



Testimony

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INSTALLATION MANAGEMENT

DOD Needs Better Data, Stronger Oversight, and Increased Transparency to Address Significant Infrastructure and Environmental Challenges

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Accessible Version

GAO Highlights

Highlights of [GAO-23-106725](#), a testimony before the Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate

Why GAO Did This Study

DOD operates hundreds of military installations around the world, each with facilities to support DOD's missions and the personnel who work and live on them. DOD faces numerous challenges in managing these installations. Its facilities are aging; service members and their families have reported health and safety hazards in their privatized housing; environmental cleanup costs are substantial and are expected to increase; and installations face heightened financial risks from climate change and extreme weather events.

This testimony summarizes GAO's prior related work and provides preliminary observations on (1) DOD's installation management challenges that pose considerable costs or risks and (2) opportunities for DOD to address these challenges.

To perform the issued and ongoing work this testimony is based on, GAO reviewed DOD documentation, analyzed DOD data, interviewed officials, conducted discussion groups with service members, and assessed DOD's efforts against relevant criteria.

What GAO Recommends

In prior work on which this testimony is based, GAO made recommendations for DOD to improve data, strengthen oversight, and increase transparency to better manage its installations. DOD generally concurred with these recommendations and is working to implement them.

View [GAO-23-106725](#). For more information, contact Elizabeth A. Field at (202) 512-2775 or FieldE1@gao.gov.

April 19, 2023

INSTALLATION MANAGEMENT

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What GAO Found

The Department of Defense (DOD) faces significant installation management challenges, affecting the department's ability to perform its missions and support its service members. For example, DOD has at least \$137 billion in deferred facility maintenance costs and faces at least \$91 billion in future environmental liability costs.

DOD has taken steps to address these challenges, but GAO's work identifies additional opportunities to improve data, strengthen oversight, and increase transparency.

- **DOD needs better data to manage risk and make informed decisions in managing its installations.** DOD relies on many different types of data to manage its installations, such as facility condition data, but GAO has identified weaknesses in these data. For example, GAO found that DOD is adopting a new system intended to better estimate facility maintenance requirements and standardize facility condition data across the department. However, implementation of the system has been delayed for years, does not have dedicated funding, and has been carried out inconsistently by the military services. To address these issues, GAO recommended that DOD set milestones for system implementation, develop funding plans, and ensure that facility condition data are comparable across the department.
- **DOD can strengthen its oversight of installation management activities.** DOD has oversight responsibilities related to installation management, such as ensuring that privatized military family housing meets health and safety standards. DOD could further strengthen its fulfillment of these responsibilities. For example, GAO found that DOD has not developed clear or consistent inspection standards for privatized housing, and the military departments have not provided adequate inspector training. These weaknesses have contributed to inconsistencies in how inspectors rate homes, leading to disagreements between military housing offices and private housing companies over repair needs, confusion among residents, and the potential for unintended impacts on the financial health of some projects. GAO recommended that DOD establish consistent inspection standards and provide better training for inspectors.
- **DOD should report more transparent information within the department and to Congress.** DOD's internal and external reporting on installation management enables decision-making, such as determining resource needs. However, GAO has identified opportunities to improve the transparency of this reporting. For example, certain DOD reports to Congress on Base Realignment and Closure costs have not included complete information on when environmental cleanup will finish at all sites or the associated costs of sites that need long-term environmental management. Without these data, Congress has limited clarity on the full costs associated with Base Realignment and Closure sites. GAO recommended that DOD include this information in future reports.

Chairwoman Hirono, Ranking Member Sullivan, and Members of the Subcommittee:

Thank you for the opportunity to discuss our work on challenges the Department of Defense (DOD) faces in managing its installations. DOD operates and sustains hundreds of installations in the continental United States and overseas. Each of these installations has facilities to support DOD's missions and the personnel who work and live on them, including administrative buildings, housing, childcare centers, runways, piers, and roads. According to the department, DOD's inventory consisted of about 668,000 facilities with an estimated plant replacement value of about \$1.8 trillion as of September 2022. In addition to maintaining these facilities and safeguarding them against environmental threats, such as severe weather, DOD is required to clean up environmental contamination of its installations when it occurs for the safety and health of service members, their families, and surrounding communities.

For years, we have reported on DOD's numerous, long-standing challenges with maintaining its installations in order to support its missions and service members. For example, DOD's facilities are aging and many have exceeded their expected lifespan; service members and their families have reported health and safety hazards in their privatized housing; environmental cleanup costs have placed a substantial financial burden on the department and are expected to increase; and installations face heightened financial risks from climate change and extreme weather events. DOD has taken steps to address these challenges, but our work has identified opportunities to strengthen these efforts.

My testimony today summarizes our prior work and provides preliminary observations on (1) DOD's installation management challenges that pose considerable costs or risks and (2) opportunities for DOD to address these challenges. Specifically, I will provide information on challenges related to DOD-owned facilities, privatized housing, environmental liabilities, and climate change and extreme weather.

This statement is based on reports we issued from May 2014 to April 2023 on DOD's facilities, privatized housing, environmental liabilities, and climate change and extreme weather-related risks. To perform the issued work this statement is based on, we reviewed DOD documentation, analyzed DOD data, interviewed officials, conducted discussion groups with service members, and assessed DOD's efforts against relevant criteria. More detailed information on the objectives, scope, and methodology for the work on which this statement is based is available in

the issued reports cited throughout the statement. This statement also includes preliminary observations from our ongoing audit work on the condition of military barracks and on Army privatized housing. To conduct this ongoing work, we have reviewed DOD documentation, analyzed data on DOD facilities, interviewed officials, conducted discussion groups with service members and made in-person observations at several installations, and assessed DOD's efforts against relevant criteria.

We conducted the issued work, and are conducting the ongoing work on which this statement is based, 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.

Numerous Installation Management Challenges Pose Considerable Costs and Risks for DOD

DOD's installation management challenges are significant, affecting the department's ability to perform its missions and support its service members. Specifically, DOD has at least \$137 billion in deferred facility maintenance costs, relies on private housing companies to address the large costs associated with operating and maintaining family housing, faces at least \$91 billion in future environment liability costs, and will continue to be at risk of fiscal exposure due to climate change and extreme weather-related effects.

DOD-owned facilities. For many years, DOD has not fully funded its facility sustainment requirements, delaying maintenance and repairs that were not performed when they should have been. As a result, DOD has a reported backlog of \$137 billion in deferred maintenance costs, as of fiscal year 2020. In January 2022, we reported that DOD officials cite the department's deferred maintenance backlogs as a significant and growing risk to the department's ability to support its missions.¹ We also reported that because facility sustainment funding is focused primarily on mission-critical facilities, lower-priority facilities—such as housing and childcare

¹GAO, *Defense Infrastructure: DOD Should Better Manage Risks Posed by Deferred Facility Maintenance*, [GAO-22-104481](#) (Washington, D.C.: Jan. 31, 2022).

centers—are chronically neglected and experience increased deterioration, according to DOD officials.

However, the condition of these lower-priority facilities affect personnel and their families' quality of life and mission readiness. For example, officials at multiple installations told us that childcare centers have been closed or are operating at reduced capacity because of deteriorating conditions. Lack of access to childcare can reduce the availability of personnel to participate in training and other work activities. Given current funding levels, DOD officials expect the deferred maintenance backlog to continue increasing and stated that disposing of facilities will likely be required to reduce the backlog.

Privatized housing. In the mid-1990s, DOD estimated that it would need about \$20 billion to eliminate the poor quality of its family housing through new construction or renovation. DOD was concerned that the poor quality of its housing was having a negative effect on military readiness and the quality of life of service members. In 1996, Congress enacted the Military Housing Privatization Initiative, which provided the military departments with various authorities to obtain private-sector financing and management to operate, maintain, repair, renovate, construct, and recapitalize military housing. Since then, private housing companies have assumed primary responsibility for military family housing in the United States.

However, in recent years, reports of hazards in privatized housing—such as mold, pest, and rodent infestations—as well as concerns about the financial condition of these projects have raised questions about DOD's management and oversight of privatized housing.² As DOD and private housing companies take steps to implement statutory requirements aimed at improving privatized military housing, questions are arising about the financial health of these projects and how to balance short-term improvements with longer-term ones.

²GAO has issued multiple reports on DOD's privatized housing in recent years. For example, see GAO, *Military Housing: DOD Can Further Strengthen Oversight of Its Privatized Housing Program*, [GAO-23-105377](#) (Washington, D.C.: April 6, 2023); *Military Housing: DOD Needs to Strengthen Oversight and Clarify Its Role in the Management of Privatized Housing*, [GAO-20-281](#) (Washington, D.C.: Mar. 26, 2020); and *Military Housing Privatization: DOD Should Take Steps to Improve Monitoring, Reporting, and Risk Assessment*, [GAO-18-218](#) (Washington, D.C.: Mar. 13, 2018).

Environmental liabilities. The federal government’s environmental liability—which we identified as a high-risk area in 2017—is vast and growing, and DOD’s environmental liabilities are estimated to be \$91 billion as of fiscal year 2022.³ These estimated future costs relate primarily to environmental cleanup and restoration activities at or near current and former DOD installations. For example, in June 2021, we found that DOD was early in the process of investigating its releases of per- and polyfluoroalkyl substances (PFAS), which are chemicals that can lead to some adverse health effects.⁴ PFAS can be found in the firefighting foam DOD uses and have contaminated drinking water, groundwater, and soil at or near military installations. DOD faces significant future costs to address its PFAS releases, with the department’s most recent estimate totaling at least \$6.6 billion beyond fiscal year 2023. We have also reported on DOD’s environmental liabilities at its closed locations. For example, in 2022 we found that DOD estimated needing billions of dollars to address contamination resulting from its activities at Base Realignment and Closure (BRAC) installations and Formerly Used Defense Sites.⁵

Climate change and extreme weather. We have identified the federal government’s fiscal exposure to climate change as a high-risk area and reported on the serious climate change and extreme weather-related challenges that military installations face.⁶ For example, Hurricane Michael devastated Tyndall Air Force Base in Florida, shutting down most base operations for months, causing severe damage to operational infrastructure for Air Force combat units, and resulting in an estimated

³GAO, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, [GAO-17-317](#) (Washington, D.C.: Feb. 15, 2017). GAO’s High-Risk Series identifies federal programs and operations that are high risk because of their vulnerabilities to fraud, waste, abuse, and mismanagement or that need transformation. We updated the High-Risk Series in March 2021. See GAO, *High-Risk Series: Dedicated Leadership Needed to Address Limited Progress in Most High-Risk Areas*, [GAO-21-119SP](#) (Washington, D.C.: Mar. 2, 2021).

⁴GAO, *Firefighting Foam Chemicals: DOD Is Investigating PFAS and Responding to Contamination, but Should Report More Cost Information*, [GAO-21-421](#) (Washington, D.C.: June 22, 2021).

⁵GAO, *Base Realignment and Closure: DOD Should Provide Congress More Complete and Transparent Information*, [GAO-22-105207](#) (Washington, D.C.: Sep. 28, 2022) and *Environmental Liabilities: Improvements Needed to Measure Progress of Cleanup of Formerly Used Defense Sites*, [GAO-22-104744](#) (Washington, D.C.: June 16, 2022).

⁶GAO, *National Security Snapshot: Climate Change Risks to National Security*, [GAO-22-105830](#) (Washington, D.C.: September 2022) and [GAO-21-119SP](#).

cost of \$3.6 billion to rebuild the base. Additionally, Norfolk Naval Shipyard in Virginia, which repairs and modernizes Navy warships, has had increased flooding as relative sea levels have risen, and it faces an average of three to five significant high tides and one hurricane each year. We have also reported that extreme weather events, such as hurricanes and wind and hail storms, have caused millions of dollars in damages to privatized housing at military installations across the United States.⁷

DOD Has Taken Steps to Address Its Challenges, but Must Further Improve Its Data, Strengthen Oversight, and Increase Transparency

DOD Needs Better Data to Manage Risks and Make Informed Decisions

DOD has taken steps to collect and use data to manage risks and make more informed decisions in managing its installations. However, we have identified steps that DOD should take to further improve its use of data in managing installations. Specifically, DOD has opportunities to improve the reliability of its facility condition and real property data; validate maintenance data collected by private housing companies; make updates to data on PFAS cleanup progress, as needed; and incorporate more climate change projection data into its planning processes.

DOD-owned facilities. In recent years, DOD has been working to better evaluate and manage risks associated with keeping facilities in good working order and meeting mission requirements. For example, DOD is in the process of adopting a new tool—the Sustainment Management System—that should provide data to help the department identify and mitigate the risks posed by its long-standing decisions to defer maintenance. This system estimates the major repair and replacement funding needs of individual facilities and models the potential consequences of underfunding those needs. Moreover, this system is

⁷GAO, *Military Housing Privatization: DOD Should Improve Oversight of Property Insurance and Natural Disaster Recovery*, [GAO-21-418](#) (Washington, D.C.: May 20, 2021).

intended to standardize different methods that have been used across DOD to assess and provide data on facility condition.

However, we have identified several challenges to implementing the Sustainment Management System and, therefore, to achieving the benefits it can provide. Specifically, in January 2022, we found that DOD-wide implementation of the system had been delayed for several years, did not have dedicated funding, and was being carried out inconsistently by the military services.⁸ To address these issues, we recommended that DOD set milestones and hold leadership accountable for system implementation, develop funding plans to support facility condition assessments, and ensure that facility condition data are comparable across the department. DOD concurred with these recommendations and plans to implement them by December 2023; we will continue to monitor the department's progress.

DOD and Congress also need accurate and complete real property data to make informed management decisions—such as determining facility sustainment funding needs, understanding facility utilization, and identifying excess property for disposal. In 2018, we found that DOD had improved the quality of some data in its real property database.⁹ However, we also found that the database still contained inaccurate and incomplete data, to include missing entries for facility utilization and condition and overdue asset reviews. To improve DOD's real property data, we recommended that the department fully monitor data recording processes, identify which real property data are most significant for decision-making, develop and implement corrective actions for data discrepancies, and develop a strategy to address risks with data quality and information accessibility. DOD generally concurred with these recommendations and has started to implement them. For example, the Air Force issued a policy in September 2022 that requires personnel to annually validate data on facilities and update the system of record to ensure completeness. We will continue to monitor DOD's efforts to implement these recommendations.

Additionally, based on preliminary observations from our ongoing work on the condition of military barracks, DOD may not have reliable data on barracks condition. We observed that the military services vary in how

⁸[GAO-22-104481](#).

⁹GAO, *Defense Real Property: DOD Needs to Take Additional Actions to Improve Management of Its Inventory Data*, [GAO-19-73](#) (Washington, D.C.: Nov. 13, 2018).

they conduct facility condition assessments for barracks, including variations in the frequency of assessments, and the expertise required to conduct assessments, among others. During the course of our work, officials at several installations told us that facility condition scores often do not accurately reflect living conditions in barracks. For example, at one installation we visited, we learned that a barracks that had been closed for renovation because long-standing plumbing and electrical issues rendered them uninhabitable had received a facility condition score of 90 out of 100, indicating that it was in good condition. The reliability of barracks condition assessments and scores are important for decision-making and funding prioritization.¹⁰

Privatized housing. We have previously reported that DOD and private housing companies collect maintenance data that could be used to monitor the condition of privatized homes.¹¹ However, we found that these data were not sufficiently reliable for that purpose because they had some limitations. Specifically, we found that the usefulness of work order data was limited by inconsistent use of terminology in maintenance records and differing practices for opening and closing work orders. To improve DOD's ability to use maintenance data for monitoring housing conditions, we recommended that the department establish minimum data requirements and consistent terminology and practices for data collection, as well as a requirement for the military departments to validate maintenance data. In January 2021, DOD established minimum data requirements and consistent collection terminology and practices, but it has not yet required the military departments to validate data collected by the private housing companies. We will continue to monitor DOD's efforts to fully implement this recommendation.

Additionally, based on preliminary observations from our ongoing work on Army privatized housing, the Army may be using outdated and inaccurate data when assessing the financial health and development capability (e.g., capability for replacing outdated homes with new construction homes) of its privatized housing projects. The Army conducts an annual

¹⁰In discussing our ongoing review, DOD officials acknowledged that facility condition scores may not be fully reliable and stated that there may be benefit in reviewing how the military services conduct condition assessments for barracks. DOD officials also stated that instances in which barracks are closed for renovation should be examined carefully, as it may be the case that they were closed out of an abundance of caution and due to problems with an individual room, rather than because of significant issues with building systems.

¹¹[GAO-20-281](#).

analysis of its privatized housing projects to gauge financial health, to include risk, and forecast development capability. While the analysis reflects each project's current revenue and expenses, the results of the analysis are compared to financial projections that have not been updated for several years, which could negatively affect the quality of the analysis. In addition, the Army's annual analysis assumes that projects will continue to invest the previous year's budget for minor capital improvements (e.g., replacing floors or appliances) in perpetuity, yet in reality these funds can vary widely from year to year. The reliability of these metrics are key for the Army to have an accurate picture of the financial health and development capability of its privatized housing projects.¹²

Environmental liabilities. DOD data on cleanup of installations with known or suspected PFAS contamination may be outdated. DOD's fiscal year 2020 data showed that 26 percent of identified installations had completed the first phase of the environmental restoration process (i.e., the preliminary assessment/site inspection phase).¹³ Two years later, at the end of fiscal year 2022, DOD reported that 53 percent of identified installations had completed the first phase of the process, and that approximately 270 installations would proceed to the second phase of the environmental restoration process (i.e., the remedial investigation/feasibility study).¹⁴

These data indicate progress in PFAS investigation and cleanup between fiscal years 2020 and 2022. However, DOD will likely have to update them to obtain a clearer and more current picture of its progress, due to new Environmental Protection Agency (EPA) guidance and proposed regulations. For example, in July 2022, in response to new guidance from EPA, DOD lowered the PFAS screening levels it uses to determine whether an installation should proceed from the first phase to the second phase of the environmental restoration process. According to DOD, it plans to re-evaluate completed investigations to determine whether additional work is needed—which may result in more installations needing

¹²In April 2023, Army officials noted that the Army's upcoming annual analysis will include new, updated financial projections from each privatized housing project.

¹³[GAO-21-421](#).

¹⁴Office of the Assistant Secretary of Defense for Energy, Installations, and Environment, *Report on Department of Defense's Per- and Polyfluoroalkyl Substances Task Force Activities* (January 2023).

to conduct further investigations and cleanup than previously identified. Additionally, in March 2023, EPA announced proposed drinking water standards for PFAS. These proposed standards are stricter than EPA's previously-issued health advisory levels, which, if finalized, would likely result in the need for DOD to take additional cleanup action to address PFAS in drinking water at or near some of its installations.¹⁵

Climate change and extreme weather. DOD installations face climate change and extreme weather-related challenges, and we have previously reported that incorporating climate data into installation and facilities planning would help the department better manage climate-related risks. For example, in June 2019, we found that DOD had not used climate projections to assess future vulnerabilities from climate change and extreme weather at its installations.¹⁶ We also found that DOD generally did not consider climate projections in its designs for projects intended to enhance the resilience of facilities to climate change and extreme weather effects, according to installation officials.¹⁷ Not using climate projections in installation planning may expose DOD facilities to greater-than-anticipated damage or degradation—and, therefore, higher costs—as a result of climate or extreme weather-related effects.

To address these issues, we recommended that DOD issue guidance on incorporating climate projections into installation master planning and facilities project designs, and that the military departments use this guidance to update their installation and facility planning standards to better account for climate change risks. DOD concurred with these recommendations and has implemented them in one area. Specifically, as of May 2021, the department had incorporated sea level change projections into its installation master planning and facilities designs. According to DOD, its goal is to incorporate additional climate projection data—such as information on drought—into its processes, but it has not

¹⁵For more information on PFAS occurrence in state drinking water and related federal actions, see GAO, *Persistent Chemicals: EPA Should Use New Data to Analyze the Demographics of Communities with PFAS in Their Drinking Water*, [GAO-22-105135](#) (Washington, D.C.: Sep. 30, 2022).

¹⁶GAO, *Climate Resilience: DOD Needs to Assess Risk and Provide Guidance on Use of Climate Projections in Installation Master Plans and Facilities Designs*, [GAO-19-453](#) (Washington, D.C.: June 12, 2019).

¹⁷Enhancing climate resilience means taking actions to reduce potential future losses by planning and preparing for potential climate hazards such as extreme rainfall, rising sea levels, and drought. Investing in resilience can reduce the need for far more costly steps in the decades to come.

set specific targets for completing those actions. By following through on its intention to incorporate additional climate change projections into installation planning and the facilities design process, DOD would improve the resilience of defense facilities to changes in the climate and reduce long-term federal fiscal exposure.

DOD Can Do More to Strengthen Its Oversight of Housing Conditions, Environmental Response, and Climate Change Risks

DOD takes steps to oversee the condition of its facilities and housing, assess its progress in responding to environmental contamination, and monitor its fiscal exposure from climate change and extreme weather. However, the department could do more in each of these areas to further strengthen its performance of this oversight.

DOD-owned facilities. DOD has taken steps to improve its oversight of the department-wide effort to standardize facility condition assessments. In June 2016, we found that the Office of the Secretary of Defense (OSD) lacked the information it needed in its real property database to monitor whether the military services' facility condition ratings were based on a standardized process.¹⁸ We recommended that DOD revise its guidance to ensure it was collecting the information it needed to oversee progress, and DOD implemented that recommendation.¹⁹

However, preliminary observations from our ongoing work on barracks condition suggest that DOD could strengthen oversight of its barracks. Specifically, OSD may not be taking as active a role in overseeing the military departments' barracks management as it has in recent years for the military departments' privatized family housing programs. For example, OSD conducts annual programmatic reviews of government-owned barracks, compared with quarterly programmatic reviews of privatized family housing. In addition, DOD officials told us they have monthly meetings with senior service housing officials on military housing overall, but that they generally focus on privatized family housing, rather

¹⁸GAO, *Defense Facility Condition: Revised Guidance Needed to Improve Oversight of Assessments and Ratings*, [GAO-16-662](#) (Washington, D.C.: June 23, 2016).

¹⁹As we discuss earlier in this statement, in January 2022, we identified additional challenges the department faces in implementing this standardized process, and we made several recommendations to address those challenges. See [GAO-22-104481](#).

than barracks. Without sufficient oversight, OSD's ability to identify and monitor challenges with barracks condition, and to help the military departments address those challenges, may be limited.²⁰

Privatized housing. Since 2018, we have issued multiple reports on DOD's oversight of its privatized housing program and made 49 recommendations to improve the program and help address concerns with the condition of the homes.²¹ DOD has addressed nearly half of these recommendations and taken steps to implement statutory requirements that were designed to improve the department's oversight of privatized housing conditions. For example, DOD has developed standardized policies and increased the number of personnel positions within OSD and the military services to oversee the condition of privatized housing.

However, in April 2023, we found that DOD needed to further improve its oversight of privatized housing.²² For example, we found that while each of the military departments is conducting required housing inspections prior to resident occupancy, DOD has not developed clear or consistent inspection standards, and the military departments have not provided adequate inspector training. These weaknesses have contributed to inconsistencies in how inspectors rate homes, leading to friction between military housing offices and private housing companies, confusion among residents, and the potential for unintended impacts on the financial health of some projects. We also found that DOD has not completed studies to fully determine its privatized housing oversight personnel needs, as required, or established a timeframe for doing so. To further improve departmental oversight and address concerns related to the privatized housing program, we recommended that DOD establish consistent inspection standards and provide better training for inspectors. DOD and the military departments generally concurred with these recommendations. We also recommended DOD establish deadlines for

²⁰In April 2023, OSD officials stated they were aware of the need to increase oversight of the military services regarding barracks. They also said that OSD has expanded monthly meetings with the military services on privatized housing to focus on all housing issues, including barracks, and that the services are moving toward a focused approach to invest in barracks.

²¹We made 19 recommendations to DOD in our April 2023 report on privatized housing ([GAO-23-105377](#)). We made an additional 30 recommendations to DOD in additional reports issued since 2018.

²²[GAO-23-105377](#).

assessing personnel needs, and DOD concurred. We will monitor DOD's actions to implement these recommendations.

Additionally, based on preliminary observations from our ongoing work on Army privatized housing, there may be gaps in oversight of large-scale construction activities at five privatized housing projects.²³ As part of our ongoing work, we are examining whether construction activities are consistently inspected. Clearly defined responsibilities are important to ensure that construction activities receive the appropriate level of inspection and oversight.²⁴

Environmental liabilities. DOD has programs in place to investigate and clean up environmental contamination at its former installations, but additional oversight and guidance would enhance those efforts. For example, DOD estimated in fiscal year 2022 that it would cost over \$13 billion to clean up environmental contamination at about 1,700 Formerly Used Defense Sites.²⁵ Cleanup at these sites consists primarily of addressing two types of contaminants—hazardous substances and military munitions. In June 2022, we found that DOD had cleaned up 85 percent of Formerly Used Defense Sites with hazardous substances, but only 45 percent of such sites with military munitions.²⁶ We also found that DOD had established a cleanup goal for sites with hazardous substances, but had not established a comparable goal for sites with military munitions. We recommended that OSD set a cleanup goal for military munitions sites. DOD concurred with the recommendation and stated that it has begun working to develop a cleanup goal. Once it has a performance goal in place, DOD will be able to assess the degree to which its military munitions cleanup program is achieving desired results.

Moreover, we found that DOD did not have guidance to help weigh the relative risk between sites contaminated with hazardous substances and

²³The five Army installations are Fort Campbell (Kentucky), Fort Drum (New York), Fort Hood (Texas), Fort Knox (Kentucky), and United States Army Garrison-Hawaii (Hawaii). Fort Wainwright (Alaska) is also expected to undergo large-scale construction; however, as of April 2023, Army officials stated that construction had not started at this location.

²⁴In April 2023, Army officials noted that the Army has a layered approach to privatized housing oversight and leverages a third-party contractor to ensure quality work.

²⁵Formerly Used Defense Sites are sites located on properties that were once under DOD's jurisdiction and owned, leased, or otherwise possessed by the United States at the time of the actions leading to contamination but were conveyed out of DOD's jurisdiction prior to 1986.

²⁶[GAO-22-104744](#).

sites contaminated with military munitions. We recommended that OSD develop guidance to inform selecting sites for funding. DOD concurred with the recommendation and stated it has begun internal discussions on developing this guidance. With this guidance, the Army—which has been delegated responsibility for cleanup at Formerly Used Defense Sites—would be better able to make informed decisions on which sites should be funded first. We will continue to monitor DOD’s efforts to implement these recommendations.

Climate change and extreme weather. Extreme weather events can cause significant damage to DOD infrastructure, including privatized housing, and result in substantial financial losses. In May 2021, we found that property insurance carried by selected private housing projects covered most of the extreme weather losses that occurred over a 3-year span from December 2016 to December 2019, to include significant hurricane damage at Tyndall Air Force Base and Marine Corps Base Camp Lejeune.²⁷ However, we also found that the military departments had exercised insufficient oversight of their privatized housing projects’ property insurance coverage. For example, the Air Force did not have procedures for requiring timely resolution of any discrepancies between insurance coverage and requirements, and the Navy had not documented its conducted insurance reviews. Proper oversight is critical to ensure that privatized housing projects are effectively positioned to respond to extreme weather events and to provide service members with access to quality housing. We made seven recommendations in a sensitive version of our May 2021 report, including that the military departments improve their insurance review oversight procedures. DOD has implemented five of these recommendations, and we are monitoring the department’s plans to implement the two remaining recommendations from this report.

DOD Should Be More Transparent in Reporting Installation Management Information within the Department and to Congress

DOD communicates and reports information within the department and to Congress on its installation management activities to help make decisions, request and obtain needed resources, and facilitate congressional oversight. However, DOD could improve the transparency of its reporting on facility maintenance needs, housing resident

²⁷[GAO-21-418](#).

satisfaction, environmental liabilities, and climate change and extreme weather, among other things.

DOD-owned facilities. For the last 20 years, DOD has used a model to estimate its annual funding requirements for facilities maintenance. DOD uses the funding estimates produced by the model to inform DOD's annual budget request to Congress. In January 2022, we found that the cost factors used in the model—such as adjustments for geographic differences in the costs of labor, material, and equipment—are comparable to those used by other selected federal agencies.²⁸ However, we also found that DOD's model does not account for the higher costs of sustaining facilities that have exceeded their expected lifespans. This omission is significant, since nearly 30 percent of DOD's buildings have exceeded their expected lifespans and therefore likely have higher maintenance costs. As a result, DOD has likely been underestimating the total costs of facility sustainment needs, which, in turn, inform the department's budget requests to Congress.

To address this issue, we recommended that DOD account for the costs to sustain facilities that exceed their expected lifespans when generating facility sustainment funding estimates. DOD did not concur with our recommendation, in part because it is transitioning to the previously mentioned Sustainment Management System to generate funding requirements. However, as we discuss above, implementation of this new system has been delayed for years and is not expected until at least the end of 2026. As such, we continue to believe that DOD should account for the age of its facilities when estimating its funding needs so that it can more transparently communicate to Congress the resources it needs.

Additionally, based on our preliminary observations from ongoing work on military barracks, DOD's budget request to Congress may not reflect all barracks funding needs identified by officials as critical for supporting quality of life and readiness. DOD's budget request only includes those military construction projects submitted and approved through military service prioritization processes. However, officials at multiple installations told us they had been unsuccessful in requesting and obtaining military construction funding for new barracks. In one case, an installation requested funding for new barracks for 10 years, but did not succeed in obtaining it, according to officials. As a result, DOD may not be providing

²⁸[GAO-22-104481](#).

Congress a complete or accurate picture of how much funding is needed to improve barracks living conditions.²⁹

Privatized housing. We have previously reported on ways DOD could improve the quality of its reporting to Congress on privatized housing. In March 2020, we reported that DOD had provided periodic reports to Congress that includes information on resident satisfaction.³⁰ However, we found that the resident satisfaction data in these reports were unreliable due to variances in how the data were collected, errors and inaccuracies in how the data were calculated and reported, and missing information on methodology and limitations. To ensure that Congress had an accurate picture of resident satisfaction with privatized housing, we recommended that DOD address the deficiencies we identified in future reports. DOD concurred with the recommendation and has taken some steps to improve congressional reporting, but limitations still exist. For example, DOD's March 2022 report to Congress did not articulate why resident satisfaction surveys were not conducted at several installations or include the results of specific survey questions on resident satisfaction with the condition of their homes. We will continue to monitor DOD's actions to implement this recommendation.

Additionally, in March 2018, we found that, although DOD is statutorily required to report to Congress on the financial condition of privatized housing projects on a semiannual basis, it had not done so for any fiscal year since 2014.³¹ To ensure that Congress has the information it needs to oversee the financial condition of privatized housing, we recommended that DOD resume issuing the required reports. DOD concurred with the recommendation and has issued subsequent reports, but has not yet resumed issuing these reports in a timely manner. For example, DOD's report covering fiscal year 2019 data was not issued until March 2022—over 2 years after fiscal year 2019 had ended. We will continue to monitor DOD's actions to fully implement this recommendation.

²⁹DOD officials stated during our ongoing review that limited funding is a consistent challenge for barracks, as is determining how to prioritize limited resources. They also said that a military installation's request for barracks military construction does not necessarily represent an actual need for new barracks at that location.

³⁰[GAO-20-281](#).

³¹[GAO-18-218](#).

Environmental liabilities. DOD has provided information to Congress on its environmental liabilities response activities through various reports, but we have identified opportunities to enhance transparency. For example, in September 2022, we found that DOD reported some future BRAC costs to Congress, but those reports did not include complete and transparent information regarding (1) when all BRAC sites are estimated to reach site closeout and (2) the number and associated costs of sites that are estimated to remain in long-term management.³² Without these data, Congress has limited clarity on the full costs and time needed to complete BRAC activities and lacks information that could guide future decision-making related to BRAC. We recommended that DOD include this information in future reports. DOD concurred with this recommendation, and officials told us they plan to include this information in its planned July 2023 report to Congress.

Similarly, in June 2021, we found that DOD had not reported future PFAS cost estimates, or the scope and limitations of those estimates, in its annual environmental reports to Congress.³³ DOD concurred with and implemented our recommendation to provide this information to Congress. At the time of our June 2021 review, DOD estimated that future PFAS costs would exceed \$2 billion beyond fiscal year 2020. Since then, DOD's estimate for future PFAS investigation and cleanup costs had more than tripled, to \$6.6 billion beyond fiscal year 2023—and DOD expects that estimate to continue to increase as it continues to investigate PFAS contamination. Additionally, we reported that DOD may face higher costs to clean up PFAS if EPA issued federal drinking water or cleanup standards for PFAS that were stricter than the recommended levels in place at the time of our review.

Since our June 2021 report, EPA has (1) proposed PFAS drinking water standards that are stricter than the advisory levels that DOD has been following since 2016 and (2) issued PFAS screening levels that are stricter than the previous screening levels that DOD had been following to make investigation and cleanup decisions. The changing landscape of PFAS regulations and guidance, as well as DOD's progress in investigating PFAS contamination at its installations, highlight the importance of DOD continuing to report transparent PFAS cost estimates to Congress.

³²[GAO-22-105207](#).

³³[GAO-21-421](#).

Climate change and extreme weather. DOD has taken action to assess its installations' vulnerability to potential climate change impacts and incorporate climate change considerations into installation planning efforts. However, in May 2014, we found that installation officials rarely proposed climate resilience projects because the services' processes for approving and funding military construction projects did not include climate change in the criteria used to rank potential projects.³⁴ Because of this, installation planners may believe that climate resilience projects are unlikely to successfully compete with other military construction projects for funding, and thus the military services have a smaller number of such projects to approve. To help increase transparency on these projects within the department, we recommended that DOD clarify its processes so that the military departments consider climate resilience when comparing military construction projects for approval and funding. DOD concurred with the recommendation but has not yet taken action to fully implement it.

In summary, DOD faces substantial costs and significant challenges in managing its installations, particularly as they relate to the maintenance and repair of its facilities, the condition of privatized housing, environmental liabilities, and effects of climate change and extreme weather. These challenges can have direct and meaningful impacts on service members' quality of life, as well as their ability to perform their missions. While DOD has taken various actions to better manage and address these challenges, we have made numerous recommendations for DOD to improve its data, oversight, and transparency. These recommendations, if fully implemented, will enhance the department's ability to better manage its installations and more effectively use its available resources.

Chairwoman Hirono, Ranking Member Sullivan, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

³⁴GAO, *Climate Change Adaptation: DOD Can Improve Infrastructure Planning and Processes to Better Account for Potential Impacts*, [GAO-14-446](#) (Washington, D.C.: May 30, 2014).

GAO Contact and Staff Acknowledgments

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Related GAO Products

Military Housing: DOD Can Further Strengthen Oversight of Its Privatized Housing Program. [GAO-23-105377](#). Washington, D.C.: April 6, 2023.

Base Realignment and Closure: DOD Should Provide Congress More Complete and Transparent Information. [GAO-22-105207](#). Washington, D.C.: September 28, 2022.

National Security Snapshot: Climate Change Risks to National Security. [GAO-22-105830](#). Washington, D.C.: September 2022.

Environmental Liabilities: Improvements Needed to Measure Progress of Cleanup of Formerly Used Defense Sites. [GAO-22-104744](#). Washington, D.C.: June 16, 2022.

Defense Infrastructure: DOD Should Better Manage Risks Posed by Deferred Facility Maintenance. [GAO-22-104481](#). Washington, D.C.: January 31, 2022.

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