concurred with the closure of six stations, including one where officials we interviewed on site confirmed its

³⁵The documents we reviewed confirmed some areas where the contractor obtained input from affected districts, such as unique surf station characteristics, and revised the list of stations recommended for closure, as described in table 1. During interviews we conducted with Coast Guard officials within Districts 1, 5, and 9, officials also discussed the impact closures would have on some leadership opportunities (e.g., fewer stations to manage means fewer opportunities for personnel to be in command of a station).

steadily diminishing SAR caseload. Our analysis of Coast Guard data validated this station's low workload showing an average of seven single-boat response SAR cases annually³⁶ from fiscal years 2010 through 2016.³⁷ We also found that this station had been recommended for closure in the past.³⁸ In another example, District 9 input sought an additional, seasonal closure of one station that the contractor analysis did not evaluate for permanent closure due to one criterion applied by the process.³⁹ District 9's input provided additional context for this station, saying that seasonal closure was preferable to taking no action because there was significant response redundancy in this region. Moreover, the district input noted that the acquisition of modern boats has increased the range and reduced the response time of many stations. District input also noted that improvements in public education and awareness of safe boating practices, technology and availability of communications equipment, and the increase in non-Coast Guard response resources has resulted in a steady and dramatic decline in the stations' SAR workloads. Our analysis of all Coast Guard single-boat response data for cases within the contiguous United States for fiscal years 2010 through 2016 confirmed this decline, showing an annual average of 46 cases per station in 2010 to an annual average of 39 cases per station in 2016, a decline of about 15 percent.⁴⁰ Appendix IV provides details from our

³⁶We analyzed search and rescue case data, such as the number of single- and multi-boat responses by station and by fiscal year. In some locations, more than one Coast Guard station may initiate a search and rescue response due to the close proximity of the stations or other factors. Because around 29 percent of these SAR cases (22,322 out of 77,953) could be duplicative if attributed to individual stations, we focused our analyses on single-boat responses (55,631 cases) where we could accurately attribute the cases to individual stations.

³⁷From fiscal years 2010 through 2016, the 183 boat stations we analyzed averaged 41 single-boat responses annually.

³⁸The Coast Guard conducted a limited study of one station's workload to assess the viability and disposition of the station. This study was completed in April 2007 to document support for closing this one station.

³⁹Closing this station would retain 88 percent double station coverage instead of the 90 percent threshold established for the study.

⁴⁰Our analysis of Coast Guard SAR single-boat response case data from fiscal years 2010 through 2016 found that the 18 stations recommended for closure reported an average of about 15 single-boat SAR responses annually, compared to an annual average of about 41 single-boat responses for all boat stations. Some seasonal stations report the number of cases to which they respond in combination with their parent station. Excluding these seasonal stations, the single-boat response SAR caseload for our sample results in an average of 19 responses annually for fiscal years 2010 through 2016.

analysis of the number of single-boat response SAR cases conducted by selected stations.

A 2014 Analysis of Selected Coast Guard Air Stations and Air Facilities Identified Unnecessary Duplication but Coast Guard Would Benefit from a Comprehensive Process

In 2014, the Coast Guard contracted for an analysis of selected air stations and air facilities that identified overlap and unnecessary duplication but it did not comprehensively review all air stations and air facilities. Specifically, the criteria-based analysis reviewed search and rescue capabilities, operational case data, and other mission requirements, and determined that certain air facilities provided overlapping search and rescue coverage, some of which was unnecessarily duplicative. Coast Guard officials said they used the results of this analysis to support proposed closures of air facilities in Newport, Oregon, and Charleston, South Carolina, in the President's Fiscal Year 2014 Budget.⁴¹ Subsequent appropriations for fiscal year 2014 also did not include funding for the operation of the two air facilities. However, shortly before their planned closure date, the Coast Guard encountered strong opposition to the closures at the local, state, and Congressional levels, and did not close them.

As with boat stations, the Coast Guard considers some overlapping coverage among air stations and air facilities desirable to mitigate potential risks such as those posed by asset maintenance downtime, limitations in the number of qualified personnel, restrictive weather conditions, or case complexity. Coast Guard officials stated that the 2014 analysis considered many factors to address potential impacts of the closure of the Newport and Charleston air facilities. For example, the Coast Guard used modeling tools to determine the operational impact of altering facility locations and the availability of aviation assets. Coast Guard officials told us they also conducted outreach to the affected

⁴¹Coast Guard Aviation Force Siting Optimization Study, September 2014.

communities and their political representatives in advance of the proposed closure date, as required by law.⁴²

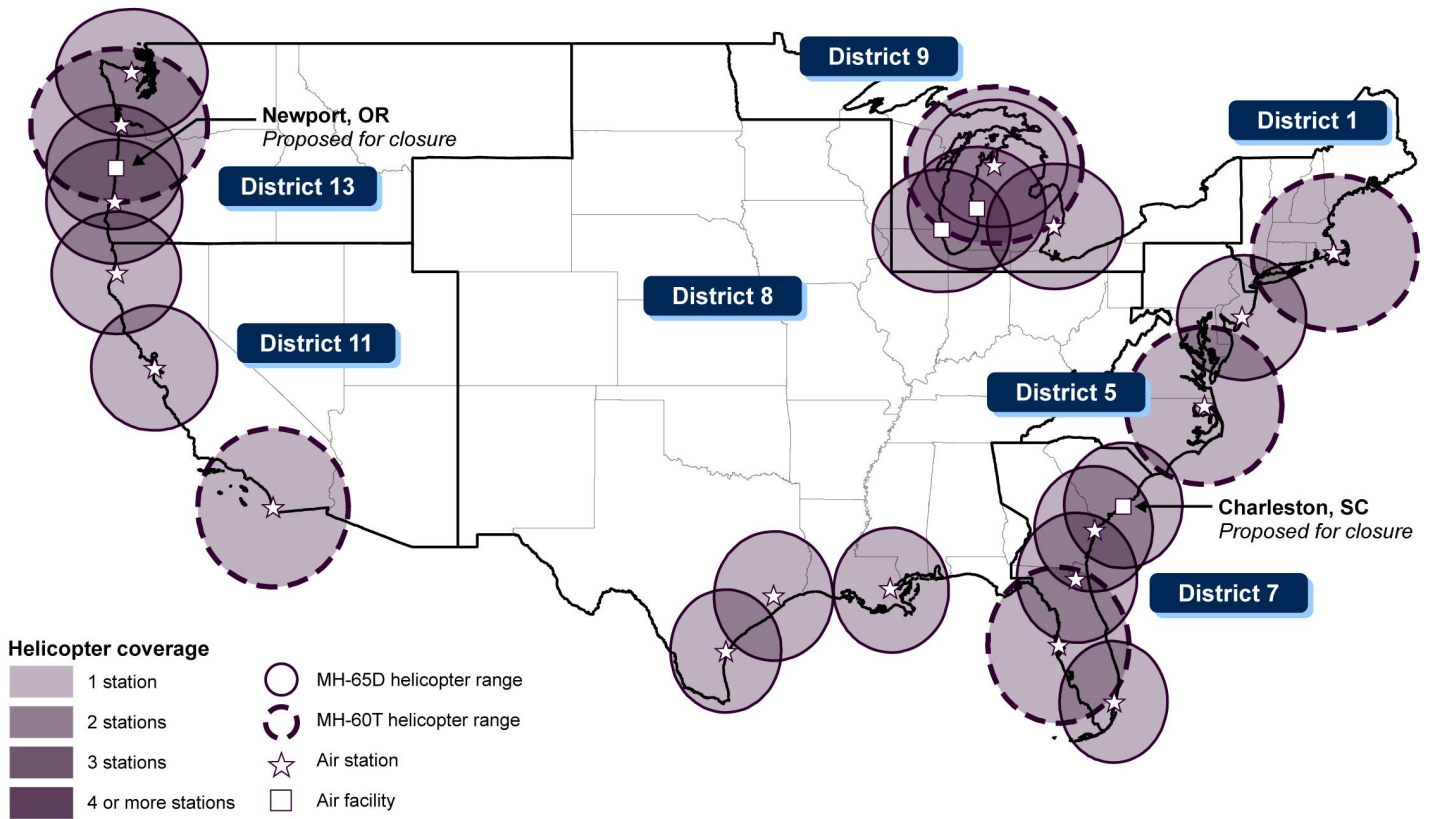
Further, Coast Guard officials explained that the fiscal outlook at the time (e.g., sequestration) required changes to optimize assets, and their proposal accomplished this without sacrificing operational capability because the response time of neighboring SAR units would remain within the Coast Guard's SAR standards.⁴³ The 2014 analysis also determined that the majority of SAR cases involving these two facilities occurred close to shore, with boat responses generally arriving on scene and conducting the search and rescue instead of air assets.⁴⁴ Circles in figure 6 represent air asset response capabilities nationwide, as of August 2017, with darker shades reflecting greater overlapping coverage.

⁴²14 U.S.C. § 676a.

⁴³Under sequestration, the Coast Guard faced about a 25 percent curtailment in its air and surface operations. Sequestration is an automatic, across-the-board cancellation of budgetary resources. Sequestration was first established in the Balanced Budget and Emergency Deficit Control Act of 1985 (BBEDCA) to enforce discretionary spending limits and control the deficit. This budgetary enforcement mechanism was revived by the Budget Control Act of 2011 (BCA), which provided the legal basis for the fiscal year 2013 sequestration. Pub. L. No. 112-25, 125 Stat. 240 (2011).

⁴⁴Our analysis of Coast Guard SAR cases from fiscal years 2010 through 2016 found similar results in that 20 percent of SAR responses (20,683 cases out of 103,263 cases) involved Coast Guard aviation assets.

Figure 6: Map of Coast Guard Helicopter Coverage as of August 2017



Source: GAO analysis of U.S. Coast Guard information; MapInfo (map). | GAO-18-9

Note: Figure includes stations that operate helicopters but excludes fixed wing aircraft, which also can be used to conduct some search and rescue activities, such as conducting a search over a large area. Figure also identifies two air facilities the Coast Guard attempted to close in 2014.

In 2014 and 2016, two laws were enacted that required the Coast Guard to keep the air facilities open for a specific period of time,⁴⁵ and established a number of requirements the Coast Guard is required to

⁴⁵In 2014, the Howard Coble Coast Guard and Maritime Transportation Act was enacted stating that the Coast Guard may not close a Coast Guard air facility that was in operation on November 30, 2014; or retire, transfer, relocate, or deploy an aviation asset from an air facility for the purpose of closing such a facility. The provision was effective until January 1, 2016. Pub. L. No. 113-281, § 225(b), 128 Stat. 3022, 3039 (2014). In 2016, the Coast Guard Authorization Act of 2015 was enacted extending the 2014 act closure provisions until at least January 1, 2018. In addition, the Coast Guard Authorization Act of 2015 contained a provision stating that, beginning January 1, 2018, the Secretary of Homeland Security may not close or terminate operations at a Coast Guard air facility until a number of specific requirements, discussed below, are met. 14 U.S.C. § 676a.

follow if it proposes closing or terminating operations at its air facilities.⁴⁶ Thus, the two air facilities remained open. As of May 2017, Coast Guard officials told us they have no plan to close air facilities or air stations, nor do they plan to develop a process to comprehensively review air stations or facilities to optimize their locations because previous attempts to close stations or facilities have been prohibited by law or subject to certain requirements. However, the Coast Guard has responsibility for evaluating the need for its air stations and air facilities to ensure that it is using resources as effectively and efficiently as possible. The Coast Guard's station optimization charter calls for a defensible (i.e., sound) and data-driven analysis of boat stations that meets statutory requirements. This charter could be a template for establishing a parallel process for comprehensively analyzing the need for its air stations and air facilities.

GAO's Program Evaluation guidance calls for evaluating programs based on well-regarded criteria to achieve strong, defensible conclusions.⁴⁷ Program evaluations can also provide accountability for the use of public resources (e.g., to determine the "value added" by the expenditure of those resources), such as whether scarce resources are being spent on unnecessarily duplicative air facilities. Having a sound and reproducible process for comprehensively analyzing the need for air stations and air facilities will better position the Coast Guard to make decisions to enhance the efficiency of its operations and more effectively allocate its resources. These actions will also better inform Congress as to the status of the Coast Guard's resource needs and the efficiency of its operations.

⁴⁶Requirements include Secretary of Homeland Security determinations that (1) SAR capabilities are maintained in the area; (2) weather and sea conditions do not require continued facility operation; and (3) SAR time standards will continue to be met. The Secretary must also provide opportunities for public comment, including public meetings in communities in the area of responsibility of the air facility, regarding any proposed closure; submit a proposal to Congress in the President's budget prior to any closure; and not later than 7 days after a closure proposal is submitted provide written notice to members of Congress and Senators who represent the district in which the facility is located or which assets conduct SAR operations; and written notice to the House Committees on Appropriations and Transportation and Infrastructure, and Senate Committees on Appropriations and Commerce, Science, and Transportation. 14 U.S.C. § 676a.

⁴⁷[GAO-12-208G](#).

Coast Guard Has Not Taken Actions nor Developed a Plan to Close Unnecessarily Duplicative Stations Its Analyses Identified

The 2013 analysis of Coast Guard stations identified unnecessary duplication and recommended certain stations for potential closure; however, as of August 2017 the Coast Guard had not closed any stations, nor developed a plan with time frames for closing stations. In their input to the station optimization process, Coast Guard officials in affected districts supported recommended station closures to achieve operational improvements, and Coast Guard leadership continues to believe the study results are valid. Implementing station closures could also result in costs savings.

Coast Guard Has Attempted to Close Stations At Least Eight Times since 1973

The need to close some Coast Guard stations that provide unnecessarily duplicative SAR coverage to efficiently respond to changed circumstances such as improved technology is not a new issue. Coast Guard officials reported, and our prior work has shown, that the Coast Guard has attempted to permanently or seasonally close stations at least eight times since 1973.⁴⁸ However, closing unneeded stations has historically been difficult due to public concern about the effect of closures on local communities and other factors. In some cases over the years, Congress has intervened and enacted federal laws that have affected Coast Guard's proposed closures. For example, in 1988 the Department of Transportation and Related Agencies Appropriations Act, 1989, required the Coast Guard to reopen boat stations 1 year after they had been closed,⁴⁹ and at the same time provided that GAO was to evaluate the methods behind the Coast Guard decision.⁵⁰ Responding to this

⁴⁸Count of closure attempts includes planned closures, proposed closures, and closures that the Coast Guard began processing, including the ongoing efforts to seasonally close stations. In addition, in 1990 we reported that the Department of Transportation Inspector General recommended that the Coast Guard close 21 stations, and the Coast Guard recommended additional closures. See [GAO/RCED-90-98](#).

⁴⁹Pub. L. No. 100-457, 102 Stat. 2125, 2126 (1988).

⁵⁰Id. at § 350, 102 Stat. 2156.

provision in 1990, we reported that the Coast Guard's 1988 closure decisions were based on flawed methods, incomplete analysis, and incomplete data. The Coast Guard subsequently updated its process and by 1994 we reported that that it was using a reasonable approach to recommend stations for closure.

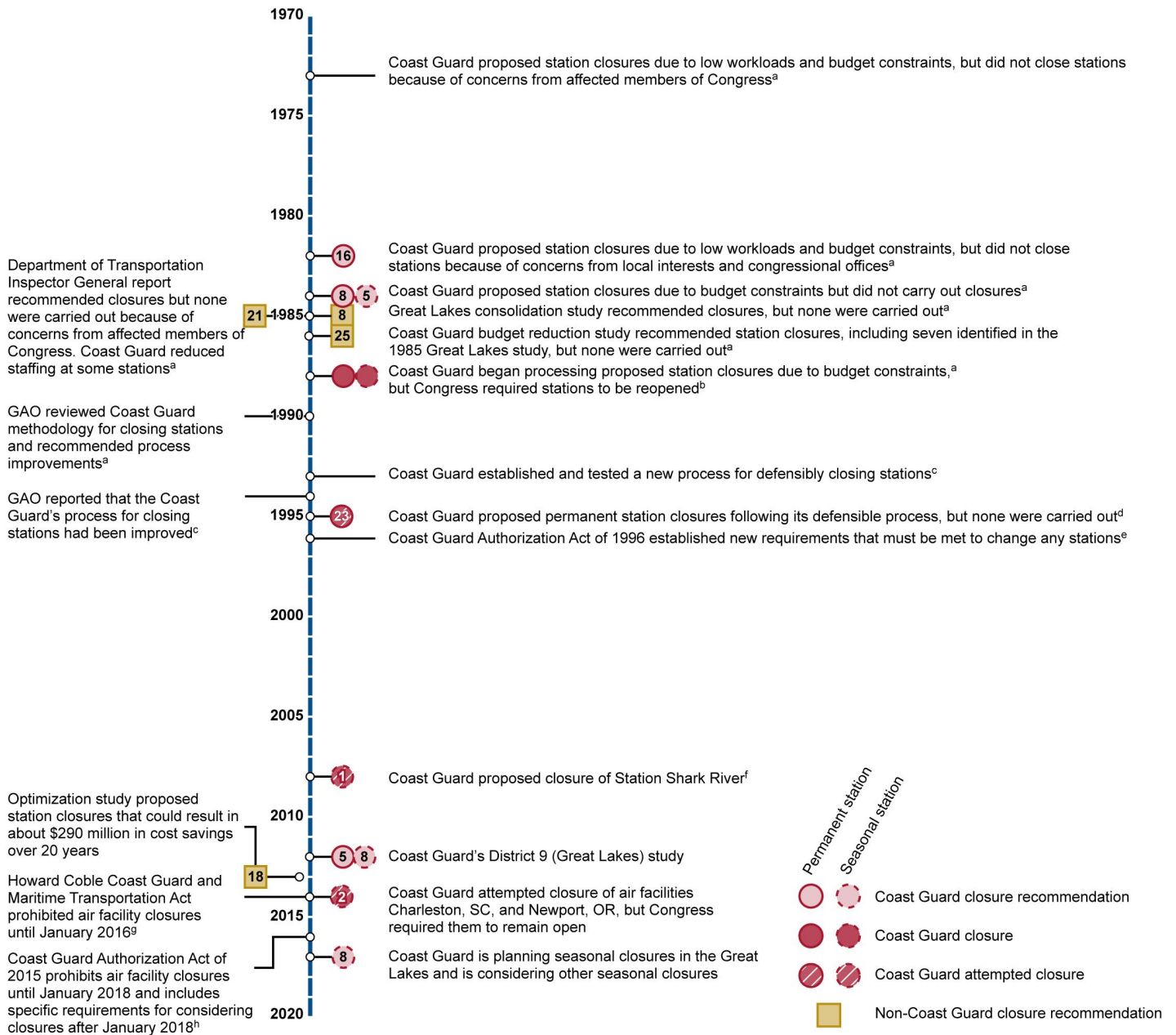
Despite the improved Coast Guard process, no stations have been closed since 1988. Coast Guard officials reported that Congress continues to oversee and manage the closure of stations, such as by establishing new requirements in the Coast Guard Authorization Act of 1996, which must be met to change any boat stations, after the Coast Guard attempted to close 23 stations in 1995.⁵¹ Similarly, after the Coast Guard attempted to close two air facilities in 2014, legislation was passed in 2014 and 2016 that prohibited Coast Guard air facility closures until January 2016 and 2018, respectively.⁵²

Figure 7 provides a timeline of Coast Guard station change proposals or actions, including at least eight Coast Guard attempts to close stations between 1973 and 2014. The figure also includes statutory requirements established in 1989, 1996, 2014, and 2016, and two data-driven analyses and studies with recommendations to address unnecessary duplication, among other information.

⁵¹14 U.S.C. § 675.

⁵²In addition, beginning January 1, 2018, the Coast Guard must meet additional requirements prior to closing air stations or air facilities. 14 U.S.C. § 676a.

Figure 7: Timeline of Studies and Actions to Address the Need for Coast Guard Stations, 1970 to 2017 (number of proposed closures denoted within the shapes below)



Source: GAO analysis of previously issued GAO reports, U.S. Coast Guard documents, and U.S. laws. | GAO-18-9

^aIn 1990 we reported on the Coast Guard's process for closing stations and past attempts to close stations. See GAO, Coast Guard: Better Process Needed to Justify Closing Search and Rescue Stations, [GAO/RCED-90-98](#) (Washington, D.C.: Mar. 6, 1990).

^bPub. L. No. 100-457, 102 Stat. 2125, 2126 (1988).

^cSee GAO, Coast Guard: Improved Process Exists to Evaluate Changes to Small Boat Stations, [GAO/RCED-94-147](#) (Washington, D.C.: Apr. 1, 1994).

^dFollowing unsuccessful attempts to permanently close the stations, the Coast Guard changed them to seasonal stations.

^e14 U.S.C. § 675.

^fCoast Guard analysis and study recommended permanent closure of Station Shark River due to low caseload and close proximity to an adjacent station. This station is designated a seasonal station but operates year-round.

^gPub. L. No. 113-281, § 225(b), 128 Stat. 3022, 3039 (2014).

^h14 U.S.C. § 676a.

Past Coast Guard efforts to analyze and close stations have frequently identified the same stations as candidates for closure. For example, prior to the 2013 contractor study, at least two Coast Guard districts conducted their own station analyses to identify opportunities to improve their stations' operations. These analyses also recommended permanent and seasonal closures of some stations. Specifically, in 2010, Coast Guard District 9 began conducting a data-driven analysis of its stations to optimize its boat forces. District 9 officials told us they initiated the analysis due to budget constraints, the challenges they had in fully staffing their stations, and their awareness of overlapping SAR coverage within the district. District 9's analysis reviewed more than 16,000 SAR cases over a 5-year period (2008–2012) to understand and quantify potential response inefficiencies. According to Coast Guard officials, their analysis determined that overall SAR caseload in District 9 was extremely high in the summer months, but there was little or no SAR caseload for some stations during the winter, a factor which also affected training proficiency as personnel were not able to respond to enough cases to maintain required qualifications.⁵³ Based on the results of this analysis, in December 2012, District 9 requested approval to permanently close five stations and seasonally close three stations to achieve more effective operations and improve maritime safety in the Great Lakes region.

According to Coast Guard district officials, these recommended closures provided no calculated savings to taxpayers because they involved movement of personnel positions and assets to other stations, not their elimination. Instead, the recommendations showed an effort to improve operational efficiency and conserve Coast Guard resources. Furthermore, among those stations in Districts 1, 5, and 9 recommended for permanent

⁵³The Coast Guard reported that workloads in District 9 were diluted among stations during the winter, which limited the opportunities for personnel to gain experience through on-the-job training necessary to build a proficient workforce.

closure in 2013, at least five—Ashtabula, Ohio; Frankfort, Michigan; Harbor Beach, Michigan; Shark River, New Jersey; and Block Island, Rhode Island—were also recommended for closure between 1985 and 1988.

When we compared the 2012 recommendations from the District 9 analysis, the 2013 contractor analysis recommendations that used the 9-step Station Optimization Process, and additional 2013 district input, we found similar results among the various analyses with respect to which stations should be permanently or seasonally closed. Based on our review of documentation and interviews with District 9 officials, as well as our comparison of the results of the District 9 analysis with the results of the contractor analysis, the 2013 recommendations are affirmed by the District 9 analysis.⁵⁴ We provide a comparison of selected recommendations and Coast Guard Headquarters' tentatively planned actions in table 2.

Table 2: Summary of Selected Coast Guard Recommendations to Change Boat Station Operations

Station (district)	2012 District 9 analysis	2013 contractor analysis	2013 district input	2017 recommended actions
Ashtabula, OH (9)	Close	Not applicable (n/a) ^a	Close	Seasonally Close
Frankfort, MI (9)	Seasonally Close	n/a ^a	Seasonally Close	Seasonally Close
Harbor Beach, MI (9)	Seasonally Close	n/a ^a	Seasonally Close	Seasonally Close
Kenosha, WI (9)	Close	Close	Close	Seasonally Close
Lorain, OH (9)	Close	Close	Close	Seasonally Close
Ludington, MI (9)	Seasonally Close	n/a ^a	Seasonally Close	Seasonally Close
Oxford, MD (5)	n/a	Close	Close	To be determined (TBD)
Beach Haven, NJ Seasonal Station (5)	n/a	Close	Close	TBD
Fortesque, NJ Seasonal Station (5)	n/a	Close	Close	TBD
Shark River, NJ Seasonal Station (5)	n/a	Close	Close	TBD
Roosevelt Inlet, DE Seasonal Station (5)	n/a	Close	Close	TBD
Wrightsville Beach, NC (5)	n/a	Close	Leave Open ^b	Leave Open
Ocracoke, NC Seasonal Station (5)	n/a	n/a	n/a ^b	TBD ^b
Jones Beach, NY (1)	n/a	Close	Close	TBD

⁵⁴Due to the amount of time that has passed since the District 9 study was conducted and personnel changes, the Coast Guard was unable to locate some documentation for us to review. However, the documentation available from the various studies, related testimonial evidence, and our own analysis of SAR data was sufficient to make this determination.

Station (district)	2012 District 9 analysis	2013 contractor analysis	2013 district input	2017 recommended actions
Merrimack River, MA (1)	n/a	Close	Leave Open ^c	Leave Open
Scituate, MA Seasonal Station (1)	n/a	Close	Close	TBD
Block Island, RI Seasonal Station (1)	n/a	Close	Close	TBD
Fishers Island, NY Seasonal Station (1)	n/a	Close	Close	TBD

Source: GAO analysis of U.S. Coast Guard studies, feedback memoranda, and policy change requests. | GAO-18-9

^aStation not considered for closure by the contractor study due to study-specific criteria such as the extent to which station area of operations would retain double coverage.

^bDistrict 5 input identified unique conditions at Wrightsville Beach to keep that station open. As an alternative, district officials identified Seasonal Station Ocracoke as a closure candidate without a reduction in the Coast Guard’s ability to meet the area SAR standard. The standard calls for Coast Guard stations to plan to arrive on the scene of the SAR distress cases within their area of responsibility within 2 hours (including up to 30 minutes of preparation prior to launch).

^cDistrict 1 identified this station as having a unique and irreplaceable capability that adjacent stations did not have—surf boat response—and thus it was important to keep it open.

District 9 and Station Input Supported Recommended Permanent and Seasonal Station Closures

Input from District 9, which had the greatest number of affected stations in the 2013 analysis, supported recommended changes and stated that “the existing unnecessary redundancies, unsustainable complexities, and unacceptable resource gaps negatively affected mission execution in the Great Lakes, where staffing shortfalls exist.” District 9’s input further stated that in some regions, four stations could respond to SAR cases within the Coast Guard’s SAR standard, and that while some redundancy is merited, these areas demonstrate redundancy that is operationally unnecessary, inefficient, and detrimental to the training needs of station personnel.

Our interview with officials at one affected station confirmed some of the complexities facing the region. For example, officials told us that because one station recommended for seasonal closure does not operate a boat capable of offshore SAR responses, adjacent stations are already directed to respond to certain offshore SAR cases in that station’s area of responsibility to meet the Coast Guard’s 2-hour SAR standard. Officials we interviewed from each of the seven stations we visited in District 9 noted their station’s high SAR caseload concentration during the summer months and the low or nonexistent SAR caseload during the winter. For example, officials from two stations that the Coast Guard would like to seasonally close during the winter told us that their stations had not responded to an ice rescue in more than 7 years. Officials we interviewed at one station recommended for permanent closure noted that

commercial boating traffic and the local population have been declining for many years, that the station was not busy during the winter season, and that the station had not conducted an ice rescue since 2002.

In 2017, the Coast Guard affirmed that its leadership believed that the results of the 2013 study remained valid as station workloads have remained relatively consistent. Headquarters officials also told us that the 2013 study criteria and subsequent recommendations for permanent closures were conservative because of previous unsuccessful attempts to close stations, and to meet statutory requirements to maintain a certain level of SAR coverage. They also told us that the analysis did not consider additional layers of response even though these layers could provide some additional SAR response backup for Coast Guard stations. For example, the contractor's analyses of boat stations did not consider SAR support provided by Coast Guard aviation assets, which generally provide an additional layer of SAR coverage for boat stations. Moreover, district officials told us that aviation assets in District 9 were recently realigned to provide even greater response capability, including longer range helicopters with de-icing capability to improve winter response capability.

The contractor analysis also did not take into account the potential SAR capabilities of commercial towing operators and local first responders which can also provide another layer of coverage to assist Coast Guard stations with SAR coverage. For example, officials from each of the seven stations we visited in District 9 told us that they coordinate with other entities, such as commercial towing operators, who can conduct responses for non-life-threatening incidents, such as providing fuel to or towing disabled boats in their station's area of responsibility. Officials from one station also told us that the local fire department has performed ice rescues in the past, because people who require ice rescues tend to dial 911 first rather than call the Coast Guard, and thus local emergency responders are able to respond faster than the Coast Guard. Officials from another station told us that the local sheriff has two response boats, and that the Coast Guard coordinates with local government and responders.

Station Closures Could Achieve Cost Savings

Station closures could also achieve cost savings in addition to the aforementioned efficiency improvements. For example, based on our analysis of the contractor study, if its recommendations to permanently

close the 18 stations from D1, D5, and D9 were implemented, and personnel and boat assets were moved or reduced in accordance with the study recommendations, the study reported that these closures could achieve potential cost savings of about \$290 million over 20 years.⁵⁵ In addition, land disposition estimates were excluded from the study, which could result in one-time proceeds from the sale of the land on which the stations are sited, if the land value exceeded remediation costs.⁵⁶

In addition to lost opportunities to improve operational efficiency and effectiveness because stations were not closed previously, some of these stations have also fallen into physical disrepair and will require funding for repairs if the stations remain open, even if they are only operated seasonally. For example, officials at one station we visited showed us a boat dock that was improperly installed and thus was subsequently damaged by waves and will need to be repaired or replaced. At this same station, officials informed us that the furnace system requires daily, manual adjustments to address temperature fluctuations that could cause damage to the station. One official also told us that this station's building structure is too big and costly, and its condition too poor, to be worth keeping. Therefore, even if this station were seasonally closed, as currently recommended—despite the analysis results suggesting permanent closure—the station will continue to require personnel to be at the station on a daily basis year round. Another station, which multiple studies recommended for permanent closure because of unnecessary duplication and a caseload insufficient to sustain the training requirements of personnel stationed there, was rebuilt as a result of extensive damage from Hurricane Sandy. According to Coast Guard budget data, more than \$2.3 million was expended to restore this station as of March 2017 using funds appropriated by the supplemental appropriations act enacted in response to Hurricane Sandy.⁵⁷

Actions Needed to Address Unnecessary Duplication

Given the extent of overlapping SAR coverage identified by the Coast Guard's analyses and its attempts to address unnecessary duplication,

⁵⁵We validated the potential cost savings of about \$290 million over 20 years. Based on our analysis, the present value of potential cost savings is \$269 million.

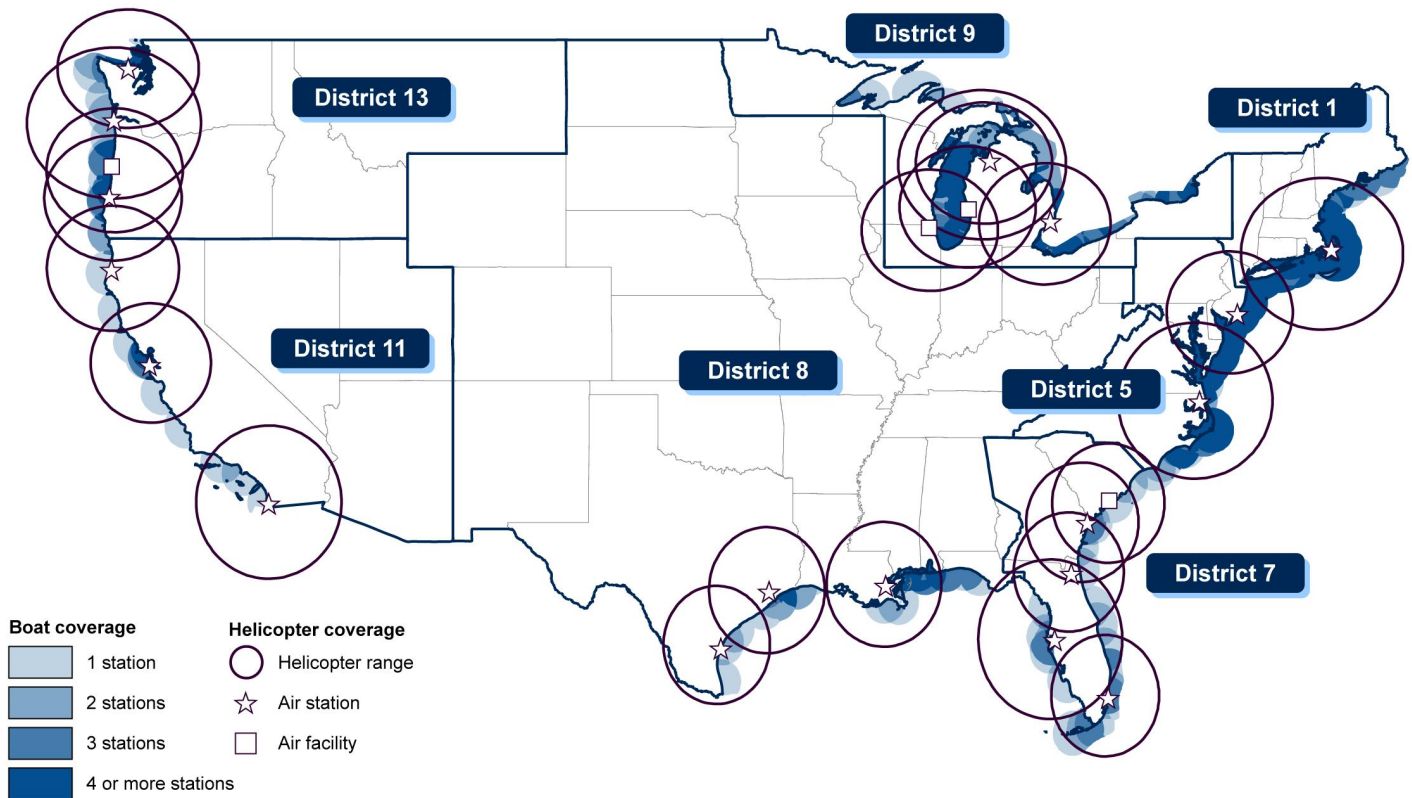
⁵⁶The contractor study did not estimate potential environmental remediation costs.

⁵⁷Disaster Relief Appropriations Act, 2013, Pub. L. No. 113-2, 127 Stat. 4, 28 (2013).

we considered the stations' levels of overlapping coverage in the context of the definitions we use for identifying overlap and duplication.⁵⁸ Figure 8 depicts the extent of the Coast Guard's overlapping boat and air station SAR coverage, with darker shading representing greater overlapping coverage, some of which the Coast Guard determined to be unnecessarily duplicative. Boat station coverage is represented by shading while aviation coverage is shown by the largest circle sizes.

⁵⁸In 2010, federal law required that within departments and government-wide we identify programs, agencies, offices, and initiatives with duplicative goals and activities and report annually. Pub. L. No. 111-139, § 21, 124 Stat. 29 (2010), 31 U.S.C. § 712 Note. See GAO's Duplication and Cost Savings web page for links to the 2011 to 2017 annual reports: <http://www.gao.gov/duplication/overview>. Overlap occurs when multiple agencies or programs have similar goals, engage in similar activities or strategies to achieve them, or target similar beneficiaries. Duplication occurs when two or more agencies or programs are engaged in the same activities or provide the same services to the same beneficiaries.

Figure 8: Overlap of Coast Guard Search and Rescue Coverage Provided by Boat Stations, Air Stations, and Air Facilities, May 2017



Source: GAO analysis of U.S. Coast Guard information; MapInfo (map). | GAO-18-9

In April 2016, the Coast Guard completed statutory requirements associated with closing eight stations in District 9 by conducting outreach to regional and local communities that would be affected by seasonal closures. The Coast Guard held these meetings to explain why it was necessary to optimize station locations and reallocate personnel from closed stations to their adjacent stations; address overlapping SAR coverage; and seasonally close unnecessarily duplicative stations. Coast Guard officials from one station told us they held a public meeting with the local fire department, police, and commercial towing operators to describe planned changes for seasonal operations at the station, despite this station having been recommended for permanent closure by studies and district input. According to Coast Guard officials, while some local responders in the District 9 area expressed some concerns, they understood the need for change. In addition, according to headquarters officials, the Coast Guard has also completed outreach efforts with members of Congress who represent these communities. They further

stated that they plan to follow the same outreach process when they finalize decisions about whether to permanently or seasonally close stations in Districts 1 and 5.

The Coast Guard has not taken action to implement the results of its analyses which recommended closures even though it has completed requirements to pursue station closures in District 9. Officials stated that the Coast Guard has not implemented the results of its sound process because past station closure efforts have been met with resistance from affected communities. As a result, Coast Guard leadership decided to pursue a more cautious approach by maintaining seasonal daily operations rather than closing stations outright as recommended in multiple analyses.⁵⁹

Standards for Internal Control in the Federal Government state that agencies should have policies and procedures for ensuring that findings of audits or other reviews, such as the Coast Guard's 2013 station optimization study, are promptly resolved. The guidance further states that managers are to (1) correct identified deficiencies, (2) produce improvements, or (3) demonstrate that the findings and recommendations do not warrant management action.⁶⁰

Coast Guard officials stated they recognize that their planned actions do not fully match the identified recommendations, but given historical challenges with closing stations, seasonal closures are preferable to taking no action. In March 2017, Coast Guard officials told us they intended to begin the process for seasonal closures of stations in District 9 at the end of the 2017 boating season while actions in Districts 1 and 5 are pending as the Coast Guard has not finalized its decisions about these stations.

The Project Management Institute's Standard for Program Management describes, among other things, how resource planning, goals, and milestones are good practices that can enhance management for most

⁵⁹As of August 2016, the Coast Guard planned to operate some seasonal stations during the weekend only; however, in February 2017 the Coast Guard revised its intended actions to be more cautious and operate the seasonal stations on a daily basis.

⁶⁰[GAO-14-704G](#).

programs.⁶¹ By executing decisions to close stations based on the results of its analyses and developing a plan with milestones to execute actions it has identified to address unnecessary duplication, the Coast Guard will be better positioned to follow through with both permanent and seasonal closures of unnecessary stations, can improve its operational and training proficiency by consolidating the remaining stations' workloads to allow for sufficient training, and may realize cost savings.

Conclusions

The Coast Guard's 2013 analysis, based on a sound, data-driven process that applied established criteria—its 2-hour SAR response standard—supports permanently closing some boat stations. Nevertheless, Coast Guard officials do not intend to follow the recommendations to permanently close the stations the study recommended, due, in part, to views expressed by community representatives. The Coast Guard's 2014 air station and air facilities study also supported closing two air facilities and was criteria-based, but was not comprehensive. An optimization process similar to that applied to boat stations could make a better case for closing selected air stations and air facilities, if it is methodologically sound.

The need to close Coast Guard stations that provide unnecessary duplication of SAR coverage, in response to changing circumstances, is not a new issue. Closing unneeded stations has historically been difficult, but with improvements in technology, severely decreased workloads, and continuing budget constraints, the importance of reevaluating the operations of these stations is even greater. In addition to lost opportunities to improve operational efficiency and effectiveness that would be gained by closing unnecessary stations, some of these stations have fallen into physical disrepair and will require funding for repairs if they remain open. Given these factors, Coast Guard action is clearly warranted.

⁶¹Project Management Institute, Inc., *The Standard for Program Management*®, Third Edition (Newton Square, Pa.: 2013). *The Standard for Program Management*® describes, among other things, how resource planning, goals, milestones, performance measures, and program monitoring and reporting are good practices that can enhance management for most programs.

Recommendations for Executive Action

We are recommending the following three actions to the Coast Guard:

- The Commandant of the Coast Guard should establish and follow a sound air station optimization process similar to its process for analyzing boat stations to allow it to comprehensively analyze its need for air stations and air facilities and determine what changes may be needed. (Recommendation 1)
- The Commandant of the Coast Guard should establish a plan with target dates and milestones for closing boat stations that it has determined, through its 9-step process and subsequent analysis, provide overlapping search and rescue coverage and are unnecessarily duplicative. (Recommendation 2)
- The Commandant of the Coast Guard should take action to close the stations identified according to its plan and target dates. (Recommendation 3)

Agency Comments and Our Evaluation

We provided a draft of this report to DHS for review and comment. In its comments, reproduced in appendix V, DHS concurred with our recommendations. DHS, through the Coast Guard, also provided technical comments, which we incorporated as appropriate.

DHS concurred with our first recommendation that the Coast Guard establish and follow a sound air station optimization process similar to its process for analyzing boat stations so it may comprehensively analyze its air station and air facility needs. DHS further stated that the Coast Guard would utilize its fiscal year 2020 Planning, Programming, Budget, and Execution cycle to identify efficiencies in air station optimization using best practices employed in its boat station optimization efforts. DHS expects this effort to be completed in September 2019.

DHS concurred with our second recommendation that the Coast Guard establish a plan with target dates and milestones for closing boat stations that it has determined provide overlapping search and rescue coverage and are unnecessarily duplicative. DHS stated that Coast Guard headquarters and appropriate district commands will continue to analyze operational coverage across the nation through the 9-step optimization

process and recommend closures or seasonalization (e.g., seasonal closures) of boat stations to eliminate unnecessary duplication and overlap in search and rescue coverage. The Coast Guard's internal analysis is expected to be completed in September 2020.

DHS concurred with our third recommendation that the Coast Guard take action to close the identified stations according to its plan and target dates, stating that Coast Guard headquarters personnel and appropriate district commands will continue to analyze closing or seasonalizing operations at boat stations identified according to its plan and target dates. DHS further stated that it must complete implementation of the second recommendation before beginning to implement the third and that the estimated completion date for the third recommendation was to be determined. Given the robustness of the Coast Guard's review process and the clear results showing unnecessary duplication among some boat stations, in addition to other valid analyses completed in previous years supporting the closure of unneeded boat stations, the Coast Guard should move forward with minimal delay to implement this third recommendation, once the plan as outlined in the second recommendation is completed. We will continue to monitor the Coast Guard's actions to close unnecessarily duplicative stations in a timely manner through our annual report on duplication, overlap, and fragmentation in the federal government.

We are sending copies of this report to the appropriate congressional committees, the Secretary of the Department of Homeland Security, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-7141 or GroverJ@gao.gov. GAO staff who made key contributions to this report are listed in appendix VI

Sincerely yours,



Jennifer Grover
Director, Homeland Security and Justice

Appendix I: Scope and Methodology

To identify the extent to which the U.S. Coast Guard (Coast Guard) has a sound process for analyzing the need for its boat stations, we reviewed laws, policies, and procedures related to its search and rescue (SAR) mission. We reviewed Coast Guard documentation of processes it used to analyze the need for boat stations, reviewed resource and budget factors, and analyzed station activity levels. We also reviewed prior GAO reports on the Coast Guard's resource allocation process and its previous attempts to close stations.¹ To verify and validate the Coast Guard's specific analytical process used to determine overlapping coverage, we obtained and analyzed the Coast Guard's analytical assumptions, including the operational parameters of the assets assigned to the stations (e.g., boat speeds), and station locations.² This analysis also allowed us to verify the soundness of the Coast Guard's model used to

¹GAO, *Coast Guard: Better Process Needed to Justify Closing Search and Rescue Stations*, [GAO/RCED-90-98](#) (Washington, D.C., Mar. 6, 1990); and *Coast Guard: Improved Process Exists to Evaluate Changes to Small Boat Stations*, [GAO/RCED-94-147](#) (Washington, D.C.: Apr. 1, 1994).

²The Coast Guard Search and Rescue Visual Analytics (cgSARVA) is an interactive system that has been designed to assist U.S. Coast Guard decision makers and analysts in understanding and assessing the operational efficiencies of different Coast Guard missions at different organizational levels. cgSARVA provides an interactive user interface and a suite of tools that enable visualization, analysis, and assessment of different Coast Guard missions. According to program documentation, the system allows an analysis of the potential risks to the maritime environment associated with station closures and reallocation of different resources in terms of response time, potential lives and property lost, and provides optimal direction as to the nearest available station in case of such station closures. According to program documentation, the system enables the analysis of trends, patterns, and anomalies associated with the distribution of cases in both space and time conducted by the Coast Guard throughout the United States. According to program documentation, the Aviation Capability and Capacity Assignment Module (ACCAM), an optimization model for Coast Guard air stations, was created for the Coast Guard to maximize aircraft fleet operational performance subject to budgetary constraints, or, conversely, to minimize aircraft fleet operational costs subject to performance targets. It is a two-stage model. The first stage is a simulation model of each Coast Guard air station generating performance metrics resulting from various scenarios. Each scenario is determined by a large number of relevant air station attributes, including number and types of stationed aircraft, operational level, historical search and rescue mission response, historical maintenance processes, deployment requirements, and other mission requirements. The second stage is an optimization model over the structured set of scenarios to determine the optimal deployment assignments, operational levels, and aircraft allocation among all Coast Guard air stations, under the current infrastructure. Additionally, the optimization model is used to demonstrate the potential efficiencies of proposed infrastructural changes.

identify overlap. We then independently recreated and visually depicted overlapping SAR coverage provided by the stations, based on Coast Guard data, assumptions, and documentation, and compared it with SAR case data by geographic area. We then analyzed Coast Guard data on single boat SAR responses (sorties) by station for fiscal years 2010 through 2016, the most recent data available at the time of our review.³ We visited a nongeneralizable sample of 12 stations we selected from within districts where the Coast Guard had identified overlap, and interviewed officials to identify local policies, station characteristics, local coordination with emergency responders and federal agencies, and local input to the Coast Guard's process for assessing station needs and implementing changes to the locations of stations, if any.

Additionally, we interviewed Coast Guard officials, including field and headquarters personnel, to determine the extent to which the Coast Guard had assessed maritime activity trends and leveraged resources from outside entities, such as local first responders, federal agencies, and private industry. We also interviewed Coast Guard officials to obtain information on the extent to which the Coast Guard used findings and recommendations from selected studies, strategies, and plans in its analyses of the need for its boat stations.

To assess the reliability of Coast Guard SAR data, we interviewed knowledgeable officials, reviewed documentation, and electronically tested the data for obvious errors and anomalies. We interviewed Coast Guard officials to discuss the reliability issues we identified, such as the inability to attribute multi-boat SAR case responses to individual stations, as well as inconsistent data related to the types of boats used to conduct SAR cases. Regarding attributing multi-boat responses to individual stations, Coast Guard officials told us that some cases involve multiple boats and that the outcome of a SAR case may not be attributable to an individual station. Regarding boat assets used to conduct SAR cases, in February 2017, officials informed us that in 2015 the Coast Guard implemented changes to its Marine Information for Safety and Law

³We obtained search and rescue case data, such as the number of single- and multi-boat responses by station and by fiscal year, from the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) system, for fiscal years 2010 through 2016. In some locations, more than one Coast Guard station may initiate a search and rescue response due to the close proximity of the stations or other factors. Because around 29 percent of these SAR cases (22,322 out of 77,953) could be duplicative if attributed to individual stations, we focused our analyses on single-boat responses (55,631 cases) where we could accurately attribute the cases to individual stations.

Enforcement (MISLE) system and added around 500 controls, such as built-in data entry checks, to prevent potential data entry errors. Officials told us that this change could have caused some inconsistencies in how the data is captured, but that the implementation of the changes includes testing and ongoing actions to resolve the issues. We determined that the data were sufficiently reliable for the purposes of this report to demonstrate selected station caseloads in our report. We compared Coast Guard actions to evaluate stations against criteria established in GAO's *Designing Evaluations* guidance, which call for adhering to established evaluation design practices in order to achieve reliable results,⁴ the Coast Guard's SAR response standard,⁵ and statutory requirements to conduct public outreach.⁶

To identify the extent to which the Coast Guard has a sound process to analyze the need for its air stations and air facilities, we reviewed laws, policies, and procedures related to its SAR mission. We reviewed Coast Guard documentation of processes it used to analyze the need for selected air facilities in 2014. We obtained and analyzed Coast Guard assumptions and station locations for determining overlapping SAR coverage in 2014 and used a mapping program to visually depict overlapping coverage provided by aviation assets, based on Coast Guard

⁴GAO, *Designing Evaluations 2012 Revision*, [GAO-12-208G](#) (Washington, D.C.: January 2012). This report addresses the logic of program evaluation design, presents generally accepted statistical principles, and describes different types of evaluations for answering varied questions about program performance, the process of designing evaluation studies, and key issues to consider toward ensuring overall study quality. This report is one of a series of papers whose purpose is to provide guides to various aspects of audit and evaluation methodology and indicate where more detailed information is available. It is based on GAO reports and program evaluation literature. To ensure the guide's competence and usefulness, drafts were reviewed by selected GAO, federal and state agency evaluators, and evaluation authors and practitioners from professional consulting firms. This publication supersedes *Government Operations: Designing Evaluations*, [GAO/PEMD-10.1.4](#) (Washington, D.C.: May 1, 1991).

⁵The Coast Guard establishes its response standard based on a macro analysis of expected survival times of people in the water, including regional variances (e.g., cold water versus warm, resource-rich port areas versus remote locations), and calls for its stations to plan to arrive to the scene of the SAR distress cases within their area of responsibility within 2 hours (including up to 30 minutes of preparation prior to launch). U.S. Coast Guard, *U.S. Coast Guard Addendum to the United States National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual*, COMDTINST M16130.2F (Washington, D.C.: January 2013).

⁶14 U.S.C. § 675 requires the Coast Guard to provide an opportunity for public comment and for public meetings in the area of the station or subunit with regard to the decision to close the station or subunit.

data, assumptions, and documentation. Additionally, we interviewed Coast Guard officials to obtain information on the extent to which the Coast Guard used findings and recommendations from selected studies, strategies, and plans in its analyses of the need for and locations of its air stations. We compared Coast Guard actions to evaluate air stations and air facilities against criteria established in GAO's Designing Evaluations guidance which calls for adhering to established evaluation design practices in order to achieve reliable results, to determine if the Coast Guard's methodological steps were sound.⁷

To determine the extent to which the Coast Guard has taken actions to implement the results of its analyses of its need for boat and air stations, we analyzed Coast Guard documents and reports to identify proposals put forth by the Coast Guard for permanently or seasonally closing stations it has identified as overlapping and unnecessary. We analyzed these proposed actions to determine whether proposed plans or decisions regarding stations aligned with the results of the Coast Guard analyses. Specifically, we reviewed the study reports, memoranda detailing district input on the results of the 2013 contractor study and their verification of the stations the study identified as unnecessarily duplicative, and compared the recommended closures from the various studies to determine if the outcomes were consistent. We also compared Coast Guard actions against its response standards and statutory requirements to conduct public outreach. Finally, we reviewed documents and information on these proposals and compared them against criteria in Standards for Internal Control in the Federal Government,⁸ and leading practices identified in the Project Management Institute's Standard for Program Management.⁹

We conducted this performance audit from July 2016 through October 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for

⁷[GAO-12-208G](#).

⁸GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014).

⁹Project Management Institute, Inc., *The Standard for Program Management*®, Third Edition (Newton Square, Pa.: 2013). *The Standard for Program Management*® describes, among other things, how resource planning, goals, milestones, performance measures, and program monitoring and reporting are good practices that can enhance management for most programs.

our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Selected Coast Guard Assets

The U.S. Coast Guard (Coast Guard) uses several different types of assets to carry out its missions, including search and rescue. Coast Guard assets include boats, rotary wing aircraft (helicopters), fixed wing aircraft (planes), and cutters (including patrol boats and ships).

Boats

The Coast Guard's primary boat station search and rescue (SAR) assets are its boats, which it uses to conduct searches near shore and on inland waterways, such as harbors and bays that are too shallow for its larger cutters to access.¹ Different boats have different capabilities (see table 3). For example, 47-foot motor life boats are slower than other boats, but can operate in heavy weather and up to 50 nautical miles offshore.

Aircraft

The Coast Guard operates two types of aircraft: rotary wing (helicopters) and fixed wing (airplanes). Rotary wing aircraft operate from air stations, air facilities, cutters equipped with flight decks, and other locations that can support flight operations. The Coast Guard uses its rotary wing aircraft for search and rescue in coastal waters, among other mission uses. Rotary wing aircraft can hover and are equipped with hoists, which can allow rescue of distressed individuals from the water. Fixed wing aircraft operate from Coast Guard air stations, air facilities, and airports, and are used to conduct over-water searches and other missions.

Cutters

Coast Guard cutters are ships 65 foot or longer. They operate under the control of District or Area commands. According to the Coast Guard, cutters are suitable for conducting extended search and rescue operations because of their high endurance, communications systems, and ability to operate in heavier weather than other assets. Cutters carry

¹As of August 2017, the Coast Guard operated about 1,400 boats and cutters, of which about 700 are boats operated out of boat stations.

boats that can directly rescue mariners in distress. Cutters with flight decks can serve as launch platforms for helicopters, which can help with SAR operations.

The Coast Guard generally allocates boats to stations based on the needs and conditions of those stations. The Coast Guard also has other types of boats in its inventory that are used for a variety of missions that may include SAR missions. Table 3 provides details of selected boats used for search and rescue.

Table 3: Selected Coast Guard Boats Used for Search and Rescue (SAR) at Boat Stations

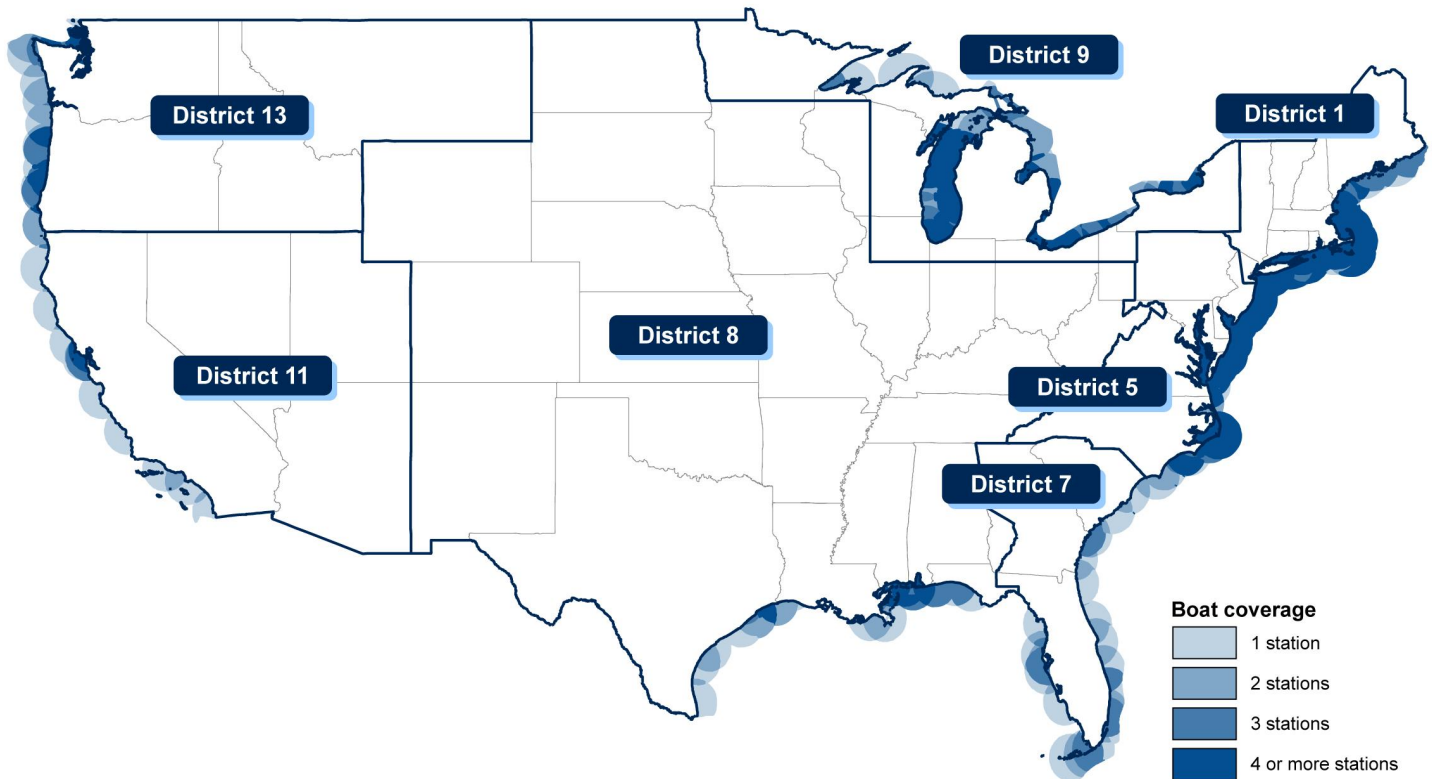
Type of boat	Specifications	Purpose
Response Boat Small - I (RB-SI)	25-foot, maximum speed 46 knots, cruise speed 35 knots, maximum seas of 6 feet, maximum range 150 nautical miles, maximum offshore distance 10 nautical miles, brought into service in 2003.	Designed as a highly maneuverable and multimission capable boat powered by twin outboard gas engines, used to conduct search and rescue and high-speed maneuvering tactics, including homeland security operations.
Response Boat Small - II (RB-SII)	29-foot, maximum speed 47 knots, cruise speed 25 knots, maximum seas of 6 feet, maximum range 175 nautical miles, maximum offshore distance 10 nautical miles, brought into service in 2012.	Designed as a highly maneuverable and multimission capable boat powered by twin outboard gas engines, used to conduct search and rescue and high-speed maneuvering tactics, including homeland security operations.
Response Boat Medium (RB-M)	45-foot, maximum speed 47 knots, cruise speed 30 knots, maximum seas of 10 feet, maximum range 250 nautical miles, maximum offshore distance 50 nautical miles, started production in 2008.	Designed as a high-speed, self-righting, multimission capable boat to operate in moderate weather and sea conditions and are not permitted to operate in breaking surf or bar conditions.
Motor Life Boat (MLB)	47-foot, maximum speed 25 knots, cruise speed 20 knots, maximum seas of 30 feet and surf of 20 feet, maximum range 200 nautical miles, maximum offshore distance 50 nautical miles, started production in 1997.	Designed as a self-righting response rescue boat primarily for SAR missions in high seas, surf, and heavy weather conditions, and also supports other mission operations.
Special Purpose Craft – Shallow Water (SPC-SW)	27-foot, maximum speed 41 knots, cruise speed 30 knots, maximum seas of 4 feet, maximum range 225 nautical miles, maximum offshore distance 5 nautical miles, brought into service in 2008.	Designed as a multimission capable boat for shallow water operations including search and rescue, maritime law enforcement, and Ports, Waterways, and Coastal Security missions.

Source: GAO analysis of U.S. Coast Guard documentation as of March 2017. | GAO-18-9

Appendix III: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in the Contiguous United States

Figures 9 through 12 show the extent of search and rescue coverage by U.S. Coast Guard (Coast Guard) boat stations in the contiguous United States and selected Coast Guard districts reported in September 2013. The extent of coverage in 2017 was the same as the Coast Guard's 2013 contractor study reported.

Figure 9: Extent of Search and Rescue Coverage by Boat Stations in the Contiguous United States Reported in September 2013 (Current as of May 2017)

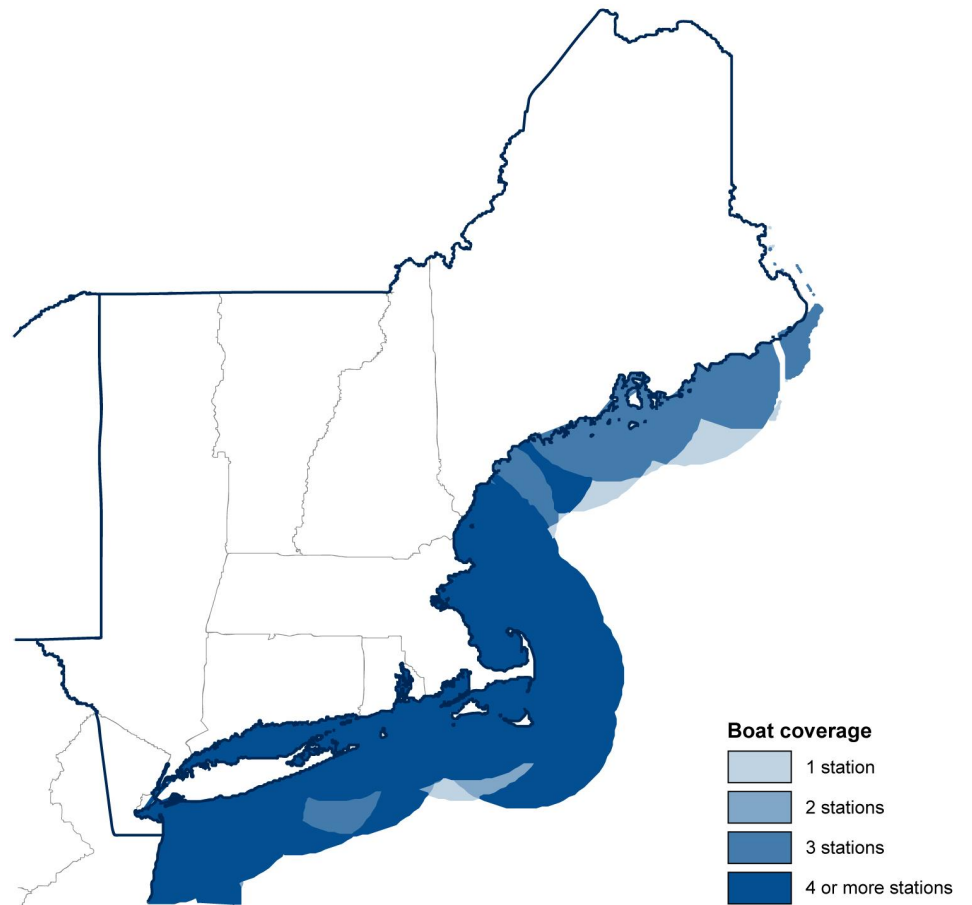


Source: GAO analysis of U.S. Coast Guard information; MapInfo (map). | GAO-18-9

Appendix III: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in the Contiguous United States

Note: GAO recreated the map of search and rescue coverage by following the same parameters the Coast Guard used when it provided the contractor the map in 2013. The extent of coverage identified in 2017 is the same reported in the Coast Guard's 2013 contractor study.

Figure 10: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in District 1 Reported in September 2013 (Current as of May 2017)

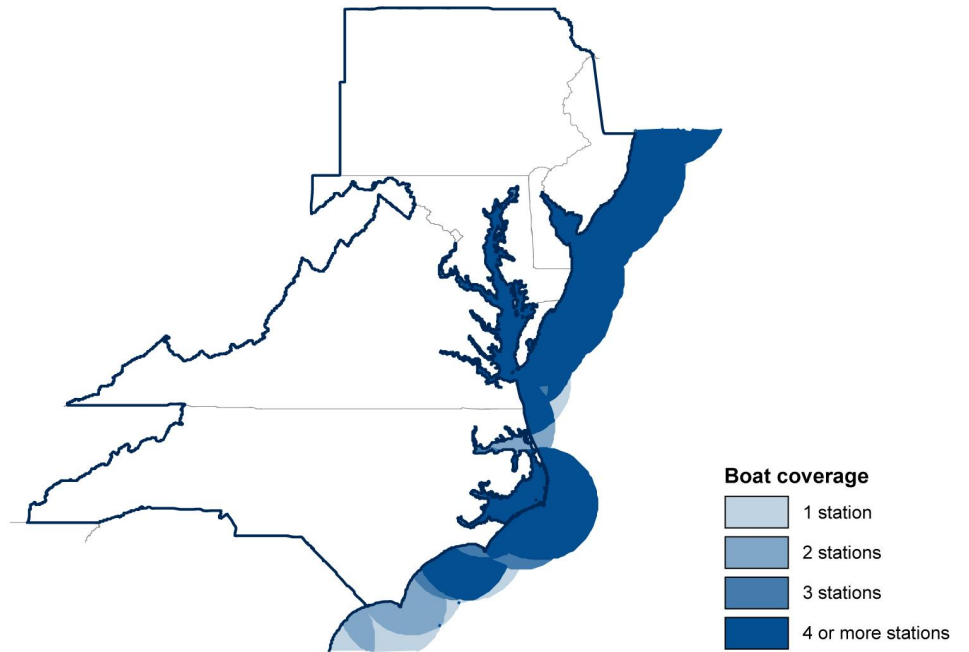


Source: GAO analysis of U.S. Coast Guard information; MapInfo (maps). | GAO-18-9

Note: GAO recreated the map of search and rescue coverage by following the same parameters the Coast Guard used when it provided the contractor the map in 2013. The extent of coverage identified in 2017 is the same reported in the Coast Guard's 2013 contractor study.

Appendix III: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in the Contiguous United States

Figure 11: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in District 5 Reported in September 2013 (Current as of May 2017)



Source: GAO analysis of U.S. Coast Guard information; MapInfo (maps). | GAO-18-9

Note: GAO recreated the map of search and rescue coverage by following the same parameters the Coast Guard used when it provided the contractor the map in 2013. The extent of coverage identified in 2017 is the same reported in the Coast Guard's 2013 contractor study.

Appendix III: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in the Contiguous United States

Figure 12: Extent of Search and Rescue Coverage by Coast Guard Boat Stations in District 9 Reported in September 2013 (Current as of May 2017)



Source: GAO analysis of U.S. Coast Guard information; MapInfo (maps). | GAO-18-9

Note: GAO recreated the map of search and rescue coverage by following the same parameters the Coast Guard used when it provided the contractor the map in 2013. The extent of coverage identified in 2017 is the same reported in the Coast Guard's 2013 contractor study.

Appendix IV: Reported Single-Boat Search and Rescue Responses by Selected Stations, Fiscal Years 2010 through 2016

Table 4 provides details of selected U.S. Coast Guard (Coast Guard) stations recommended for permanent or seasonal closure and the search and rescue (SAR) caseloads they reported for fiscal years 2010 through 2016, as well as estimated fiscal year 2015 annual operating costs. Our analysis of Coast Guard SAR single-boat response case data from fiscal years 2010 through 2016 found that the 18 stations recommended for closure reported an average of about 15 single-boat SAR responses annually, compared to an annual average of about 41 single-boat responses for all boat stations. These numbers are based on station reported data in the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) case management system, and only include cases in which a single boat was launched to conduct a SAR mission. Some SAR missions result in multiple stations launching due to factors such as close proximity of stations, case complexity such as weather conditions, or other factors such as boat availability or training. Including multilaunch cases could result in double counting of SAR cases and therefore these cases were excluded from our analysis.¹ Due to flexibility in how Coast Guard stations report SAR responses, some seasonal stations, which are detached subunits of larger parent stations, report the number of cases to which they respond in combination with the parent station.² Because we could not disaggregate this information, we do not report on individual cases from these stations.

¹Around 29 percent of SAR cases (22,322 out of 77,953) could be duplicative if attributed to individual stations. Therefore, we focused our analyses on single-boat responses (55,631 cases) where we could accurately attribute the cases to individual stations.

²Excluding the stations that did not report their single-boat response SAR cases produces an average of 19 responses annually for the selected stations for fiscal years 2010 through 2016, compared with the overall average of 41 single-boat responses for the 183 multimission stations we analyzed.

Appendix IV: Reported Single-Boat Search and Rescue Responses by Selected Stations, Fiscal Years 2010 through 2016

Table 4: Total Single Station Coast Guard Search and Rescue (SAR) Cases for Selected Boat Stations, Fiscal Years (FY) 2010 through 2016, and Estimated FY 2015 Annual Operating Cost

Station (district)	Estimated FY2015 annual operating cost	Single SAR cases by fiscal year							
		2010	2011	2012	2013	2014	2015	2016	Total
Ashtabula, OH (9)	\$1,031,917	7	28	22	19	31	22	44	173
Frankfort, MI (9)	\$882,816	15	14	12	10	13	20	4	88
Harbor Beach, MI (9)	\$866,247	15	15	10	6	5	11	11	73
Kenosha, WI (9)	\$1,815,684	26	27	42	23	22	11	13	164
Lorain, OH (9)	\$2,417,118	18	28	36	28	36	33	42	221
Ludington, MI (9)	\$910,493	16	20	21	15	17	13	8	110
Oxford, MD (5)	\$1,068,894	26	13	18	17	15	15	13	117
Beach Haven, NJ Seasonal Station (5)	\$1,823,748 ^a	15	4	4	4	2	1	4	34
Fortesque, NJ Seasonal Station (5)	— ^a	11	10	2	7	4	0	4	38
Shark River, NJ Seasonal Station (5)	— ^a	19	8	17	1	0	0	2	47
Roosevelt Inlet, DE Seasonal Station (5)	— ^a	0	1	1	0	0	0	0	2
Wrightsville Beach, NC (5)	\$1,577,217	19	47	39	18	22	16	24	185
Ocracoke, NC Seasonal Station (5)	— ^b	—	—	—	—	—	—	—	—
Jones Beach, NY (1)	\$2,316,669	88	63	49	30	39	30	44	343
Merrimack River, MA (1)	\$2,094,330	82	55	50	36	19	33	35	310
Scituate, MA Seasonal Station (1)	\$407,891 ^c	—	—	—	—	—	—	—	—
Block Island, RI Seasonal Station (1)	\$963,002 ^d	—	—	—	—	—	—	—	—
Fishers Island Seasonal Station, NY (1)	— ^d	—	—	—	—	—	—	—	—

Legend: — = not reported.

Source: GAO analysis of U.S. Coast Guard search and rescue case data. | GAO-18-9

Note: In some locations, more than one Coast Guard station may initiate a SAR response due to the close proximity of the stations or other factors. Because around 29 percent of these SAR cases (22,322 out of 77,953) could be duplicative if attributed to individual stations, we focused our analyses on single-boat responses (55,631 cases) where we could accurately attribute the cases to individual stations. Due to flexibility in how Coast Guard stations report SAR responses, some seasonal stations, which are detached subunits of larger parent stations, report the number of cases to which they respond in combination with the parent station. Because we could not disaggregate this information, we do not report on it.

^aA 2013 station optimization study grouped the closure of these stations together and attributed total cost savings for the four stations. The cost per station is a fraction of \$1,823,748. Coast Guard could not provide annual station costs for some seasonally operated stations.

^bWe estimated annual operating costs based on combining two sources because the Coast Guard could not provide details for some stations that operate seasonally and where operating costs are combined with nearby stations. We were unable to obtain station operating costs for some stations.

^cA 2013 station optimization study grouped the closure of this station with another station and attributed total cost savings for the two stations. We estimated an annual operating cost of around \$407,891 for this station by combining information from two Coast Guard sources.

^dA 2013 station optimization study grouped the closure of these stations together and attributed total cost savings for the two stations. The cost per station is a fraction of \$963,002. Coast Guard could not provide annual station costs for some seasonally operated stations.

Appendix IV: Reported Single-Boat Search and Rescue Responses by Selected Stations, Fiscal Years 2010 through 2016

Table 5 provides details of selected stations recommended for permanent or seasonal closure and the SAR caseloads they reported during the winter months, for fiscal years 2010 through 2016.

Table 5: Winter Single Station Coast Guard Search and Rescue (SAR) Cases Reported for Selected Boat Stations, Fiscal Years 2010 through 2016

Station (district)	Single SAR cases by fiscal year, winter quarter							Total responses 2010–2016
	2010	2011	2012	2013	2014	2015	2016	
Ashtabula, OH (9)	—	—	1	—	1	—	—	2
Frankfort, MI (9)	1	1	—	—	—	—	1	3
Harbor Beach, MI (9)	—	—	—	—	—	—	1	1
Kenosha, WI (9)	1	—	2	—	—	1	2	6
Lorain, OH (9)	—	—	1	—	—	1	—	2
Ludington, MI (9)	—	—	—	—	—	—	—	—
Oxford, MD (5)	—	2	1	3	—	2	—	8
Beach Haven, NJ Seasonal Station (5)	—	—	—	—	1	—	—	1
Fortesque, NJ Seasonal Station (5)	—	—	—	—	—	—	—	—
Shark River, NJ Seasonal Station (5)	—	—	—	—	—	—	—	—
Roosevelt Inlet, DE Seasonal Station (5)	—	—	—	—	—	—	—	—
Wrightsville Beach, NC (5)	1	1	6	—	3	3	3	17
Ocracoke, NC Seasonal Station (5)	—	—	—	—	—	—	—	—
Jones Beach, NY (1)	5	7	7	—	6	3	5	33
Merrimack River, MA (1)	4	2	—	2	1	2	—	11
Scituate, MA Seasonal Station (1)	—	—	—	—	—	—	—	—
Block Island, RI Seasonal Station (1)	—	—	—	—	—	—	—	—
Fishers Island, NY Seasonal Station (1)	—	—	—	—	—	—	—	—

Legend: — = not reported.

Source: GAO analysis of U.S. Coast Guard search and rescue case data. | GAO-18-9

Note: In some locations, more than one Coast Guard station may initiate a SAR response due to the close proximity of the stations or other factors. Because around 29 percent of these SAR cases (22,322 out of 77,953) could be duplicative if attributed to individual stations, we focused our analyses on single-boat responses (55,631 cases) where we could accurately attribute the cases to individual stations. Due to flexibility in how Coast Guard stations report SAR responses, some seasonal stations, which are detached subunits of larger parent stations, report the number of cases to which they respond in combination with the parent station. Because we could not disaggregate this information, we do not report on it.

Appendix V: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528



October 5, 2017

Jennifer Grover
Director, Homeland Security and Justice
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Management's Response to Draft Report GAO-18-9, "COAST GUARD: Actions
Needed to Close Stations Identified as Overlapping and Unnecessarily Duplicative"

Dear Ms. Grover:

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's recognition that the Coast Guard has "a sound process for analyzing its boat stations that includes clear and specific steps for analyzing the need for stations using terms that can be readily defined and measured." The Coast Guard remains committed to improving operational efficiency and effectiveness through boat optimization.

The draft report contained three recommendations with which the Department concurs. Attached find our detailed response to each recommendation.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim H. Crumacker".

JIM H. CRUMACKER, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Attachment

**Attachment: DHS Management Response to Recommendations
Contained in GAO-18-9**

GAO recommended that the Commandant of the Coast Guard:

Recommendation 1: Establish and follow a sound air station optimization process similar to its process for analyzing boat stations to allow it to comprehensively analyze its need for air stations and air facilities and determine what changes may be needed.

Response: Concur. Coast Guard Headquarters, Office of Budget and Resources, will utilize the FY 2020 Planning, Programming, Budget, and Execution cycle to identify efficiencies in air station optimization using best practices employed during recent boat optimization efforts. Estimated Completion Date (ECD): September 30, 2019

Recommendation 2: Establish a plan with target dates and milestones for closing boat stations that it has determined through its 9-step process and subsequent analysis, providing overlap search and rescue coverage and are unnecessarily duplicative.

Response: Concur. Coast Guard Headquarters and appropriate district commands, will continue to analyze operational coverage across the nation through a 9-step boat station optimization process, and recommend closures or seasonalization of boat stations to eliminate unnecessary duplication and overlap in search and rescue coverage. The Office of Boat Forces will complete the analysis by September 30, 2020. ECD: September 30, 2021

Recommendation 3: Take action to close the stations identified according to its plan and target dates.

Response: Concur. Coast Guard Headquarters, Office of Budget and Resources, and appropriate district commands will maintain subject matter experts who will continue to analyze closing or seasonalizing operations at boat stations identified according to its plans and target dates. It is important to note that we must first complete the implementation of Recommendation 2 before we can begin to implement Recommendation 3. ECD: To Be Determined

Appendix VI: GAO Contact and Staff Acknowledgments

GAO Contact

Jennifer A. Grover, (202) 512-7141 or groverj@gao.gov

Staff Acknowledgments

In addition to the contact above, Dawn Hoff (Assistant Director), Andrew Curry (Analyst-in-Charge), Chuck Bausell, Dorian Dunbar, Michele Fejfar, Peter Haderlein, Eric Hauswirth, Tracey King, John Mingus, Claire Peachey, and Christine San all made key contributions to this report.

Appendix VII: Accessible Data

Agency Comment Letter

Text of Appendix V: Comments from the Department of Homeland Security

Page 1

October 5, 2017

Jennifer Grover

Director, Homeland Security and Justice

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

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Jim Crumpacker

Director

Departmental GAO-OIG Liaison Office

Attachment

Page 2

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Response: Concur.

Coast Guard Headquarters, Office of Budget and Resources, will utilize the FY 2020 Planning, Programming, Budget, and Execution cycle to identify efficiencies in air station optimization using best practices employed during recent boat optimization efforts.

Estimated Completion Date (ECD): September 30, 2019

Recommendation 2:

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