

Defense Environmental Programs Annual Report to Congress for Fiscal Year 2023

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I. INTRODUCTION

This Defense Environmental Programs Annual Report to Congress for Fiscal Year 2023 contains information on the progress of DoD's environmental programs, including Environmental Restoration, Environmental Conservation and Planning, Environmental Compliance, Climate Resilience, and Environmental Technology, pursuant to title 10, U.S. Code section 2711 (Sections II-IV). Each mission within our environmental portfolio is directly engaged to support a strong, healthy, and resilient military force. More than two million military and civilian personnel live, work, and train on DoD installations that are comprised of extensive built and natural infrastructure. These spaces are central to our Service members' military experience and their ability to carry out their missions. Therefore, it is both a national security imperative and our moral obligation to ensure that these spaces are effective, positive places for current and prospective Service members, their families, and the civilian workforce.

II. ENVIRONMENTAL RESTORATION PROGRAM

The Department began environmental restoration in 1975 with the Installation Restoration Program (IRP). The IRP addresses contamination from hazardous substances, pollutants, or other contaminants at active installations, Formerly Used Defense Sites (FUDS) properties, and Base Realignment and Closure (BRAC) locations in the United States.¹ In 2001, DoD established the Military Munitions Response Program to address defense sites (e.g., closed military ranges) known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. These sites are referred to as munitions response sites (MRSs). Through these programs, DoD complies with the Federal cleanup law, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund.

The Department remains focused on continuous improvement in the restoration program through minimizing overhead, adopting new technologies to reduce cost and accelerate cleanup, refining and standardizing our cost estimating, and improving our relationships with State regulators and affected communities through increased dialogue. These initiatives help ensure that we make the best use of our available resources to complete cleanup. The Department measures cleanup progress against the Response Complete (RC) milestone, which occurs when the cleanup activities are complete (although DoD or a subsequent owner may continue to monitor the site). Of the 40,695 IRP sites and MRSs in the inventory, DoD has achieved the RC milestone at more than 34,304 sites (84 percent).

Additional information about the status of DoD's cleanup efforts and funding can be found on the DoD Cleanup website at <https://www.denix.osd.mil/cleanup/>.

¹ The IRP also addresses releases at National Guard facilities in accordance with Title 10, U.S.C., section 2707(e).

IRP Site Inventory and Status

Table 1 summarizes the inventory and cleanup status of IRP sites at active installations, FUDS properties, and BRAC locations. The table presents the number of sites in the inventory, the number of sites at Remedy in Place (RIP)² and RC through FY 2022 and FY 2023, and the changes in RIP and RC status from FY 2022 to FY 2023.

Table 1: IRP Site Inventory and Status

	Total IRP Inventory (FY 2023)	RIP			RC		
		Number of IRP Sites at RIP through FY 2022	Number of IRP Sites at RIP through FY 2023	Change In RIP Status from FY 2022 to FY 2023	Number of IRP Sites at RC through FY 2022	Number of IRP Sites at RC through FY 2023	Change in RC Status from FY 2022 to FY 2023
Active Installations							
Army	11,527	10,709	10,742	33	10,433	10,460	27
Department of the Navy (DON)*	4,217	3,689	3,623	-66 ⁺	3,477	3,442	-35 ⁺
Air Force	7,571	6,182	6,207	25	5,780	5,809	29
Defense Logistics Agency (DLA)	222	197	196	-1**	189	188	-1**
Active Total	23,537	20,777	20,768	-9	19,879	19,899	20
FUDS Properties							
FUDS Total	3,129	2,783	2,797	14	2,730	2,742	12
BRAC Locations							
Army	2,120	2,024	2,018	-6 ⁺⁺	1,980	1,971	-9 ⁺⁺
DON*	1,152	1,115	1,106	-9 ^{***}	1,013	1,012	-1 ^{***}
Air Force	5,148	5,045	5,044	-1 ⁺⁺⁺	4,929	4,930	1
DLA	48	48	48	0	47	47	0
BRAC Total	8,468	8,232	8,216	-16	7,969	7,960	-9
DoD Total	35,134	31,792	31,781	-11	30,578	30,601	23

* DON includes Navy and Marine Corps; DON manages Navy and Marine Corps environmental restoration activities as a combined program.

+ The number of sites at RIP and RC decreased because DON reopened these milestones to investigate per- and polyfluoroalkyl substances (PFAS) at some sites.

** The number of sites at RIP and RC decreased because DLA reopened these milestones to make corrections to historic data for a site declared RIP and RC prematurely.

++ The number of sites at RIP and RC decreased because the Army reopened these milestones to investigate PFAS at some sites, and to make corrections to historic data for sites declared RIP and RC prematurely.

*** The number of sites at RIP and RC decreased because DON reopened these milestones to investigate PFAS at some sites.

+++ The number of sites at RIP decreased because the Air Force reopened this milestone for a site reported at RIP in FY 2022.

MRS Inventory and Status

Table 2 summarizes the inventory and cleanup status of MRSs at active installations, FUDS properties, and BRAC locations. The table presents the number of MRSs in the inventory, the number of MRSs at RIP and RC through FY 2022 and FY 2023, and the changes in RIP and RC status from FY 2022 to FY 2023.

² The Department measures the number of sites at RIP, which occurs when cleanup systems are constructed and operational.

Table 2: MRS Inventory and Status

	Total MRS Inventory (FY 2023)	RIP			RC		
		Number of MRSs at RIP through FY 2022	Number of MRSs at RIP through FY 2023	Change In RIP Status from FY 2022 to FY 2023	Number of MRSs at RC through FY 2022	Number of MRSs at RC through FY 2023	Change in RC Status from FY 2022 to FY 2023
Active Installations							
Army	1,402	1,223	1,221	-2*	1,216	1,214	-2*
DON ⁺	421	224	226	2	216	218	2
Air Force	1,044	867	914	47	867	913	46
DLA	7	0	0	0	0	0	0
Active Total	2,874	2,314	2,361	47	2,299	2,345	46
FUDS Properties							
FUDS Total	2,323	1,066	1,064	-2**	1,066	1,064	-2**
BRAC Locations							
Army	179	142	143	1	141	142	1
DON*	43	22	22	0	22	22	0
Air Force	142	132	131	-1 ⁺⁺	130	130	0
DLA ^{***}	0	N/A	N/A	N/A	N/A	N/A	N/A
BRAC Total	364	296	296	0	293	294	1
DoD Total	5,561	3,676	3,721	45	3,658	3,703	45

*The number of sites at RIP and RC decreased because the Army reopened these milestones to make corrections to historic data for MRSs declared RIP and RC prematurely.

+ DON includes Navy and Marine Corps; DON manages Navy and Marine Corps environmental restoration activities as a combined program.

** The number of sites at RIP and RC decreased because the U.S. Army Corps of Engineers made corrections to the FUDS data in FY 2023, such as removing MRSs from the Defense Environmental Restoration Program (DERP) inventory that were reported in error.

++The number of sites at RIP decreased because the Air Force discovered additional contamination an MRS reported at RIP in FY 2022.

*** DLA does not have MRSs at BRAC locations.

Cost-to-Complete Estimate

The remaining Cost-to-Complete estimate for Defense Environmental Restoration Program (DERP) sites, as of the end of FY 2023, is \$51.05 billion (B). This includes \$43.66B in installation project funding allocated to individual sites and \$7.39B in program management and other support costs that cannot be attributed to individual sites.

DoD expects this estimate to increase as the DoD Components complete the ongoing investigations and learn more about the extent of the cleanup PFAS required. Further, the timeline for cleanup will vary significantly depending on the amount and extent of per- and polyfluoroalkyl substances (PFAS) at a specific location, as well as other site-specific characteristics that are determined during the remedial investigation/feasibility study phase. The Department cannot estimate this timeline and therefore cannot estimate the complete cost of cleanup until this information is known. The DoD Components will plan and program for these requirements as they are defined. Additional information about DoD's efforts related to PFAS can be found at <http://www.defense.gov/pfas>.

Base Realignment and Closure Inventory and Status by Round

In response to Government Accountability Office-22-105207, “Base Realignment and Closure: DoD Should Provide Congress More Complete and Transparent Information,” Table 3 summarizes, by BRAC round, the total number of BRAC sites, when BRAC sites are projected to achieve the site closeout (SC) milestone,³ the number of sites that are projected to remain in the long-term management (LTM) phase in perpetuity, and the estimated cost associated with LTM of these sites in perpetuity.

Table 3: BRAC Inventory and Status by BRAC Round

BRAC Round	Total Number of Sites	Final SC Date*	Number of Sites Projected to Remain in LTM in Perpetuity ⁺	Estimated Cost Associated with LTM in Perpetuity (\$000) ^{**}
1988	1,813	September 2083	85	213,079
1991	2,006	September 2081	249	364,620
1993	2,027	September 2083	153	182,198
1995	2,550	July 2080	398	266,478
2005	436	September 2070	54	55,584
BRAC Total	8,832	September 2083	939	1,081,959

* The final SC date is the date the last site is expected to achieve the SC milestone; it does not include sites projected to remain in LTM in perpetuity.

+ Sites that cannot achieve unlimited use and unrestricted exposure (UU/UE) will remain in the LTM phase in perpetuity.

** The estimated cost for LTM in perpetuity is based on a finite period of 30 years.

III. ENVIRONMENTAL CONSERVATION AND PLANNING

The Department understands that the protection of historic, culturally, and biologically significant resources and cooperation with Indigenous populations are integral to mission support and readiness. The Department manages its natural and cultural resources and complies with existing laws (e.g., Endangered Species Act (ESA), Sikes Act, National Historic Preservation Act (NHPA)) to enable continued access to testing and training lands and to ensure the long-term sustainability of the Nation’s natural and cultural heritage. DoD has also implemented consultation policies to better work with Tribal Nations, especially through its Native American Lands Environmental Mitigation Program (NALEMP).

Cultural Resources

As stewards of the Nation’s largest inventory of Federally owned or controlled historic properties, DoD strives to maintain, promote, and interpret the resources it manages to support DoD’s mission and protect cultural heritage for future generations. DoD’s Cultural Resources Program manages the Department’s cultural resources policy and develops initiatives to foster partnerships with Federal, Tribal, State, and local government agencies; professional organizations; and the public.

³ SC is the stage at which DoD has completed active management and monitoring at an environmental restoration site, and no additional environmental restoration funds will be expended at the site. SC occurs when environmental restoration goals have been achieved that allow UU/UE of the property (e.g., no further LTM, including land use controls, is required).

In FY 2023, the Cultural Resources Program, in coordination with the DoD Legacy Resource Management Program (Legacy Program), established a partnership with the National Preservation Institute (NPI) to address compliance with the NHPA and conservation of cultural resources on military lands. DoD’s approach to NHPA Section 110 surveys is to survey high priority real property assets and archaeological sites to improve mission readiness.⁴ As of the end of FY 2023, DoD surveyed approximately 10 million (M) acres of land (or 49 percent) and approximately 95,000 assets over 50 years old (or 71 percent). DoD has allocated \$23.5M over the next five years for these surveys. This figure includes the \$13.5M 5-year cooperative agreement (CA) the Legacy Program awarded to NPI. The Military Services also contributed \$10M for these surveys. FY23 surveys focused on:

- Evaluating the National Register eligibility of selected World War (WW) II-era buildings and structures at Andersen Air Force Base (AFB), Guam;
- Conducting architectural and archaeological surveys at various Army Reserve, Texas installations;
- Providing a National Register evaluation for 50 potentially historic structures and buildings associated with WWII, Korean War, and Vietnam War training infrastructure at Fort Cavazos, Texas;
- Conducting architectural surveys of 34 buildings and structures at ranges along Dixie Road at Fort Moore, Georgia;
- Conducting archaeological surveys at Port Tampa Cemetery, including non-invasive geomorphological testing, to refine horizontal and vertical boundaries and develop management and site protection plans at MacDill AFB, Florida;
- Conducting a Phase I Archaeological Survey within the Townsend Bombing Range at Marine Corps Air Station Beaufort, South Carolina;
- Conducting archaeological studies to prepare for National Register evaluations of five historic period sites at Vandenberg Space Force Base, California.

In FY 2023, in coordination with the Legacy Program, the Cultural Resources Program published the *Department of Defense Tribal Engagement Guidebook* to improve DoD’s engagement with Federally recognized tribes. The Cultural Resources Program also published the *Climate Adaptation Guide for Cultural Resources*, which presents methods to consider, integrate, and improve resilience to climate change risks into cultural resources management (CRM).⁵

Natural Resources

Healthy, resilient lands are critical to DoD’s mission success and provide the natural infrastructure to support military readiness activities. DoD’s Natural Resources Program plays a critical role in supporting the military’s combat readiness mission by ensuring continued access to the 26.9M acres of military land, water, and airspace needed to accomplish vital testing,

⁴ The NHPA requires Federal agencies “ensure that historic property under the jurisdiction or control of the agency is identified, evaluated, and nominated to the National Register of Historic Places” (54 U.S.C. § 306102 (b)(1)).

⁵ The DoD *Climate Adaptation Guide for Cultural Resources* is available at: https://www.denix.osd.mil/cr/denix-files/sites/19/2023/06/CR-20-002_DoD-Climate-Adaptation-Guide_FINAL-508.pdf. The guide presents methods to integrate climate adaptation strategies into military installation CRM plans.

training, and operational activities. Specifically, DoD's Natural Resources Program and its conservation and management actions support "no net loss" of mission capabilities; improve built and natural infrastructure resilience; and promote natural and cultural stewardship through partnerships.

DoD manages its lands, waters, and airspace to enable the military mission while supporting conservation using Integrated Natural Resource Management Plans (INRMPs). Pursuant to the Sikes Act (16 U.S.C. 670 *et seq.*), military installations with significant natural resources are required to prepare, maintain, and implement INRMPs.⁶ Current and compliant INRMPs ensure "no net loss" of military mission capability on installation lands, while providing for conservation, rehabilitation, and the sustainable multipurpose use of natural resources.⁷ DoD managed 341 INRMPs in FY 2023, 84 percent of which were compliant. This represents a four percent increase compared to the 80 percent in FYs 2020 through 2022.

DoD also manages over 550 Federally listed threatened and endangered species on its installations and ranges, of which 54 Federally listed species and 74 at-risk species exist only on DoD lands. Since FY 2019, DoD has spent over \$2B to conserve threatened and endangered species on its installations and ranges while protecting its mission. In collaboration with the Department of the Interior (DOI), DoD established the Recovery and Sustainment Partnership (RASP) initiative to better address the relationship between species' needs and military readiness. In FY 2023, the RASP focused on improving the conservation status of over 40 species. These efforts directly led to delisting six species, all endemic to DoD lands, from the ESA.⁸

Through the RASP, DoD and the U.S. Fish and Wildlife Service (USFWS) collaborate on the development of species action plans (SAPs) to address DoD priority species.⁹ In FY 2023, DoD and USFWS implemented nine SAPs across 40 installations and ranges to address the most urgent conservation needs for DoD mission-priority species. These efforts will impact over 100 installations and ranges. In addition to efforts under the SAPs, DoD and the USFWS continued to improve conservation for more than 50 species, which will address mission impacts on over 150 DoD installations and ranges.

By working to sustain and restore threatened, endangered, and at-risk species, DoD improves species populations; helps advance species recovery and conservation; and prevents future species listings. These efforts enable the Department to carry out its mission-essential activities by avoiding and minimizing impacts related to species, habitat, ecosystem, and other natural resources management.

⁶ INRMPs integrate military mission requirements, environmental and master planning documents, cultural resources, and outdoor recreation to ensure both military operations and natural resources conservation are considered and consistent with stewardship and legal requirements.

⁷ An INRMP is compliant if it has been reviewed for operation and effect within a five-year period by all signatories to the INRMP.

⁸ The 6 species delisted in FY 2023 include the San Clemente sage sparrow, San Clemente Island lotus, San Clemente Island larkspur, San Clemente Island bush mallow, San Clemente Island paintbrush, and the Okaloosa darter.

⁹ The SAPs identify actions and milestones that support species recovery and conservation while reducing mission and readiness activity constraints for military installations and ranges.

Wildland Fire Management

Many DoD installations have developed robust wildland fire management programs that use beneficial fire to mitigate wildfire risk, maintain training land access, and improve or protect habitat and ecosystem diversity. There are 227 DoD installations with Integrated Wildland Fire Management Plans as a component of their INRMP. In FY 2023, DoD Wildland Fire Managers responded to and managed 3,065 wildfires, which burned 206,947 acres. Additionally, in calendar year 2023, DoD Wildland Fire Managers conducted prescribed fires, resulting in 481,266 total acres burned.

Recognizing the prevalence of wildland fire occurring on installations and increasing wildfire hazards due to climate change, the Department developed a centralized repository of installation wildland fire data in 2023 to inform program policy, oversight, and budgeting requirements. This data repository will inform the Department's Cohesive Wildland Fire Management Strategy. In addition to these efforts, the Department actively participated in the following workgroups in FY 2023: National Wildlife Coordinating Group, Wildland Fire Leadership Council, and the Wildfire Resilience Interagency Working Group and its related post-fire and smoke management working groups. Finally, DoD continues to be a major driver for funding and fielding the latest fire management technology in the multi-agency Eastern Innovation Landscape Network.

Native American Affairs

DoD recognizes tribal nations, their sovereignty, and cultural traditions. Through its instructions and policies, DoD mandates consultation at varying levels of its organization, including installation commands. To support DoD's Native American Affairs, the Department facilitates three versions of the Cultural Communications and Consultation Courses (CCCC) for military and DoD civilian personnel; conducts Native American outreach activities on behalf of the Office of the Secretary of Defense (OSD); and administers the NALEMP. In FY 2023, DoD:

- Delivered an American Indian CCCC at Naval Air Station Fallon, Nevada and an Alaska Native CCCC at Joint Base Elmendorf-Richardson, Alaska. Planned a Native Hawaiian CCCC at Joint Base Pearl Harbor-Hickam, Hawaii;
- Hosted a webinar on the Federal Trust Responsibility and Tribal Treaty Rights;
- Continued to review and consider tribal input received during virtual tribal consultations held in 2022 regarding updates to *DoD Instruction (DoDI) 4710.02, DoD Interactions with Federally Recognized Tribes*;
- Published a Tribal Protocols Guidebook funded through the Legacy Program;¹⁰
- Held the Native American Heritage Month celebration at the Pentagon in November 2022. Over 100 DoD personnel, Tribal Leaders, Native American Federal employees, and Native American veterans joined the celebration;
- Funded a Legacy project to undertake a one-year study of DoD's role during the Federal Indian Boarding School era;

¹⁰ The document serves as a resource guide for DoD Components on how to build and enhance relationships with tribal governments in the Lower 48. The Guidebook is available at www.denix.osd.mil/na.

- Continued participating in interagency coordination to enhance policy alignment and leverage Federal resources to address tribal concerns and improve consultation efforts, including through the White House Council on Native American Affairs; and
- Continued addressing comments from Native Hawaiian Organizations regarding updates to *DoDI 4710.03, Consultation with Native Hawaiian Organizations*.

Native American Lands Environmental Mitigation Program

NALEMP addresses environmental effects of past DoD actions on Indian lands and on other locations where the Department, an Indian tribe, and the current landowner agree that such mitigation is appropriate. NALEMP-eligible sites are screened to determine priority for cleanup action based on health, safety, and environmental criteria. Typically, impacts include hazardous materials, munitions debris, underground fuel storage tanks, unsafe buildings, lead-based paint and asbestos, and abandoned equipment. To date, NALEMP has fully mitigated over 100 sites in the lower 48 states and Alaska. In FY 2023, NALEMP:

- Executed 14 CAs with Indian tribes, valued at \$10.2M;
- Executed FYs 2021, 2022, and 2023 CA options valued at \$5.2M with FY 2023 plus-up funding;
- Completed cleanup at three sites previously executed under FY 2022 CAs and five sites previously executed under FY 2021 CAs;
- Completed Step I or III Site Assessment Reports for 26 reported potential impacts with 13 tribes; and
- Developed 14 preproposals for the FY 2024 NALEMP Short List of projects and budgets.¹¹

Legacy Resource Management Program

The Legacy Program provides coordinated, Department-wide, and partnership-based integration of military mission readiness with the natural and cultural resources conservation. Since its establishment in 1991, the Legacy Program has funded over 3,400 projects, totaling \$400M, which has benefited over 300 military installations worldwide. The Legacy Program funds natural and cultural resources and Native American Affairs projects each FY to address DoD’s existing or emerging resource management needs and challenges. The Legacy Program’s priority investment areas for FY 2023 included, but were not limited to, improving:

- The management and conservation of biodiversity, particularly DoD “mission priority species.”
- Consultation and coordination with Indian Tribal Governments, Tribal Nations, and Native Hawaiian Organizations, and including Indigenous Knowledge in management programs.
- CRM processes through enhanced environmental resilience, project management, and building energy efficiency.

¹¹ Tribes on the Short List are invited to partner with the DoD through two-year CAs to address environmental effects.

- Techniques and approaches for resilient lands and ecosystem management.
- Wildland fire management and risk reduction.

FY 2023 Legacy Program funds were executed based on the priorities identified above and in conjunction with the Military Services. Key FY 2023 Legacy Program accomplishments include:

- Executing \$18.5M in FY 2023 to support Program initiatives, a more than four-fold budget increase from FY 2022.
- Executing 44 ongoing projects via CAs, Interagency Agreements, and Military Interdepartmental Purchase Requests valued at \$12M or 65 percent of the Legacy budget.
- Administering, overseeing, and technically supporting 18 ongoing, multi-year Legacy Program funded projects.
- Executing 10 nature-based solutions pilot projects totaled at \$2.9M to improve installation climate resilience.
- Providing \$1.5M in funding to four DoD technical initiatives: DoD Partners in Fight, DoD Partners in Amphibian and Reptile Conservation, the Avian Knowledge Network, and DoD Partners in Preservation.
- Executing nine DoD installation-targeted, regional- or national-level projects and partnerships totaling \$4M under the DoD and U.S. Forest Service-International Programs Cooperation on Monarch Butterfly Conservation Interagency Agreement.
- Providing \$180,000 in funding to two DoD-wide collaborations: National Public Lands Day partnership and Cooperative Ecosystem Studies Units (CESU) Network.
- Funding projects through the CESU Network totaling more than \$150M and providing a net savings of \$25M for DoD.
- Financing essential environmental and cultural program leadership and support services for the Office of the Deputy Assistant Secretary of Defense for Environmental Management and Restoration, totaling \$4.7M or 26 percent of the Legacy Program budget.
- Increasing the number of Legacy Listserv recipients by 125 to 1,022 individuals. The listserv is the program's mechanism to share information and communication among the natural and cultural resources communities.
- Reinstating the Legacy Program project tracking system through the establishment of the Legacy Project Reporting Database.
- Funding the development of a variety of publications, guidebooks, best management practices, and technical reports to benefit DoD installation natural and cultural resource managers and planners.

In addition to the achievements above, the Legacy Program selected Colorado State University to undertake a study titled, *The Role of the DoD in Federal Indian Boarding Schools*. The project focuses on researching and identifying DoD's role during the Federal Indian boarding school era. This research will be part of the background research necessary for DoD to fulfill its requirement from the FY 2023 National Defense Authorization Act (H.R. 7900, P. 204-205) to document its role more fully in the establishment and sustainment of American Indian boarding schools in the United States from 1819 through the 1960s. Additionally, the research

will support DOI's efforts to locate any records relating to the Federal Indian boarding school system.

Finally, the Legacy Program selected the Naval Facilities Engineering Systems Command (NAVFAC) Atlantic to develop a video highlighting the 50th anniversary of the ESA and DoD's work to recover and protect threatened, endangered, and at-risk species, and sustain biodiversity and maintain military readiness. *Boots on the Ground - Mission Support through 50 Years of Conservation* is a seven-minute video that describes DoD's efforts to balance vital military testing, training, and operational mission and its commitment and ongoing work to conserve threatened, endangered, and at-risk species.

IV. ENVIRONMENTAL COMPLIANCE

The Department provides resources through its Compliance Program to comply with applicable requirements, such as Federal, State, and local environmental laws, regulations, and ordinances, for installations located in the United States. In addition, the Compliance Program includes applicable environmental compliance, remediation, and planning requirements for installations located outside of the United States.

Under the Compliance Program, DoD activities include sampling and analyzing pollutant discharges to air and water, maintaining environmental permits for regulated activities, providing safe drinking water, and disposing of regulated waste. The program also includes projects to upgrade drinking water systems and wastewater treatment facilities and install air pollution controls to meet new regulatory standards. In addition, the Compliance-related Cleanup Program includes the remediation of contaminated DoD lands that are not eligible for DERP funding.

DoD is committed to maintaining compliance with all applicable environmental laws and regulations. In FY 2023, the number of new enforcement actions remains low despite a 20 percent increase in total inspections. The Department maintained an over 97 percent compliance rate for regulated DoD Public Water Systems, providing drinking water meeting health-based standards for approximately 1.5M people on military installations. In addition, DoD achieved a Clean Water Act compliance rate of 93 percent. Further, the percentage of major installations operating in complete compliance with applicable Clean Air Act requirements has increased to a four-year high of 94 percent.

V. CLIMATE RESILIENCE

The Office of the Under Secretary of Defense for Acquisition and Sustainment has the primary responsibility for DoD's climate change adaptation and resilience. The Office of the Assistant Secretary of Defense for Energy, Installations, and Environment (OASD(EI&E)) is primarily responsible for DoD's climate change adaptation and resilience policy and guidance, oversight, and risk management activities across the Department, among other roles. Key FY 2023 climate resilience accomplishments include:

- Providing progress updates on the DoD Climate Adaptation Plan (CAP) to the Council on Environmental Quality and the Office of Management and Budget.¹²
- Publishing the *DoD Plan to Reduce Greenhouse Gas Emissions*.¹³
- Hosting a DoD Climate Resilience Workshop in July 2023 with over 900 DoD personnel, partners, and stakeholders.
- Expanding the DoD Climate Assessment Tool (DCAT) to over 2300 installations and sites globally, including all major installations.¹⁴
- Providing six stand-alone Climate Assessment Tools (CATs) to partners and allies, including Australia, Germany, Italy, Japan, Republic of Korea, and United Kingdom.
- Updating the Unified Facilities criteria to account for changing climatic conditions in planning and engineering designs.
- Completing Water Management and Security Assessments (WMSAs) at 59 installations and beginning WMSAs at 105 additional installations.¹⁵

VI. ENVIRONMENTAL TECHNOLOGY PROGRAM

OSD oversees the Military Departments’ and Defense-Wide environmental technology programs. OASD(EI&E) manages the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). The mission of the environmental technology programs is to address high-priority environmental challenges. The DoD Components’ environmental technology investments focus on unique Military Service requirements and complement other Defense-wide investments. SERDP, ESTCP, and the DoD Components work together to coordinate and leverage these investments.

SERDP Progress in Achieving Objectives and Goals

SERDP is DoD’s environmental and resilience science and technology program. DoD plans and executes SERDP with the Department of Energy and the Environmental Protection Agency (EPA). In FY 2023, SERDP:

- Identified and demonstrated the leading replacements for aqueous film forming foams (AFFF), providing data vital for the development of the new military specification (MILSPEC) for a fluorine-free foam firefighting agent. These efforts standardized the product requirements and testing of commercially available PFAS-free firefighting agents for DoD use.
- Contributed to the de- or down-listing of seven threatened or endangered species on DoD lands in 2023, which is essential to maximize DoD land use and availability of mission-related training days.
- Developed modeling tools to help fire managers plan safe and effective prescribed burns.

¹² The DoD CAP, originally published in 2021, integrates climate change adaptation and resilience considerations across agency programs, real property management, public lands and waters, and financial services.

¹³ *DoD Plan to Reduce Greenhouse Gas Emissions*: <https://media.defense.gov/2023/Jun/16/2003243454/-1/-/1/2023-DOD-PLAN-TO-REDUCE-GREENHOUSE-GAS-EMISSIONS.PDF>

¹⁴ DCAT is an internal tool for DoD-use only that provides climate data and information, allowing installations to prepare for changing climate conditions.

¹⁵ The additional WMSAs were completed in FY 2024, bringing the total amount of installations assessed under the methodology to 164.

- These tools will replace outdated models that are unable to predict fire behavior due to rapid ecological changes that are creating more frequent and intense wildfires.
- SERDP and ESTCP are using congressional funding to advance fire management tools and technologies across DoD and Federal landscapes.
- Validated EPA Draft Method 1633, which provides a standardized sampling method for PFAS across several critical environmental matrices. Standardized sampling methods are imperative for carrying out effective site cleanup practices.

ESTCP Progress in Achieving Objectives and Goals

ESTCP is DoD’s environmental, resilience, and installation energy and water technology demonstration and validation program. Through ESTCP, DoD promotes the transfer of innovative technologies with established proof of concept studies to the field or production use. ESTCP demonstrations collect cost and performance data to employ innovative technologies. In FY 2023, ESTCP:

- Funded projects to test and evaluate the performance of fluorine-free, AFFF alternatives, ensuring alternatives met DoD’s stringent performance criteria.
- Demonstrated and validated two fluorine-free firefighting agents, enabling the Navy to approve the products for military use.
- Began demonstrating prototype PFAS treatment technologies with 10 companies at three military installations. With successful demonstrations, treatment prototypes will provide treatment options for installations impacted by PFAS.
- Transitioned a successful, small-scale ESTCP demonstration for a PFAS removal technology to Naval Air Station Oceana. The installation expanded its use of the technology, leading to a significant and more efficient removal of PFAS within the treatment area.
- Developed and demonstrated a bio-based cleaner, lubricant, and preservative (CLP) for military firearms.
 - The bio-based CLP demonstrated reduced cleaning times as compared to traditional CLPs.
 - Because of this demonstration and improvement, the U.S. Army Armaments Center revised the MILSPEC to cover bio-based CLPs.
- Transitioned an innovative method for monitoring threatened and endangered species, environmental DNA (eDNA), increasing access by 50,000 acres for military training and testing. ESTCP is also funding the advancement of eDNA use across several other projects.
- Transitioned an ESTCP microgrid demonstration to Portsmouth Naval Shipyard and U.S. Marine Corps Recruit Depot – Parris Island. ESTCP invested an additional \$90M through Energy Savings Performance Contracts (ESPCs) to procure facility improvements.¹⁶

¹⁶ ESPCs enable installations to procure improvements with no up-front capital costs or special congressional appropriations.