2021 Report on REPI Program Outcomes and Benefits to Military Mission Capabilities

Department of Defense
Office of the Assistant Secretary of Defense for Sustainment
Readiness and Environmental Protection Integration (REPI) Program

TABLE OF CONTENTS

Figures

Tables

EXECUTIVE SUMMARY

The Department of Defense's (DoD) Readiness and Environmental Protection Integration (REPI) program is a key instrument to address encroachment that limits or restricts military training, testing, and operations. The REPI program facilitates cost-sharing partnerships between the Military Departments, other federal agencies, state and local governments, and private organizations to increase installation resilience to climate change and extreme weather events, ease or avoid land use conflicts near military installations, and address regulatory restraints that inhibit military activities. These mutually beneficial arrangements, authorized by Congress in 10 United States Code (U.S.C.) § 2684a as well as other authorities such as the Sikes Act (16 U.S.C. § 670c-1) and Intergovernmental Support Agreements (10 U.S.C. § 2679), preserve and enhance military readiness by providing installation and range commanders with the necessary tools to optimally conduct their essential missions, including key capabilities of strategic importance in the Pacific. This report utilizes data submitted by the Military Services to demonstrate the REPI program's outcomes that benefit military missions and promote readiness. The report contains detailed analysis of the program's operations and effectiveness.

ENCROACHMENT IS THREATENING MILITARY BASES AROUND THE UNITED STATES AND ITS TERRITORIES

Encroachment, defined as factors that negatively affect DoD's ability to effectively use testing, training, and operational lands, is a widespread challenge that DoD must continue to address in the face of growing pressure. Based on available REPI project data through the Fiscal Year (FY) 2021 proposal cycle, the three

most common restrictors of military activity are noise complaints, danger or safety zone regulations, and threatened or endangered species regulations. As discussed in Section 2 of this report, 91 percent of the 65 proposals submitted in FY 2021 report at least one of these three restrictions. Accordingly, the majority of the REPI program's annual budget is dedicated to easing or preventing these types of restrictions.

ENCROACHMENT IMPACTS ARE GROWING RAPIDLY YEAR AFTER YEAR

Section 2 highlights how the conversion of natural and agricultural buffer lands to residential and commercial properties can impact military operations. Family farms and large timber companies' holdings are declining while transportation, utility, and other infrastructure networks are expanding across lands that were previously viewed as undesirable to developers. The rapid expansion of development is exacerbating military installations' and ranges' encroachment challenges. Just under half of properties targeted for protection by the Military Services as part of their most recent REPI project funding requests are at risk of incompatible development within 12-24 months, and an additional 16 percent of properties are at risk of development within the next year. Protection of these parcels is time sensitive. Once these lands are subdivided and developed, the impact to nearby military operations is often irreversible.

ENCROACHMENT CONTINUES TO THREATEN ESSENTIAL MISSION CAPABILITIES

Encroachment currently restricts or potentially threatens a wide variety of mission-critical activities across air, land, sea, and frequency spectrum domains. Most

notably, encroachment threatens fixed-wing and rotary-wing flight training, live fire operations, and ground maneuver activities. Section 3 outlines how the acreage protected through REPI preserves and enhances specific critical capabilities.

REPI TARGETS DOD'S PRIORITY MISSIONS AND CAPABILITIES

Recent guidance from the new administration seeks to address the threats posed by climate change and strengthen the United States position in the Indo-Pacific region. The REPI program has the network, capabilities, and funding to address these priorities. Since REPI gained the authority to address climate change and resilience in FY 2019, funding and focus on these projects have steadily grown. In FY 2021, the Services submitted 16 proposals focused on climate change and resilience, requesting approximately $97 million in funding from DoD. This funding was expected to be paired with over $211 million in partner funds, representing a cost share of nearly 73 percent. Erosion, coastal flooding, and sea level rise were the most commonly identified climate change vulnerabilities for those 16 projects.

REPI projects are already common in the Indo-Pacific region and funding for these projects will increase. Of the eight projects spread throughout Hawaii, Alaska, and Guam, threats vary significantly and as is the case for all REPI projects require years of planning and negotiating to make progress in protecting the installation. Through FY 2020, these installations have used $136 million in REPI and partner funding to protect over 15,000 acres. Partners have contributed the bulk of the funding, providing a 76 percent partner cost share. These funds protect critical assets throughout the region such as an automated multi-purpose training range at Joint Base Elmendorf Richardson valued at $22 million and the Aegis Ashore Missile Defense Test Complex at Pacific Missile Range Facility Barking Sands in Hawaii with an estimated value of $59 million.

REPI'S MINIMAL INVESTMENT HELPS TO PROTECT DOD'S HIGH-VALUE ASSETS FROM COSTLY WORKAROUNDS

REPI is preserving and enhancing valuable DoD assets for a small fraction of what it costs to build, modernize, and replace or repair them. The Department spends billions of dollars in military construction (MILCON),

capital improvement, repair projects, and maintenance of its facilities and equipment. To modernize and maintain unfettered access to key capabilities into the future, DoD must leverage tools to protect these assets from known or potential encroachment threats. Section 4 outlines how REPI serves as an effective and cost-efficient way for DoD to preserve and enhance the military's capabilities. For example, Naval Air Weapons Station China Lake has leveraged $5.2 million in DoD funding with over $13.4 million in external partner contributions to help preserve or enhance $1.2 billion in recent MILCON investments. These investments preserve the installation's advanced testing and training capabilities and include $352 million for two integration labs and; $117 million for an Advanced Weapon Warfare Hangar. Overall, the total value of all assets and capabilities valued between $1 million and $100 million and supported by REPI is over $6 billion.

REPI HAS SAVED THE DEPARTMENT OF DEFENSE $975 MILLION BY LEVERAGING PARTNER CONTRIBUTIONS TO COMPLETE TRANSACTIONS

The REPI program is a practical and valuable tool for sustaining military readiness. The program helps to prevent suboptimal military operating environments, costly development of new facilities to replace encroached assets, and relocation of important missions. Since Congress enacted 10 U.S.C. § 2684a in 2002, REPI cooperative agreements have attracted contributions from federal agencies, state and local governments, conservation organizations, and other private organizations that nearly match the investments made by DoD. Through partnerships, the REPI program has achieved a total cost savings of over $975 million for DoD through FY 2020.

1 | OVERVIEW AND PURPOSE OF THE ANALYSIS

DoD's REPI program is a key tool for curbing encroachment that can limit or restrict military training, testing, and operations. This is typically accomplished through one of the following justifications for land protection or landscape-scale natural resource management approaches: the land use conflicts with missions, there are regulatory restrictions associated with the presence of protected species and their critical habitat, or for the enhancement of a military installation's resilience. Through partnerships with other federal agencies, state and county governments, and conservation organizations, the REPI program preserves or enhances mission capabilities by relieving or avoiding land-use conflicts near installations and by developing proactive regulatory solutions to reduce or alleviate restrictions.

Because this report is based on a quantitative assessment of proposal data, it does not focus on the numerous qualitative benefits inherent in the REPI program's core emphasis on partnerships. For example, REPI fosters innovative and diverse partnerships between DoD and external organizations that align each organization's priorities to prevent future restrictions on the military mission.

As in previous versions, this report outlines and analyzes over 16 years of the Military Services' data submitted to REPI to quantify the program's value to the DoD mission. The data analysis demonstrates the extent of current and future land use conflicts, how the REPI projects overcome these conflicts, and the overall investments in and benefits to military capabilities. The information in this report reflects installation goals submitted and verified by the Military Services through the FY 2021 funding proposal process. Additionally, this report utilizes data on completed actions reported by the Military Services through FY 2020. To prepare this report, the REPI program office organized, visualized, and summarized underlying data to provide the following analysis.

2 | REPI'S MITIGATION AND PREVENTION OF MAJOR ENCROACHMENT THREATS TO MILITARY ACTIVITY

DoD's ability to conduct realistic training and testing is vital to preparing Service members, and their equipment, for real-world combat. Realistic training and success on the battlefield go hand in hand, so DoD follows the classic Army principle of **"Train as you fight, fight as you train."**

In the past 25 years, DoD has grown increasingly concerned about encroachment pressures that adversely affect the military's use of training and testing lands. In the late 1990s, DoD identified two main encroachment threats: nearby incompatible land uses and Endangered Species Act (ESA) regulatory restrictions on DoD lands intended to protect imperiled species and their habitats. More recently, DoD identified extreme weather events and changing climate patterns as significant encroachment threats to DoD operations. Within these broad categories, many distinct types of threats have emerged. Below are examples of how these different threats can affect training, testing, and operations:

- Light pollution near installations and ranges reduces the effectiveness of night-vision training;

- Residents near installations and ranges complain about the noise, dust, and smoke generated by military activities, resulting in restrictions on the timing, frequency, and types of training activities;

- Competition for electromagnetic spectrum limits critical communication activities and the number of unmanned aircraft systems able to operate at a given time;

- Communication towers, wind turbines, energy transmission lines, and other tall structures near restricted air spaces or through large air ranges may interfere with DoD flight operations, radars, and sensitive testing equipment;

- Land development that destroys or fragments endangered species habitat around DoD lands increases DoD's responsibility to manage species habitat on DoD land;

- Sea level rise and storm surge near coastal and riverine installations can damage existing infrastructure, creating added costs and impeding military operations;

- Warmer temperatures and increased drought conditions can contribute to reduction in the water supply, more frequent wildfires, and heat-related illness, restricting training activities and putting DoD personnel at risk.

Over time, the impacts of these pressures multiply, ultimately resulting in diminished capabilities.

Figure 1 depicts the number of REPI proposals that indicated various types of encroachment threats in FY 2021. Of the 65 proposals the Military Services submitted for FY 2021, 91 percent report that at least one of the following threats, noise, danger or safety zones, and threatened or endangered species encroachment, adversely impact their installations. The Military Services submitted 53 proposals to address noise complaints and pressure to avoid noise impacts, making noise the most commonly reported threat for the third year in a row. Encroachment threats from development near or proximate to danger or safety zones, including accident potential zones

Figure 1 Encroachment Threats Identified in FY 2021 Proposals[1]
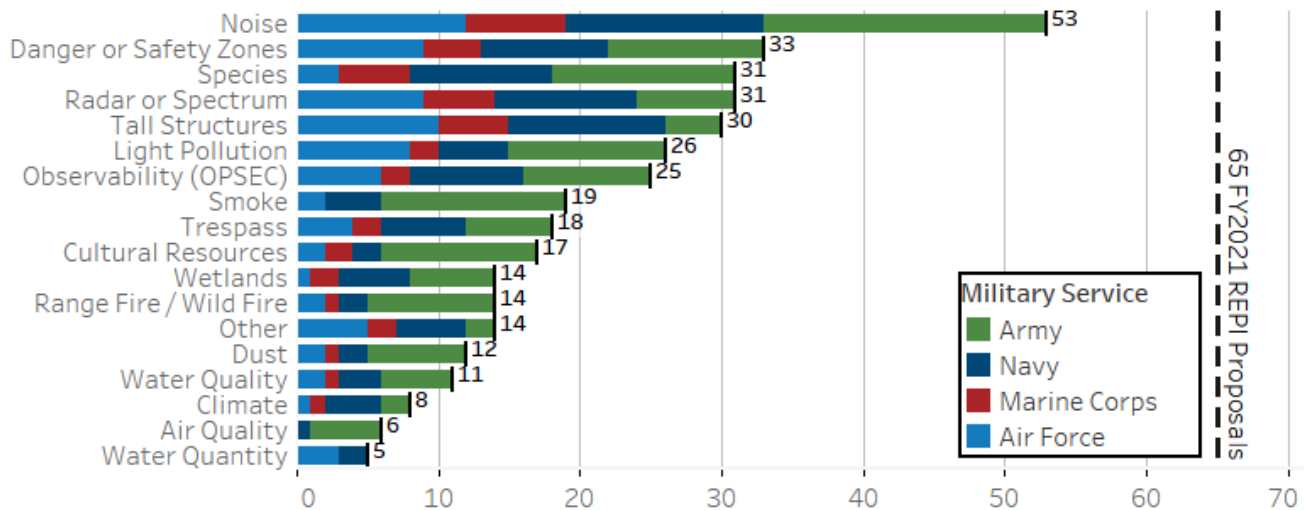
Source: FY 2021 REPI Proposals from the Military Services

Number of FY 2021 Proposals

(APZ), was the second most common encroachment threat listed, appearing in 33 proposals. The species impact encroachment threat and radar and spectrum encroachment threats tied for third and fourth most frequently listed threats, both appearing in 31 proposals each. In FY 2020, tall structures were the third most common encroachment impact, but this year the impact dropped with only 30 proposals mentioning this threat. Since the original REPI metrics report was released in 2019, encroachment impacts from noise, species, tall structures, danger or safety zones, and radar or spectrum have consistently been the most frequently listed encroachment threats in proposals. Noise has consistently been the most frequently mentioned encroachment impact while the other four have shifted between second to fifth most mentioned throughout the period. Two noteworthy increases occurred for light pollution and operations security encroachment impacts, with each gaining five and four additional identifications respectively.

Climate change and resilience has continued to grow in importance to DoD installations with REPI projects. In FY 2021, eight proposals identified climate change as an encroachment threat, increasing from five proposals in the FY 2020 cycle. Navy proposals were the main reason for the increase, with the submission of three more proposals that identified climate as an encroachment threat during the FY 2021 cycle.

For example, Naval Observatory Flagstaff Arizona identified drought and wildfire occurrences as potential adverse impacts to their mission. Global warming, particularly in this region, presents higher potential for both climate threats. Failure to address these climate impacts has the potential to cause more frequent, larger, and unplanned wildfires while also reducing the available water resources to the installation.

Most of the encroachment threats are driven by growing pressure to develop open lands. Property ownership continues to shift as large landholdings convert to smaller, subdivided units. In many cases, younger family members that inherit farmland decide to pursue other occupations. These macro level factors, in combination with access to expanded local transportation, utility, and other infrastructure networks across lands once considered less attractive to developers, are compromising vital spaces that DoD counts on to buffer their testing, training, and operations. Figure 2 illustrates the estimated timeframe for potential incompatible development of parcels proposed for FY 2021 funding. Almost three quarters of the parcels are expecting development between one and five years. Only 16 percent of the parcels proposed in the FY 2021 cycle expect development within a year, heavily contrasting with past trends. This is a significant change compared to the FY 2020 cycle when over half of the parcels expected

---

[1] Projects may select multiple encroachment threats. Projects that reported more than one encroachment threat are included in all categories selected. Installations that did not submit an FY 2021 proposal are not included. These totals do not reflect the severity of the threat, nor do they include encroachment pressures mitigated by other means. For underlying data by Military Service, see Table 1 in Appendix B.

development within six months. It is important to note that the projections of development are estimates made by the local installation and validated by the Service Headquarters. Projecting impending development involves a combination of quantifiable measures (e.g., published development plans) and qualitative measures (e.g., assessments of emerging housing trends). Given the vast proportion of proposals estimating parcel development within six months, after the FY 2020 proposal cycle, the REPI program issued clarifying guidance to improve the accuracy of the installations' estimates. The guidance likely contributed to the decrease in estimated development pressure in the FY 2021 proposals.

HOW THE REPI PROGRAM ADDRESSES ENCROACHMENT

Enacted in December 2002, 10 U.S.C. § 2684a authorizes the Department to enter into cost-sharing agreements with state and local governments as well as environmental protection organizations. Through these agreements, DoD can avoid restrictions on testing, training, and operations by encouraging compatible development, preserving habitats near or ecologically related to military installations and ranges, and maintaining or enhancing military installation resilience. One of the key steps in these partnerships is establishing what is known as an agreement area.

Figure 2 Estimated Timeframe for Potential Incompatible Development of Parcels Targeted in FY 2021 REPI Proposals
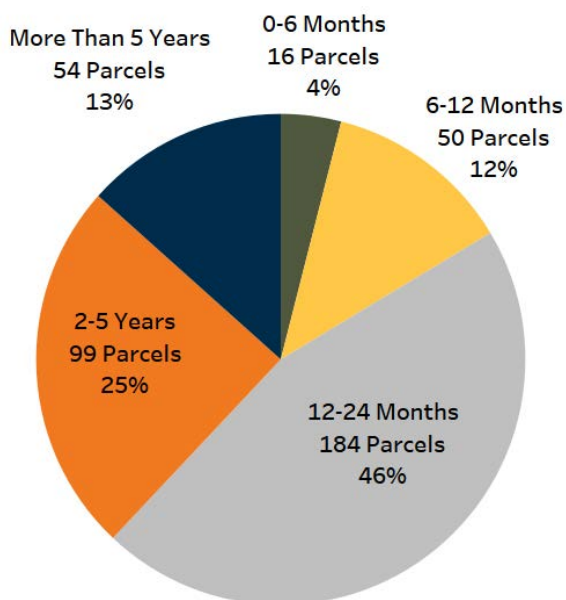
Source: FY 2021 REPI Proposals from the Military Services

The agreement area is the total geographic area in which an installation and its partners are authorized to execute pursuant to a cooperative agreement, encroachment protection agreement, or other real property agreement. Within the agreement area are the priority areas and specific parcels targeted for REPI projects. The case studies contain maps that illustrate the relationship between the overarching agreement area, the priority areas, and specific parcels. These win-win partnerships leverage DoD funding with significant contributions from other federal, state, local, and private sources to share the cost of acquisition of easements, off-base natural infrastructure projects, collaborative conservation initiatives, development rights, or other interests in land from willing sellers near installations and ranges. The partner will hold title to the easement subject to the right of the Military Service to demand or transfer the title if necessary to ensure the property maintains compatibility with the mission. In the face of suburban sprawl, ESA listings, and changing environmental conditions, the ability to leverage external contributions through REPI partnerships to relieve restrictions and build operational flexibility is paramount. REPI projects are protecting installation assets and operational capabilities from encroachment at various Military Service installations, joint bases, ranges, and reserve centers. All DoD installations in the United States and its territories are eligible for REPI program funds. Figure 3 displays new, in progress, and completed REPI projects across the country as of the end of FY 2020.[2]

Resilience is a particular focus in Figure 3, as the graphic emphasizes REPI projects with climate and resilience aspects. As referenced earlier, projects with climate and resilience focuses continue to grow within the REPI program. This aligns with DoD priorities, as climate change is a distinct focus and funding for these projects is expected to continue to grow to address the present and growing threat. One such example of this increased funding for a resilience project occurred during the FY 2021 REPI Challenge cycle at Tyndall Air Force Base (AFB) along the Gulf of Mexico in Florida. The installation was awarded $4.8 million to improve resilience for future hurricanes, storm surge, and sea level rise. In 2018, Tyndall AFB suffered catastrophic damage after Hurricane Michael, a category 5 hurricane, struck the base. Over 480 buildings on the

---

[2] Includes new, in progress, and completed projects as of the end of FY 2020.

base were destroyed or damaged beyond repair, forcing missions like the F-22 Raptor squadrons to relocate. The installation's $4.9 billion rebuild is ongoing and will continue for several more years as the installation prepares to house the F-35A Lightning II aircraft beginning in September 2023.

The 2021 REPI Challenge funding directly enhances Tyndall's resiliency by using nature-based solutions, such as shore stabilization and oyster reef development, to create a living shoreline along the installation's coastline. Living shorelines protect adjacent lands by absorbing wave energy and buffering lands from flooding and erosion. REPI projects that leverage natural infrastructure solutions to increase

the resiliency of the base will continue to become more common as shown in the similarly focused projects at Naval Weapons Station Yorktown and Marine Corps Air Station Cherry Point. Installations will continue to use these solutions in future REPI projects as they support DoD's ability to prepare against climate change impacts.

REPI PROJECT FUNDING FUNDAMENTALS

The REPI program leverages funds and resources between DoD, other federal agencies, state and local governments, and private organizations to finance encroachment mitigation and prevention efforts. There are two specific types of funding for REPI partnerships:

Figure 3 REPI Projects Across the United States

REPI Program Funds

The Military Services submit proposals requesting REPI funds annually. These funds are then obligated to projects based on the outcomes of the proposal process. In addition to the traditional process, installations also have the option to request REPI funds through the annual REPI Challenge. Through this channel, REPI projects request funds for efforts that conserve land at a greater scale, test promising ways to finance land protection, and harness the creativity of the private sector and market-based approaches.[3] Historically, REPI program funds have accounted for 32 percent of total project costs. Program funding is traditionally provided by Congress as a line-item appropriation in DoD's annual budget. In FY 2022, the Presidential Budget requested $150 million for the REPI program, doubling the FY 2021 Presidential Budget request. This will significantly expand the REPI program's ability to fund climate resilience projects at military installations in the United States and in its territories while also leaving a higher total of remaining funding to address other priority encroachment threats.

Military Service Funds

The Army, Navy, Marine Corps, or Air Force can expend Operations and Maintenance (O&M) or Research, Development, Test, and Evaluation funding to help finance their REPI projects. Since the program's creation, over 21 percent of total project costs have been covered by Military Service expenditures.

External partner contributions account for just under half of total REPI project costs to date. Partner contributions can include but are not limited to other federal grants, state and local grants or cost savings programs, private capital from conservation partners, bargain sales or donations from willing landowners, and in-kind services provided by partners. Leveraging REPI funds with these partner contributions is critical as the total Military Service funding requests always exceed and often double, available funding, as illustrated in Figure 4. DoD funding has steadily grown since the origin of the program in the early 2000s. DoD and partner investments continue to demonstrate the value of the REPI program and its partnerships to Congress and the taxpayers.

Figure 4 REPI Program Funding History
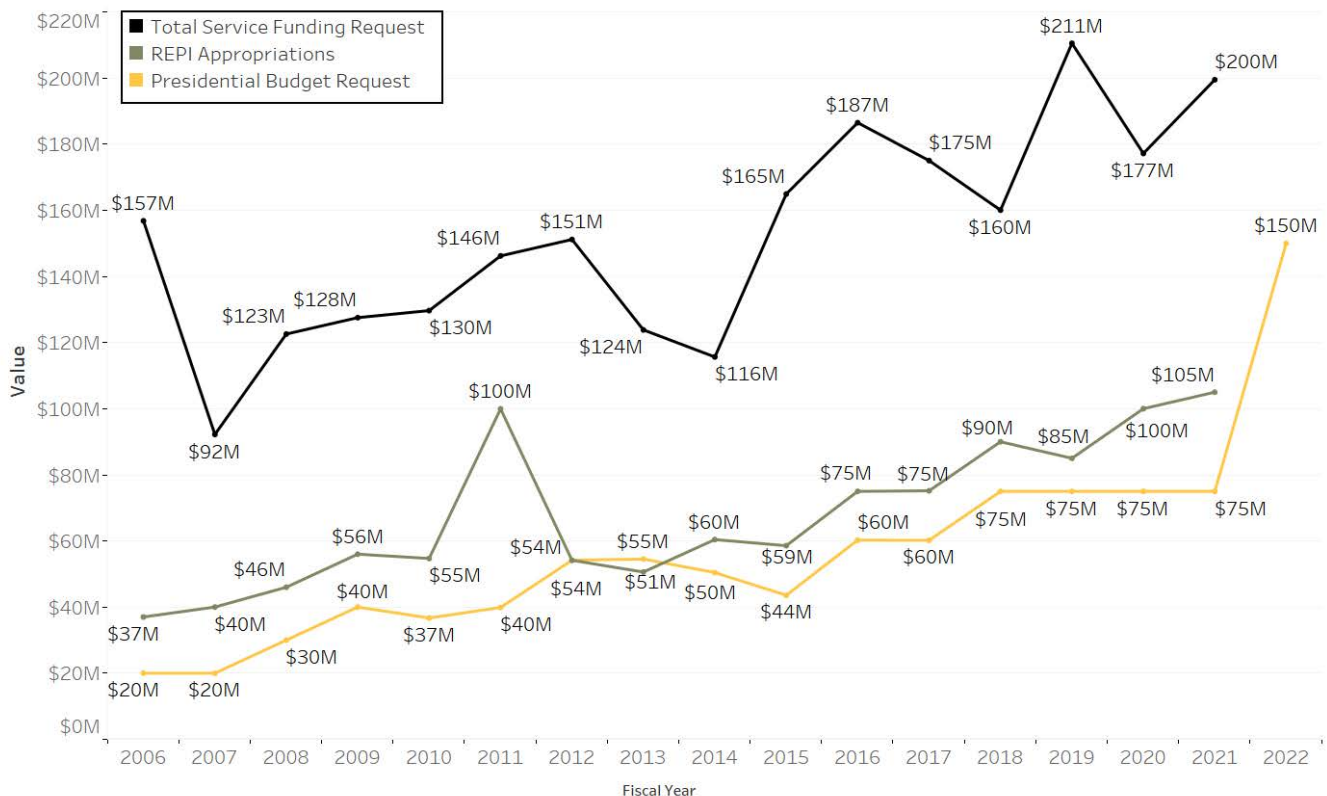
Source: REPI Proposals from the Military Services

---

[3] For more information on the annual REPI Challenge, visit **https://www.repi.mil/Buffer-Projects/REPI-Challenge/**.

3 | THE REPI PROGRAM HAS PROTECTED OVER 757,000 ACRES SINCE INCEPTION

DoD and its partners have protected over 757,000 acres at 115 REPI project locations in 35 states and territories through the end of FY 2020. Lands protected by the REPI program enable installation commanders to successfully accomplish vital testing, training, and operational missions with fewer restrictions. Figure 5 displays how the number of protected acres has steadily increased over time, commensurate with the level of DoD and partner investments over that same period. It is important to note that FY 2019 was a high protection year primarily due to the protection of over 30,000 acres in a single transaction at Melrose Air Force Range in FY 2019, representing the single largest protection in REPI history.

Figure 5 Total Acres Protected by REPI Projects through FY 2020[4]
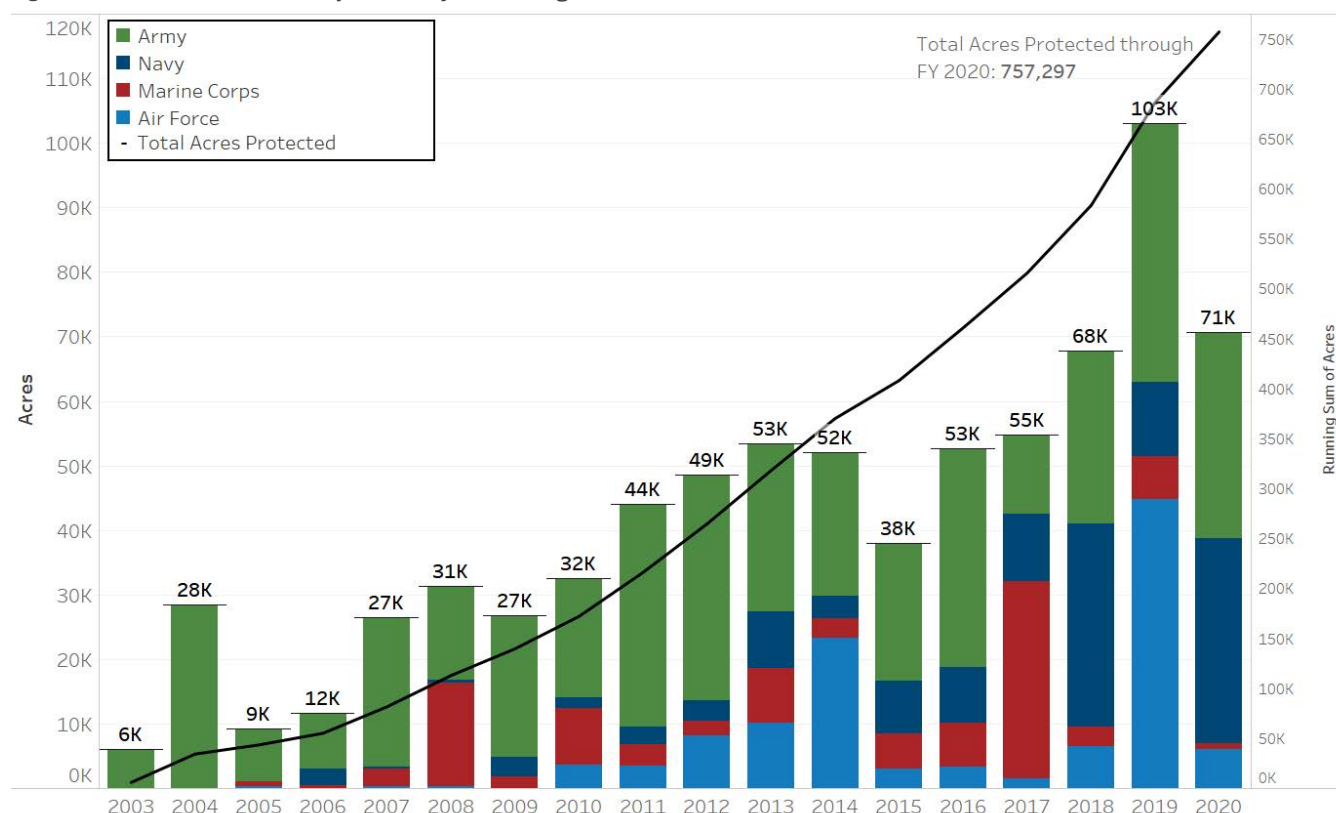
Source: Execution Data Submitted by the Military Services in the REPI Database through FY 2020

---

[4] Data is current as of the end of FY 2020, as reported in the 2021 REPI Report to Congress. Includes reported land protection efforts prior to 2003. For underlying data by Military Service, see Table 2 in Appendix B.

Figure 6 Acres Protected in FY 2020 to Preserve or Enhance Mission Capabilities[5,6]
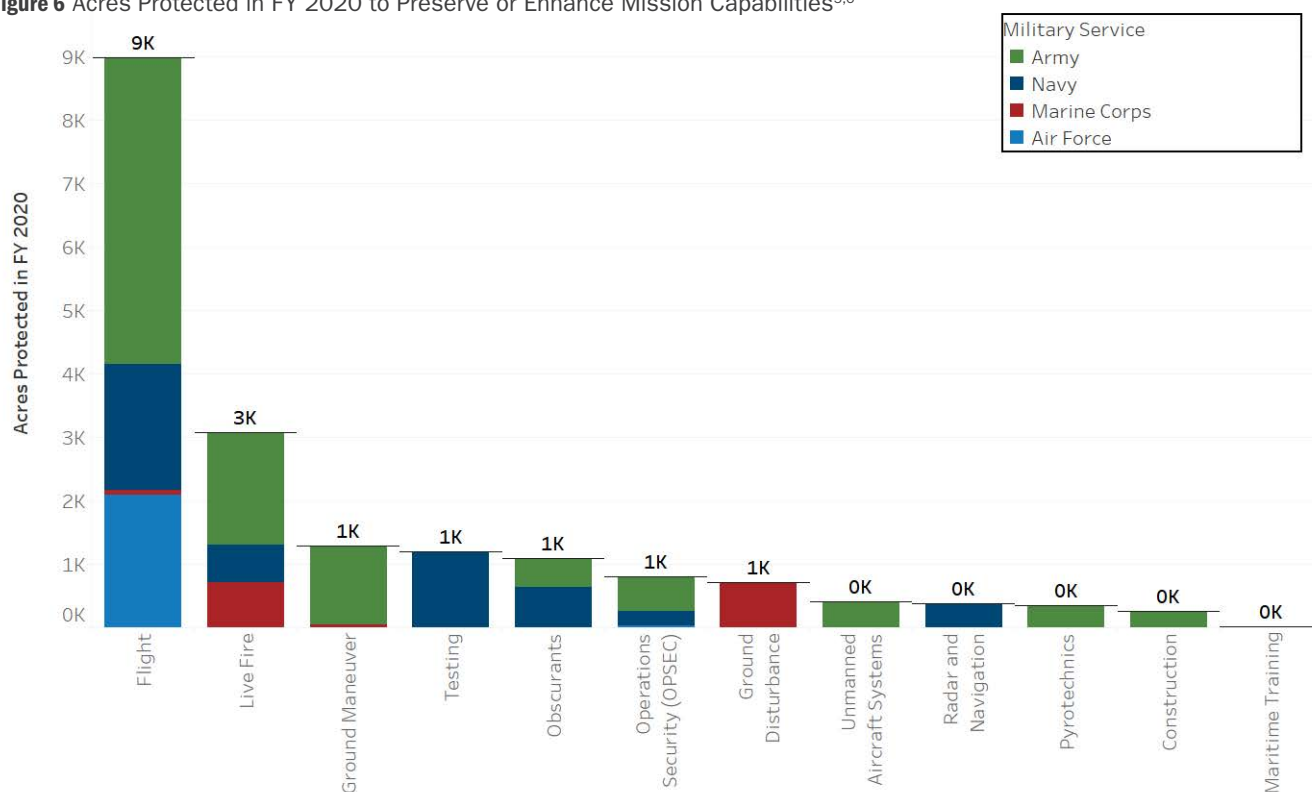
Sources: REPI Proposals Submitted by the Military Services, Execution Data Submitted by the Military Services in the REPI Database in FY 2020

Availability of funding, local real estate markets, landowner interest, and due diligence requirements all have the potential to significantly impact the scale and timeline for completing a real estate transaction. In addition to protecting lands via a real property interest, DoD and partners also make investments in restoring and managing natural resources and developing natural infrastructure solutions on some lands outside of installation boundaries. These conservation activities are authorized under 10 U.S.C. § 2684a, 16 U.S.C. § 670c-1, and 10 U.S.C. § 2679 in the case that they eliminate or relieve environmental restrictions on military activities or enhance military installation resilience. Through FY 2020, DoD and its partners have expended almost $57 million on these types of conservation activities, supporting readiness

at military installations around the United States and its territories.

Each REPI project must support a military installation or range mission as required by 10 U.S.C. § 2684a, 16 U.S.C. § 670c-1, or 10 U.S.C. § 2679. These mission benefits reflect test, training, and operational capabilities that are currently restricted or could potentially be restricted in the future absence of REPI. The 2018 Sustainable Ranges Report to Congress captures DoD's training range inventory. Of the 339 training ranges reported, the Military Services identified 78 that represent the greatest share of military training activity in the United States and its territories. Out of those 78 key training ranges, 37 ranges (47 percent) have a REPI partnership.[7] While REPI is a useful tool

---

[5] The Military Services may select multiple mission capabilities for each parcel. Acres protected are included in all mission capability categories displayed if the Military Services reported more than one for any given parcel. REPI began collecting parcel-level mission capability data in FY 2017; as a result, many executed parcels still do not contain this information even though the data gap is improving each year. Excludes 49,506 acres for parcels that were protected in FY 2020 but do not have any corresponding mission capability data. Acreage data is current as of the end of FY 2020. For underlying data by Military Service, see Table 3 in Appendix B.

[6] Data aggregation for this graphic has changed since past reports, altering the dataset and the resulting numbers in the analysis.

[7] **Source:** 2018 Sustainable Ranges Report to Congress from the Office of the Secretary of Defense, Under Secretary of Defense (Personnel and Readiness).

Figure 7 Area (millions of acres) and Length (miles) of DoD Assets that FY 2021 REPI Proposals Seek to Preserve or Enhance[8]

Marine Space 127M Acres	Total Airspace Footprint 99M Acres	Military Operating Area 62M Acres	Unrestricted Airspace 38M Acres
Range complex 101M Acres	Flight corridor 62M Acres		
Special Use Airspace 21M Acres	Restricted Airspace 18M Acres	High Risk of Adverse Impact Zone 14M Acres	
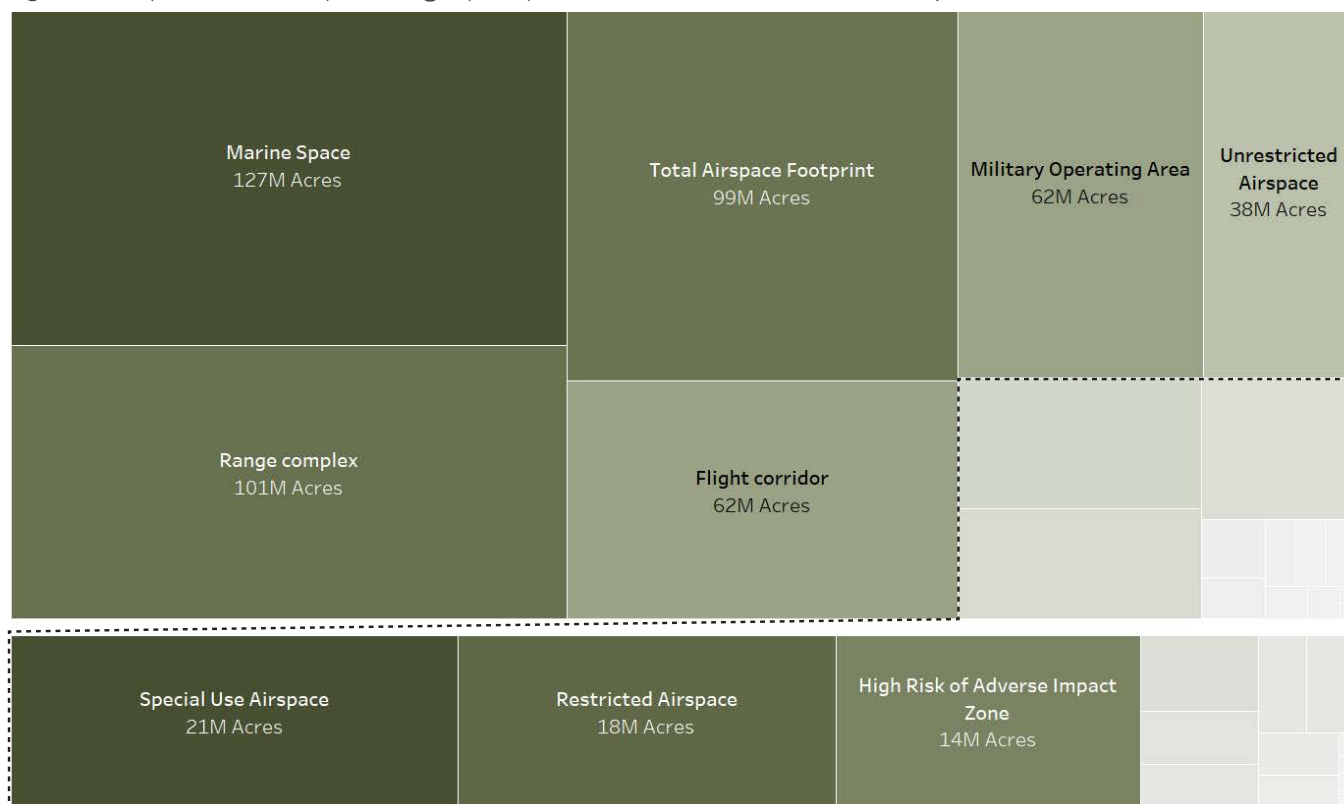
Source: FY 2021 REPI Proposals from the Military Services

for preserving or enhancing the capabilities of these ranges, the absence of an imminent encroachment threat or interested funding partner may require alternative solutions at other locations.

Figure 6 shows that the three most frequently supported mission capabilities by the most by protected acreage in FY 2020 were fixed-wing and rotary-wing flight training, live fire operations, and ground maneuver activities. Flight operations was the mission capability with the most protected acreage in FY 2020, with over three times more acreage protected than the next closest mission capability. Similar to previous years, the protection of these capabilities was primarily driven by the active Army and Army National Guard's efforts to reduce encroachment on their installations. When analyzing this data, it is critical to recognize that a single parcel can support multiple mission capabilities, and protected parcels for which the Military Services reported more than one mission

capability are displayed in all associated categories. Additionally, some protected parcels do not have listed mission capabilities, so these values are excluded from the analysis entirely. The REPI program has recently required reporting this data by parcel to better link parcel protection to mission. However, there is still a slight delay in ensuring all recent proposed and protected parcels have this data.

REPI projects are seeking to shield almost 553 million acres of total training, testing, and operating land within the boundary or control of the installations, as shown in Figure 7, which includes military areas on land, in the air and across water. Through REPI, installations are preserving and enhancing their largest assets —including more than 127 million acres of marine space, 101 million acres of range complexes, and 99 million acres of total airspace footprint. They are also protecting smaller but significant assets, such as 1 million acres of test ranges and 45 miles of runways.

---

[8] Projects may not provide asset capacities as part of their REPI proposals. These totals reflect asset capacities reported in the FY 2021 REPI proposals and should not be interpreted as comprehensive statistics for the entirety of REPI projects nationwide. Assets at installations that did not submit an FY 2021 proposal are not included. Submissions using linear units (e.g., miles) to describe traditionally multi-dimensional assets (e.g., range complex, airspace) or using multi-dimensional units (e.g., acres) to describe traditionally linear assets (e.g., flight corridor, runway) are not included. Nautical miles and square nautical miles were converted to miles and acres, respectively. Not all items are depicted to scale.

Unimpeded operation of these assets is essential to realistic testing and training operations. With realistic testing and training ensured, DoD is positioned to increase warfighting lethality and drive mission success.

Aggregated statistics on annual usage or throughput of mission capabilities that REPI projects seek to preserve or enhance by mitigating encroachment are depicted in Figure 8. Naval Air Station Patuxent River, for example, is continuing to preserve areas in Southern Maryland, on the Eastern Shore, and in the Northern Neck region to maintain the capacity for over 40,000 air runway operations and 49 water range flight operations annually.

Figure 8 Examples of Annual Usage or Throughput of Mission Capabilities Preserved or Enhanced by REPI[9]

Over **1.1 million** large caliber rounds fired

Over **321,000** flight hours

Over **4.3 million** training events

Over **52 million** small arms rounds fired

Almost **719,000** personnel trained

Over **896,000** sorties
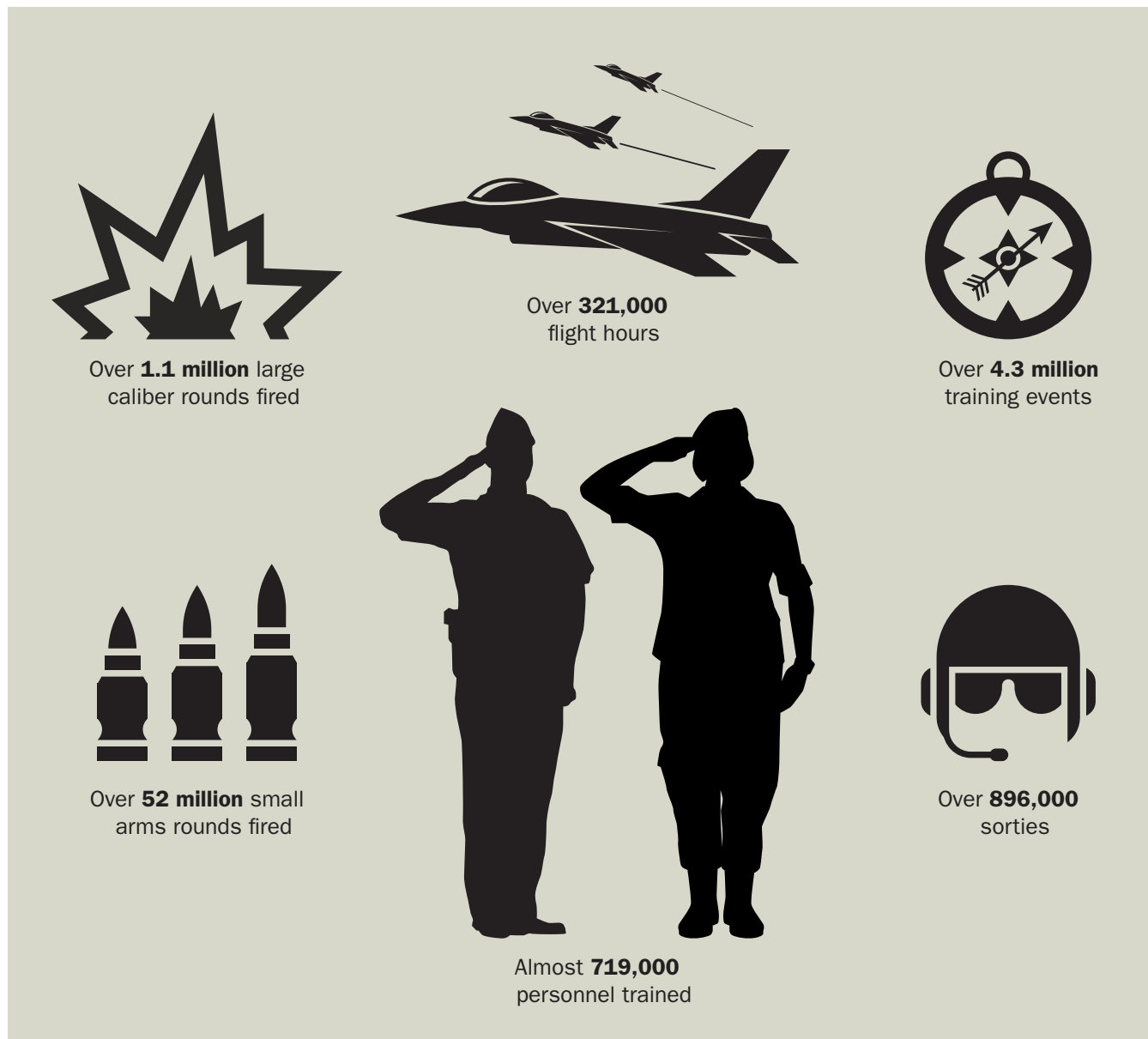
Source: FY 2021 REPI Proposals from the Military Services

[9] Projects may not provide usage and throughput data as part of their REPI proposals. These totals reflect usage and throughput data reported in the FY 2020 REPI proposals and should not be interpreted as comprehensive statistics for the entirety of REPI projects nationwide. Usage and throughput data from installations that did not submit an FY 2020 proposal are not included.

Marine Corps Air Ground Combat Center (MCAGCC) 29 Palms

Overview

MCAGCC 29 Palms is responsible for training over 90 percent of all deploying Marine Corps forces. However, the installation's varying flight and ground maneuver operations are threatened by potential incompatible development and ESA regulatory restrictions associated with the federally threatened Mojave Desert tortoise. To date, the installation has protected 5,433 acres through restrictive easements that have primarily benefitted the Desert Bravo and Foxtrot helicopter routes. To mitigate current and limit future regulatory restrictions on installation activities, DoD has expended over $10 million on conservation initiatives concentrated on relocating the remaining populations of Mojave Desert tortoises and protecting their sensitive habitat.

Encroachment Threats

MCAGCC 29 Palms experiences a variety of encroachment threats that either currently impact installation operations or have the potential to impact installation operations in the near future. The most pressing encroachment threats are present along the southwestern border of the installation. This area contains the critical habitat and movement corridors of the Mojave Desert tortoise along with incompatible development that threatens key helicopter routes, the installation's drinking water aquifer, special use airspace, and the service level training environment. The presence of the Mojave Desert tortoise results in seasonally imposed restrictions, including closures and delays of training operations. Incompatible development in the same region impacts helicopter terrain flight operations and live-fire ground and air operations during Service-level Training Events. These threats are currently impacting the installation with future effects expected to worsen if the threats are not adequately managed.

Legend
- Executed Parcels
- Agreement Areas
- Priority Areas
- MCAGCC 29 Palms
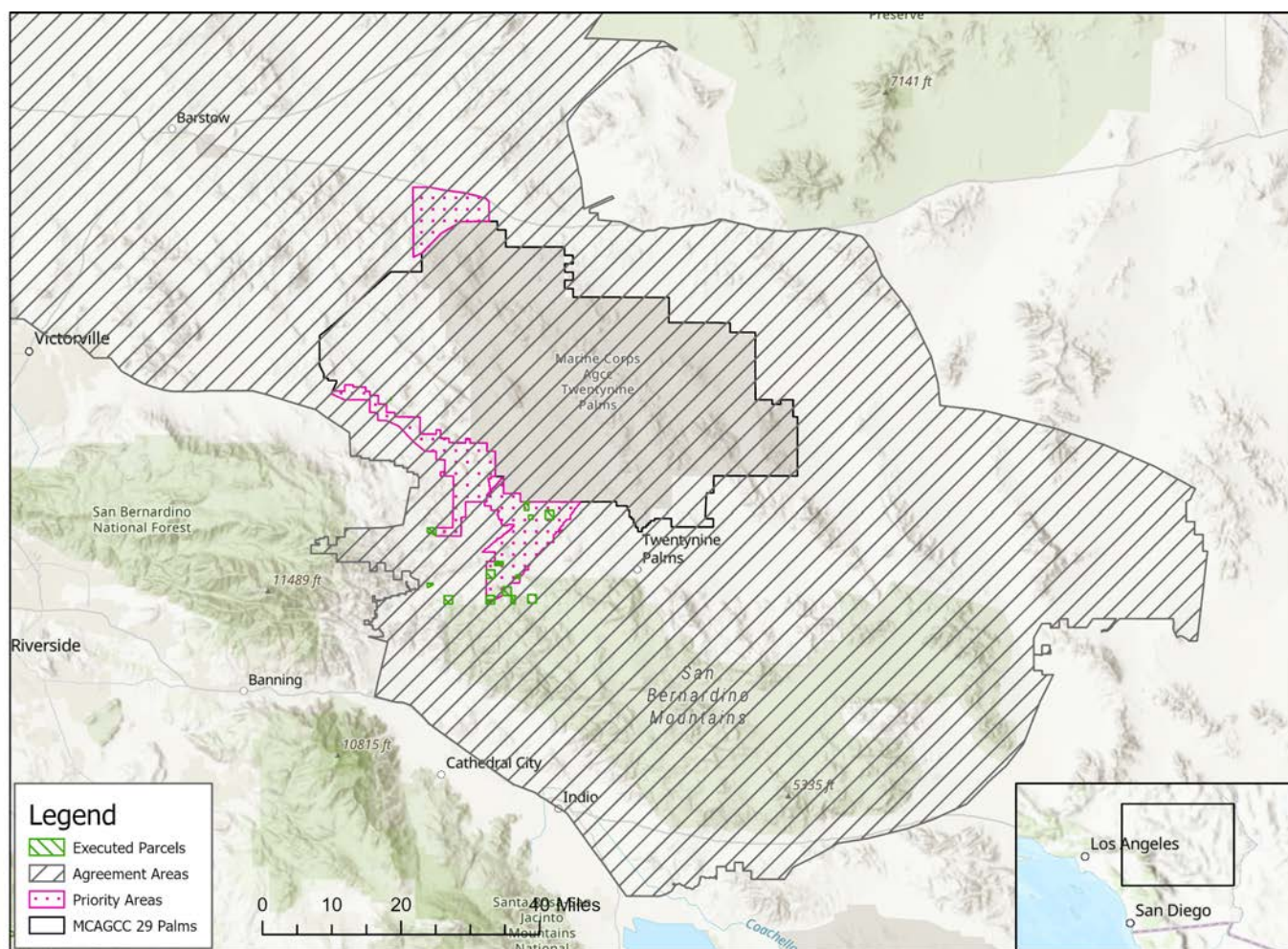
REPI Solution

MCAGCC 29 Palms uses a variety of planning documents and programs to inform its strategy, including its Encroachment Control Plan, the Real Estate Acquisition Strategy, and the West Mojave Plan. These documents have helped to address the planned renewable energy development along with the steady population growth in the Yucca Valley, Twentynine Palms, and Joshua Tree areas. To carry out these plans, the installation has been in close cooperation with county and local governments in the area to ensure that these protection efforts align with community goals while also ensuring military readiness. Additionally, the installation has a longstanding relationship with the Mojave Desert Land Trust that has an extensive history of conserving prime desert habitat and linking these pieces of land to create species corridors and limit habitat fragmentation.

MCAGCC 29 Palms has worked closely with the REPI program to obtain funding for these projects, resulting in the protection of over 5,400 acres. Project actions have been largely focused on one of two encroachment threats: either the ESA regulatory restrictions related to the threatened Mojave Desert tortoise species or the potential for incompatible development under critical training routes. In some cases, REPI funding has been used to protect land that addressed both encroachment threats. Limiting development in the surrounding area also benefits the installation by limiting draw from the installation's main water source, the Surprise Spring aquifer.

Return on Investment

MCAGCC 29 Palms has leveraged **$4 million** in DoD funding with **$4.1 million** in partner contributions to permanently prevent incompatible development, preserve the habitats of threatened and endangered species, and promote installation resilience on over **5,400 acres** surrounding the installation.[10] This REPI investment has helped to preserve or enhance at least **$1.4 billion**[11] in critical assets and mission capabilities including:

- Investments into the Marine Corps training ranges and Special Use Airspace for MCAGCC 29 Palms: **$1.4 billion**

- Military Construction of a new potable water blending plant on the installation between the Surprise Spring and Deadman subbasins: **$55 million**

About MCAGCC 29 Palms

Ninety percent of U.S. Marines train in pre-deployment events at MCAGCC 29 Palms, the Marine Corps' largest installation. Located in the Mojave Desert, the base provides vital training before deployment to desert combat areas. The culminating portions of training at 29 Palms cannot be replicated anywhere else in the United States because of its expansive desert environment and varied terrain.

Partners

- California Department of Parks and Recreation
- Copper Mountain College
- Mojave Desert Land Trust
- National Park Service
- The Trust for Public Land

---

[10] **Source:** Execution data submitted by the Navy in the REPI Database through FY 2020.

[11] **Source:** FY 2021 Proposal from MCAGCC 29 Palms.

4 | HOW DOES REPI SUPPORT DOD'S PRIORITY MISSIONS AND LOCATIONS?

In the recently released Interim National Security Strategic Guidance, President Joseph Biden identified a number of key goals that direct how the United States will engage with the world and ensure the American people will live in a peaceful, secure, and prosperous nation. While this is an overarching document that reaches far beyond the responsibilities of DoD and the REPI program, there are two areas that the REPI program can directly address and positively impact: addressing the threats posed by climate change and strengthening the United States' position in the Indo-Pacific region.

CLIMATE CHANGE, RESILIENCE, AND THE REPI PROGRAM

In recent years, Congress and DoD have emphasized that climate change threatens national security. The REPI program is expected to play a large role in addressing and implementing plans to address climate change impacts inside and outside DoD by exercising the newly granted authority under 10 U.S.C. §2684a. Congress amended the statute 10 U.S.C. § 2684a in FY 2019 and further amended in FY 2021 to authorize REPI projects to engage in activities to plan, prepare for, and recover from extreme weather events or unanticipated changes in environmental conditions. Environmental conditions threatening DoD missions can include, but are not limited to, coastal or riverine flooding, hurricanes or tropical storms, and wildfires. Using this new authority, the REPI program has the capacity to fund off-base natural infrastructure projects to effectively address climate change and installation resilience concerns at DoD installations in the United States and its territories.

Since FY 2019, the REPI program's focus on climate change and resilience has grown significantly. A total of 16 projects submitted climate change and resilience focused proposals in FY 2021. Half of these proposals viewed climate change adaptation and resilience as the primary focus of the project; the other half had other primary justifications for the proposed protection but had clear secondary benefits in support of installation resilience and climate change mitigation and adaptation.

In FY 2021 alone, these projects requested a total of $97 million that came with an expected $211.4 million in partner contributions, boasting a partner cost share of over 68 percent. When broken down to only include proposals with installation resilience and climate change listed as their primary justification, the proposals estimated $110.7 million in partner contributions and only requested $42 million from the REPI program, a partner cost share of nearly 73 percent. These climate change and resilience projects have drawn partner contributions and cost share rates that far exceed the values typically seen in the REPI program. These projects appear to be highly supported by our non-governmental partners and represent a strong opportunity for partners to get more involved with the REPI program.

These 16 projects identified several climate change vulnerabilities that their protection efforts are planning to address. The top climate change vulnerability identified was erosion, appearing in 10 of the 16 proposals. Rounding out the top three were coastal flooding and sea level rise with eight and six responses respectively.

Other installations identified wildfire and drought climate change vulnerabilities in their protection efforts. When looking at the full list of identified climate change vulnerabilities, it is evident that DoD installations across the United States are experiencing climate change-related encroachment that is either currently impacting the installation or will impact the installation in the near future.

REPI'S PROTECTION IN THE INDO-PACIFIC REGION

As stated in the Interim National Security Strategic Guidance, DoD is increasingly interested in strengthening its presence in the Indo-Pacific region to continue the development of a rules-based international order that invites freedom for all. The REPI program plays an important role in this process as a key tool used by DoD to protect existing installations from varying forms of encroachment.

As of the end of FY 2020, the REPI program has eight projects spread throughout Hawaii, Alaska, and Guam that are at varying stages in their respective protection programs. Of these eight projects, five are focused on incompatible development, five are providing natural resource management, and one has an installation resilience aspect, with some projects having more than one focus. Projects in this region are not limited to one single threat but rather have a number of differing encroachment threats that are currently impacting the installations or have the potential to impact them in the near future. To address these varying encroachment threats, the installations have most commonly used the 10 U.S.C. § 2684a authority to justify their REPI projects. However, installations have increasingly been using the Sikes Act authority to expand species and natural resource protection opportunities. Using the 2684a authority, installations within the Indo-Pacific region have used $136 million in REPI and partner funding to protect 15,629 acres since FY 2005. These REPI projects also include a 76 percent partner cost share equating to nearly $104 million in DoD cost savings to protect these valuable installations in the critical Indo-Pacific.

Success of REPI partnerships in this region has remained relatively steady over time, with the first REPI efforts beginning in 2006 and protection efforts occurring at least every two to three years since then. While Figure 5 displays a consistent level of protection across all projects, efforts in this region are different. Installations in the Indo-Pacific Command (INDOPACOM) region are highly unique and require years of planning and negotiating to make progress in protecting the installation. The military bases located on islands such as Hawaii and Guam have limited land to work with and cultural sites and beliefs to consider when conducting operations. This limits these installations' ability to achieve true mission protection in the region and requires significant effort to coordinate any REPI actions in the region. The REPI projects in Alaska at Fort Wainwright and Joint Base Elmendorf-Richardson require a similarly significant level of effort to initiate their projects, find partners, and carry out negotiations.

The requirements for significant time and monetary investments are compounded by the fact that a quarter of the 20 parcels are expecting incompatible use within two years and 70 percent more are projected to be impacted within two to five years. This means that installations in the INDOPACOM region must work rapidly to address the parcels that expect incompatible development within two years in the short term while also working diligently to plan for the 14 targeted parcels that would have a significant impact in the longer term. This becomes a much more difficult situation to manage when considering the variety of impacts at each installation and also within each region.

Hawaii's four installations with REPI projects are facing mission hindrances related to noise, ESA regulations, cultural resources, wildfire, and water resources. The variety of encroachment threats these installations experience while trying to develop a unified plan and execute the plan in the short, medium, and long term is a formidable challenge. Installations in Hawaii have had some success to date, protecting over 15,000 acres of land since 2006, but the threats in Hawaii are expected to continue to grow with dire consequences if they are not addressed in the coming decade.

While assessing the current and developing threats in the region, it is important to consider the significant value that these installations hold in their missions, assets, and capabilities. Based on submissions by the eight bases in the INDOPACOM region, there are an estimated $38.7 billion in DoD assets that are being protected by the REPI program. Some of the tangible assets in this region include an automated

multi-purpose training range at Joint Base Elmendorf-Richardson valued at $22 million; a collection of ammunition storage locations, ranges, runways, and wharves valued at $138 million in Guam; and the Aegis Ashore Missile Defense Test Complex at Pacific Missile Range Facility Barking Sands in Hawaii with an estimated value of $59.5 million. These are just some of the critical assets located at the Indo-Pacific region DoD installations. It is also important to note that the total estimated value of these assets does not include the invaluable strategic location of these installations, which significantly underrepresents the true value of these installations to DoD's overall mission.

Protection in this region is of paramount importance to the nation, making this a high priority target of the REPI program into the future. Within the Indo-Pacific region, it is increasingly clear that protecting these installations is critical to the DoD mission, but this protection will not be easy to achieve. The increased focus by DoD and the subsequent implementation of the REPI program will support these needs in the future.

5 | WHAT IS DOD'S FINANCIAL RETURN ON THE REPI PROGRAM'S EFFORT?

Since Congress signed 10 U.S.C. § 2684a into law in 2002, REPI partnership agreements have drawn partner funding that almost doubles the investment made by the Department. As illustrated in Figure 9, total investment in REPI projects represents just under $2.1 billion at a cost of only $1.1 billion to DoD, saving the Department over $975 million to address other priorities. The REPI program has provided $669 million to projects compared to $415 million from the Military Services, a majority of which was provided by the Army.

DoD strategically spends REPI funds to address the most prevalent encroachment restrictions at the given time. Figure 1 showed that noise, danger or safety zones, and threatened or endangered species presented the three most common encroachment restrictions that REPI funds are used to mitigate. Figure 10 breaks down the REPI expenditures by the encroachment restrictions they address. Unsurprisingly, DoD spent over $32 million to address noise-related encroachment restrictions. Expenditures on noise-

Figure 9 Cumulative DoD Expenditures and Partner Contributions through FY 2020[12]
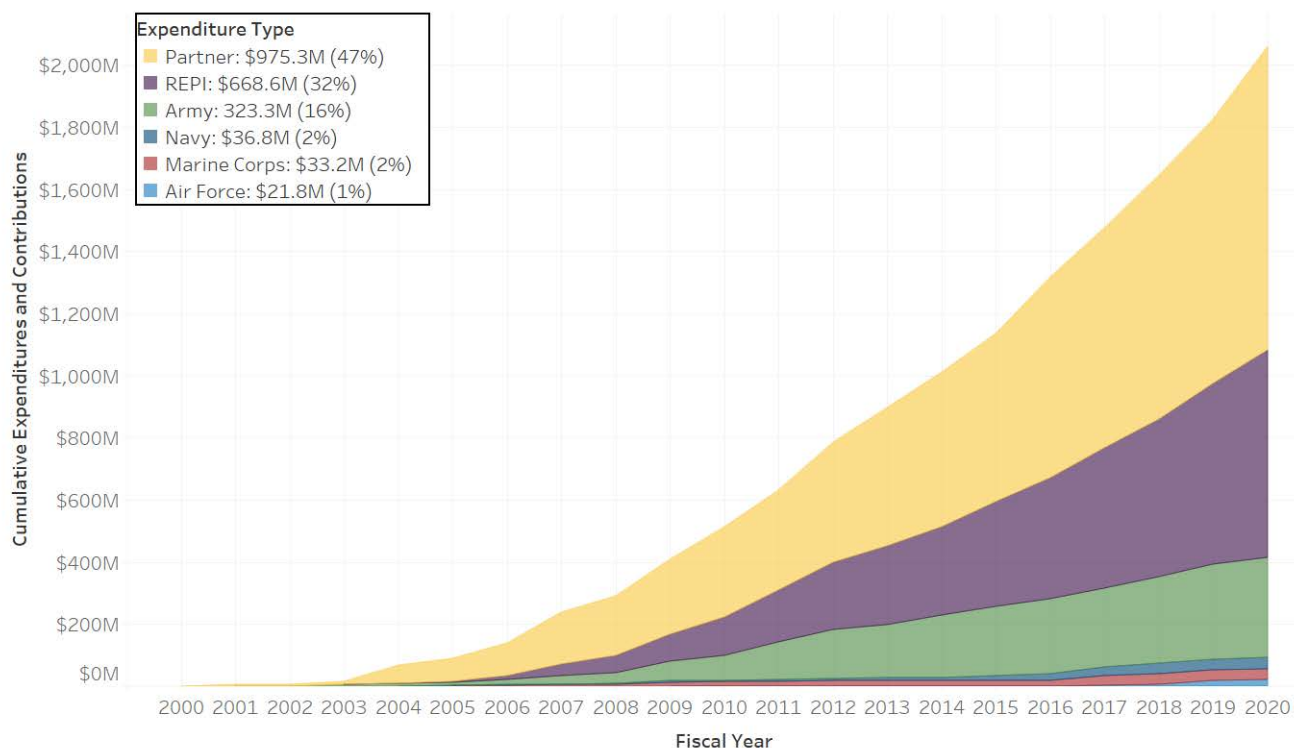
Source: Execution Data Submitted by the Military Services in the REPI Database through FY 2020

[12] Includes reported land protection efforts prior to 2003. For underlying data by Military Service, see Table 4 in Appendix B.

Figure 10 DoD Expenditures in FY 2020 to Address Encroachment Threats[13]
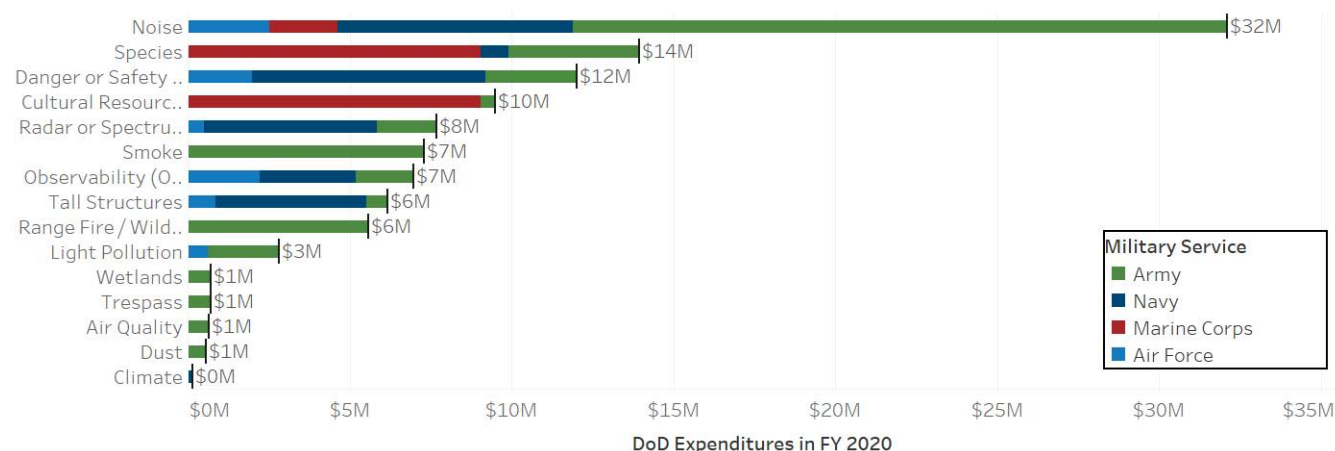
Sources: REPI Proposals from the Military Services, FY 2020 Execution Data Submitted by the Military Services in the REPI Database

related encroachment threats were over double the amount expended on the next highest encroachment threat. The next two categories with the highest expenditures in FY 2020 were species-restrictions with $14 million in expenses and over $12 million to address danger and safety zone concerns. It is important to note that a single parcel with expenditures can address multiple encroachment restrictions, and expenditures for which the Military Services reported more than one encroachment restriction are displayed in all associated categories.

When compared to the expenditures from FY 2019, the top two categories stayed the same while danger and safety zone concerns rounded out the top three, replacing observability and operational security restrictions. Another important trend to analyze year over year is the total expenditure value in FY 2019 compared to FY 2020. At a glance, the expenditures appear to have dropped significantly between FY 2019 and FY 2020; however this is not the case. In FY 2020, a greater amount of the total value of DoD funds expended—$65.0 million—was excluded from this analysis than was the case in FY 2019 when only $47.9 million was removed. This value of expenditures was removed from the analysis as it was spent on parcels that did not have the appropriate data for this analysis. Due to the recent implementation of this data collection process, some parcels protected in FY 2020 did not have the necessary data to be included in this graphic.

As time passes, the amount of expenditures excluded from the analysis should decrease as newer parcels that have the necessary data continue to be protected. This makes it seem like DoD spent less money in FY 2020 even though the total amount of expenditures was consistent from year to year.

Investments made through the REPI program are critical in sustaining valuable DoD assets and capabilities, with many identified as high priorities in national security and policy. Unrestricted access to and use of training, testing, and operations across DoD installations instills military readiness in an effort to maintain and build a more lethal Joint Force capable of protecting the American people and the nation's vital interests. Figure 11 organizes these capabilities by value, presenting the array of assets and capabilities that REPI efforts protect from encroachment. Overall, installations have submitted almost $621 billion in assets and capabilities that have benefited from the REPI program's protection and encroachment mitigation.

It is important to note that some projects submitted by the installations provided estimates of the value of the entire installation, as the REPI project generally supports all missions at the installation to some extent. As was the case with projected development timelines, the REPI program office is working with the Military Services and installations to more accurately portray the protected parcels with the value of the

---

[13] "DoD Expenditures" include REPI and Military Service expenditures. The Military Services may select multiple encroachment threats for each parcel that has expenditures. Expenditures are included in all encroachment categories displayed if the Military Services reported more than one for any given parcel. REPI began collecting parcel-level encroachment threat data in FY 2017; as a result, many executed parcels still do not contain this information even though the data gap is improving each year. Excludes $63.3 million spent on parcels in FY 2020 that do not have any corresponding encroachment threat data. Expenditure data is current as of the end of FY 2020. For underlying data by Military Service, see Table 5 in Appendix B.

assets they shield from encroachment. At this stage in metric reporting, the valuations as submitted by the installations and validated by Service Headquarters remain as reported in their proposals. Some examples of assets and capabilities protected through the REPI program include the new Armor School and Maneuver Center of Excellence infrastructure at Fort Benning and Fort Stewart valued at $3.5 billion, the F-35 basing requirements at Marine Corps Air Station Miramar valued at $274 million, and the $40 million valuation of the Marine Corps Base Hawaii training ranges. The REPI program supports a wide variety of assets ranging from warfighting assets to natural infrastructure services that are critical in support of the National Defense Strategy.

As Figure 11 shows, REPI, Military Service, and partner contributions prevent and mitigate the effect of encroachment threats to billions of dollars of DoD capabilities and assets. Assets valued between $1 million and $100 million, a reasonable grouping of DoD's small value capabilities and assets, alone account for over $6.3 billion in capabilities preserved or enhanced by REPI. Therefore, the submitted value of existing installation infrastructure, real estate, military construction projects, capital improvement projects, O&M costs, and natural resources that REPI projects partially or fully shielded from encroachment threats is significantly higher than DoD's investment of approximately $1 billion in REPI projects.

Figure 11 Estimated Values of Example DoD Investments in Mission Capabilities Preserved or Enhanced by REPI[14]

$1M-$100M
- Number of DoD Investments in Military Capabilities Valued at $1M-$100M Preserved or Enhanced by REPI: 252
- Total Value of DoD Investments in Military Capabilities Valued at $1M-$100M Preserved or Enhanced by REPI: $6,313M
- Example DoD Investments in Military Capabilities Valued at $1-$100M Preserved or Enhanced by REPI: Training Ranges at Marine Corps Base Hawaii valued at $40M

$100M-$1B
- Number of DoD Investments in Military Capabilities Valued at $100M-$1B Preserved or Enhanced by REPI: 144
- Total Value of DoD Investments in Military Capabilities Valued at $100M-$1B Preserved or Enhanced by REPI: $55,573M
- Example DoD Investments in Military Capabilities Vauled at $100M-$1B Preserved or Enhanced by REPI: F-35 basing requirements at MCAS Miramar valued at $274M

>$1B
- Number of DoD Investment in Military Capabilities Valued at >$1B Preserved or Enhanced by REPI: 67
- Total Value: $559,057M
- Example DoD Investments in Military Capabilities Valued at >$1B Preserved or Enhanced by REPI: Armor School and Maneuver Center of Excellence infrastructure at Fort Benning and Fort Stewart valued at $3.5 billion

$100K-$1M
- Number of DoD Investments: 25
- Total Value: $12M

Sources: REPI Proposals from the Military Services, Execution Data Submitted by the Military Services in the REPI Database through FY 2020, Construction Programs (C-1) Reports from DoD Comptroller

---

[14] Projects may not provide monetary values for mission capabilities as part of their REPI proposals. These examples reflect a small sample of mission capability value data reported in the FY 2020 REPI proposals and should not be interpreted as comprehensive statistics for the entirety of REPI projects nationwide.

Fort Bragg

Overview

The REPI project at Fort Bragg, one of the largest military installations in the world, has helped to protect the installation's mission from growing development. Sprawl in Hoke, Moore, and Harnett Counties surrounding the installation restricts a variety of training operations on the installation while also exacerbating the regulatory burden due to the presence of the federally protected red cockaded woodpecker (RCW). The installation's robust REPI project has protected nearly 23,000 acres around the installation that have supported the endangered woodpecker's populations and reduced incompatible development around the installation. Protecting Fort Bragg's uniquely large property from encroachment is important to the DoD mission as the installation provides critical training opportunities to Army forces year round.

Encroachment Threats

Population growth around Fort Bragg is the primary threat to the installation's operations. The cities of Fayetteville and Spring Lake have historically been areas of concern when it comes to population growth, but in recent years, development has increased significantly in all directions surrounding the installation. Land in these areas is quickly shifting from rural, low-density land uses to urban and transitional purposes. These new developments are leading to high-density living that threatens the installation's live fire and ground maneuver operations. Without a prompt response to this development, the installation will soon become "urban-locked," surrounded on all sides with high-density development. Protecting land close to the installation in Hoke, Moore, and Harnett Counties is of paramount importance to reduce incompatible development around Fort Bragg.

In addition to threatening the installation's mission, incompatible development in the area exacerbates
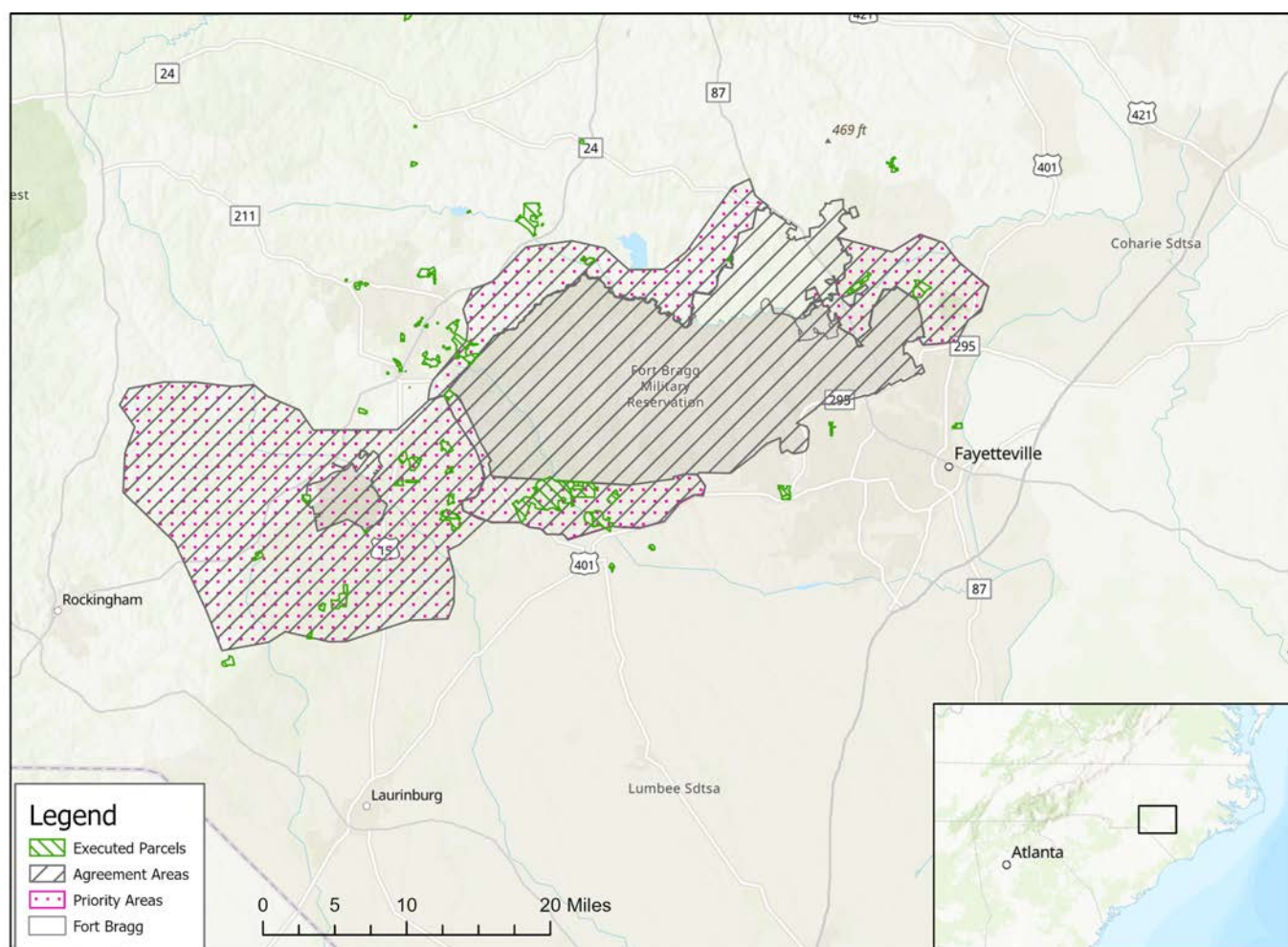
current concerns and ESA regulations related to the federally endangered RCW. Fort Bragg is known to have one of the largest remaining populations of the endangered species, making it critically important to continue and advance current efforts to protect the woodpecker around the installation and reduce the regulatory burden on operations.

REPI Solution

Fort Bragg's initial encroachment management practices provided the model for legislative authorities to address encroachment outside of military installation boundaries. The installation's longstanding Army Compatible Use Buffer program, in collaboration with the REPI program, has been critical to ensure Fort Bragg's protection from any potential encroachment threats. The installation's top priority is along the eastern border of the installation where protection focuses on restricting observation of the Pope Army Air Field and maintaining the option to extend the runway in the future. In this region, the installation has protected over 72 percent of the targeted acres, effectively reducing additional encumbrances on training operations. As an added benefit, this region also contains a large population of RCWs and continued protection of this land provides an essential travel corridor for the endangered species. The installation has also spent considerable time and resources along the southern and northern borders of the installation to limit incompatible development that could result in threats to public safety and an increase in noise complaints. These efforts are focused on protecting critical capabilities such as low altitude rotary-wing aircraft corridors and live fire ranges.

To implement and fund these efforts, Fort Bragg has worked with a variety of partners and programs. The North Carolina Sandhills Conservation Partnership, of which Fort Bragg serves as the co-chair, is of critical importance for the preservation of the RCW and other conservation efforts in the region. This organization supports the installation in preservation efforts by identifying parcels that support priority habitats, smoke buffers, and connective corridors. The Nature Conservancy also serves a critical role in helping Fort Bragg identify suitable parcels for protection, conduct negotiations and due diligence, and apply for grants to offset costs for the installation. State institutions,

such as the North Carolina Agricultural Development and Farmland Preservation Trust, also provide funding assistance through grants. With the support of these critical partners, these ongoing efforts have resulted in the recovery of the RCW and have helped shift the focus of the project towards physical encroachment and away from the past struggles with the ESA regulatory burden.

Return on Investment

Fort Bragg has leveraged **$34.6 million** in DoD funding with **$42.7 million** in partner contributions to permanently prevent incompatible development and preserve and restore habitat for the RCW on almost **24,000 acres** surrounding the installation.[15] Acquisition efforts are generally focused along the eastern and southwestern borders of the installation protecting RCW habitat shielding from sprawl around Fayetteville, respectively. This REPI investment has helped to preserve or enhance at least **$1.9 billion**[16] in critical assets and mission capabilities including:

- Real Estate Value of Fort Bragg: **$800 million**
- 82 live fire ranges and complexes: **$1 billion**
- Upgrades and Improvements to Aberdeen Facilities: **$110 million**

About Fort Bragg

Located in southeastern North Carolina, Fort Bragg is one of the largest military installations in the world. The 82nd Airborne and U.S. Army Special Operations Forces are among many U.S. military forces that utilize the installation's vast landscape. Known as the largest U.S. Army base by population, the installation supports over 52,000 active duty service members and another 25,000 reserve members, civilians, and other support employees.

Partners

- National Fish and Wildlife Foundation
- North Carolina Agricultural Development and Farmland Preservation Trust
- North Carolina Department of Agriculture
- North Carolina Division of Parks and Recreation
- North Carolina Sandhills Conservation Partnership
- North Carolina Wildlife Resources Commission
- Sandhills Area Land Trust
- Sandhills Ecological Institute
- The Nature Conservancy
- U.S. Department of Agriculture—Natural Resources Conservation Service

[15] **Source:** Execution data submitted by the Air Force in the REPI Database through FY 2020.

[16] **Source:** FY 2021 Proposal from Fort Bragg.

When submitting a proposal for REPI funds, the Military Services must articulate each project's desired end state. This requires listing the total amount of land protection necessary to preserve and enhance mission capabilities while eliminating restrictions on testing, training, and operations. As of the end of FY 2020, the program has preserved 15.5 percent of the land targeted for protection using 10 U.S.C. § 2684a, excluding a number of projects that either just started receiving funding in FY 2021 or have insufficient desired end state data. The progress toward completion value decreased by half a percentage point compared to FY 2019, but that can generally be attributed to the addition of six projects into the analysis.

Figure 12 presents the distribution of REPI projects based upon the percentage of acres currently protected within each project's desired end state. Approximately 15 percent of REPI projects are complete, a slight increase from 13 percent last year, and another 16 percent are more than halfway to completion. New projects and projects that have yet to execute any real estate transactions constitute 17 percent of projects. Most REPI projects are between one percent and 49 percent complete, showing a general increase in progress toward completion for projects overall. It is important to recognize that REPI projects do not necessarily need to be complete before the installations can begin to benefit from REPI investments. In most cases, the protection of high-priority land parcels

Figure 12 Distribution of Progress Toward Completion for REPI Projects by Status[17]
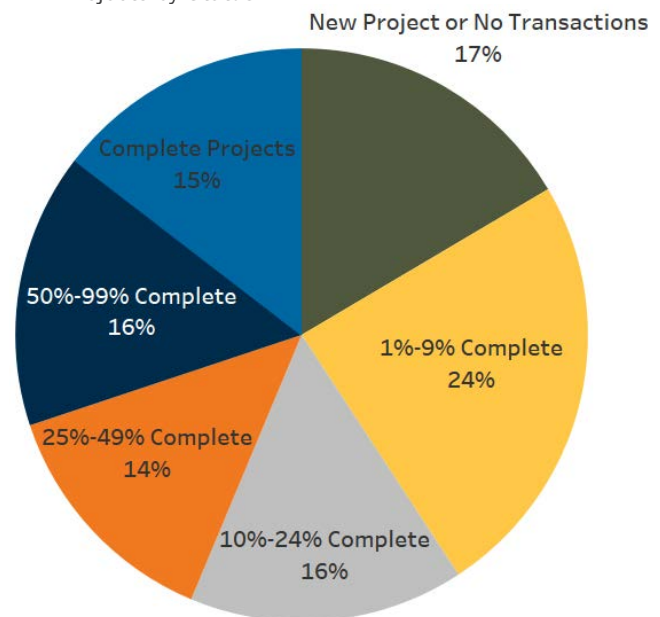
Source: REPI Proposals and Execution Data submitted by the Military Services

through REPI allows for the immediate mitigation and prevention of some adverse effects of encroachment.

Figure 13 illustrates each project's progress toward completion across each Military Service's portfolio. As evidenced in the number of projects in the early stages, there is a growing need for REPI to address mission changes, technological advances that require new platforms, and increased encroachment

---

[17] Progress is represented by the number of acres that a project has preserved as a proportion of its desired end state goal requiring protection under 10 U.S.C. § 2684a. Does not include projects that have not closed any parcels or projects with incomplete or invalid desired end state data. Completed acreage is current as of the end of FY 2020. For underlying data by Military Service, see Table 6 in Appendix B.

Figure 13 Distribution of Progress Toward Completion for REPI Projects by Military Service[18]
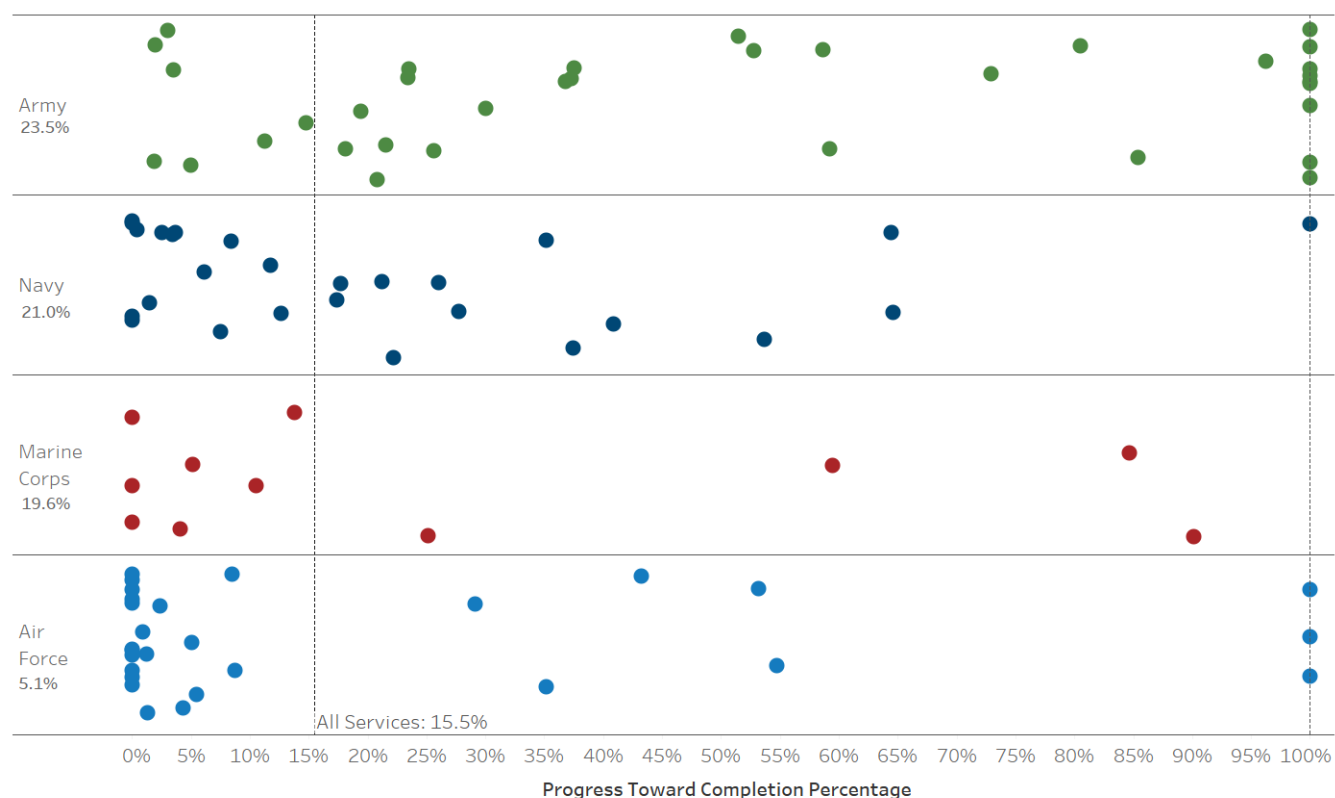
Sources: REPI Proposals from the Military Services, Execution Data Submitted by the Military Services in the REPI Database through FY 2020

restrictions at installations across the country. The Congressional authority provided by 10 U.S.C. §2684a also continues to be amended, expanding opportunities for new projects, such as the recent addition of projects focused on maintaining and improving military installation resilience to climate change. As a result, the program expects to receive requests to fund more new resilience projects over the coming years, which will impact these performance measures since they are dynamic and only represent a snapshot of the program at the time of this report. Following historic trends, the Army maintains its status as having the most active land preservation program through REPI. Based on data through the FY 2021 proposal process, almost 24 percent of desired land has been protected to date. This has increased by just over three percent since last year's report. The Navy and Marine Corps also experienced gains of approximately 10 and two percent respectively. Alternatively, the Air Force's progress toward completion declined by over five percentage

points to five percent this year. This decrease mainly occurred due to the new addition of five new projects into the calculation.

The Military Services often adjust a project's desired end state due to shifts in missions, priorities, and encroachment restrictions at the respective installation. These updates, along with the addition of new or previously excluded projects, can cause fluctuations on Service-specific and DoD-wide progress metrics despite significant gains at the project level.

The types of encroachment pressures impacting military missions have and will continue to evolve and the number of installations reporting encroachment threats has grown. The vast majority of REPI projects are multi-year projects, and many require over a decade of sustained planning and transactions with partners and landowners to mitigate all known threats. As a result, most projects are ongoing and could remain ongoing as encroachment challenges evolve.

---

[18] Progress is represented by the number of acres that a project has preserved as a proportion of its desired end state goal requiring protection under 10 U.S.C. § 2684a. Does not include projects that have not closed any parcels or projects with incomplete or invalid desired end state data. Completed acreage is current as of the end of FY 2020. This year's analysis includes all installations listed in the FY21 Report to Congress with the exception of those projects that lack sufficient desired end state data or expenditure history. For underlying data by Military Service, see Table 6 in Appendix B.

Camp Ripley

Overview

Camp Ripley, one of the REPI program's unique and most successful projects, is a premier National Guard Training Center that offers a variety of training and testing capabilities for both military and civilian organizations. However, extensive population growth and residential development along the installation boundary have threatened the operations of these capabilities. Over the past 17 years, the REPI program has helped the installation protect almost 41,000 acres spread out over 218 parcels. These efforts have provided much needed ESA regulatory relief to the installation, but REPI still has a significant role to play at Camp Ripley, which is located within the fastest growing region in Minnesota.

Encroachment Threats

Camp Ripley has been threatened by residential development proximate to the installation boundary. Any development this close to the installation exacerbates existing concerns regarding noise, smoke, and dust generated from live fire and artillery operations. Development along the southeastern border of the installation also has the potential to impact fixed- and rotary-wing flight operations due to increased light pollution and potential for noise complaints. Incompatible development impacts military installations in multiple ways. Residential and commercial development has the potential to restrict operations through increased complaints while also further fragmenting the habitat of federally protected species such as the northern long-eared bat and the bald eagle, increasing the likelihood of regulatory restrictions. If encroachment is not addressed proactively, it will lead to additional restraints on approved flight maneuvers but also the total number of operations.

Legend
- Executed Parcels
- Agreement Areas
- Priority Areas
- Camp Ripley

0 5 10 20 Miles
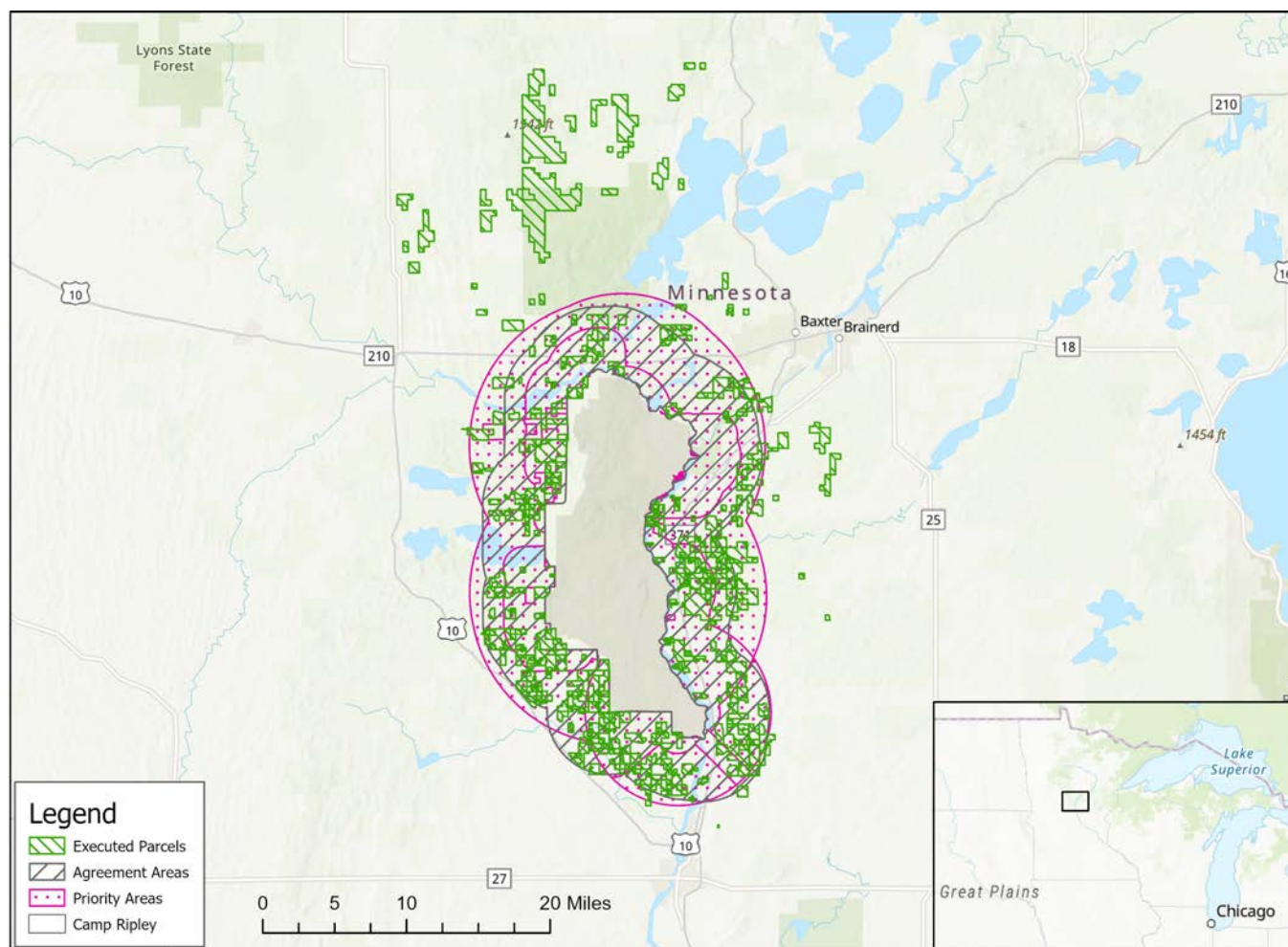
REPI Solution

Since 2004, the REPI program has helped to protect over 40,000 acres surrounding the installation. Protection is not focused on particular regions of the installation boundary, but rather focuses on areas within high operational noise contours as a priority and then extends outwards for lower priority protection areas. Almost 15,000 acres have been protected in the highest priority area, supporting the continued operation of demolition, artillery blast, and fixed- and rotary-wing aircraft operations. These practices to limit incompatible development allow Camp Ripley to continue conducting an estimated 13,500 air operations and over 1,000 aircraft conduct missions annually. On-installation areas that have benefitted most from the protection include the Infantry Squad Battle Course, a C-130 paved runway, an Assault Landing Strip, and multiple tank gunnery ranges.

Camp Ripley participates in a variety of conservation planning initiatives including the Camp Ripley Site Development Plan, the Range Complex Master Plan, the Camp Ripley Range Sustainment Program, and the Camp Ripley Sentinel Landscape[19] Strategic Plan, in addition to other local planning and zoning programs. These efforts support Camp Ripley's goal to sustain the installation's mission and ensure soldier readiness while also maintaining positive relationships with surrounding communities. To nurture these relationships with the local stakeholders, the installation created a Citizen Advisory Committee filled with prominent members of the community to manage the direction of the Army Compatible Use Buffer program. The installation also developed an incident response system to collect and address any community concerns caused by installation operations.

Return on Investment

Camp Ripley has leveraged **$39.2 million** in DoD funding with **$85.5 million** in partner contributions to permanently prevent incompatible development and enhance installation resilience on almost **41,000 acres** surrounding the installation.[20] Protected land shields a variety of mission capabilities from the impacts of incompatible development. Protected areas are largely focused on parcels within demolition, artillery blast, and low altitude aviation noise contours outside the installation. This REPI investment has helped to preserve or enhance at least **$430 million**[21] in critical assets and mission capabilities including:

- Construction of Multi-Purpose Machine Gun Range, Unmanned Aircraft Systems runway, and Digital Multipurpose Training Ranges: **$80 million**
- Operations at Small Caliber Weapons Firing Range: **$130 million**
- Operations at Large Caliber Weapons Firing Range: **$120 million**
- Operations on the Installation Airfield: **$100 million**

About Camp Ripley

Camp Ripley, an important Army National Guard post, is located near Little Falls, Minnesota. Due to its location, Camp Ripley serves as the primary U.S. winter training site for the National Guard and supports ground vehicle maneuver training and live-fire artillery and bombing training on the 53,000 acre installation. Camp Ripley also hosts training exercises of foreign units on a regular basis as well as for active duty components and civilian agencies.

Partners

- Cass County
- Cass Soil and Water Conservation District
- Crow Wing County
- Crow Wing Soil and Water Conservation District
- Ducks Unlimited
- Lessard-Sams Outdoor Heritage Council
- Minnesota Board of Water and Soil Resources
- Minnesota Deer Hunters Association
- Minnesota Department of Natural Resources
- Minnesota Land Trust
- Morrison County
- Morrison Soil and Water Conservation District
- National Wild Turkey Federation
- The Nature Conservancy
- Parks and Trails Council
- The Conservation Fund
- The Trust for Public Land
- U.S. Department of Agriculture-Natural Resources Conservation Service

---

[19] The Sentinel Landscapes Partnership is a coalition of federal agencies, state and local governments, and non-governmental organizations that works with private landowners to advance sustainable land management practices around military installations and ranges. For more information on Sentinel Landscapes, visit **https://sentinellandscapes.org/**.

[20] **Source:** Execution data submitted by the Army in the REPI Database through FY 2020.

[21] **Source:** FY 2021 Proposal from Camp Ripley.

APPENDIX A:
ENCROACHMENT THREATS AND RESTRICTED ACTIVITIES REPORTED IN REPI PROJECT PROPOSALS

Figure 14 Encroachment Threats Reported in REPI Project Proposals[22]

Service	Installation	Air Quality	Climate	Cultural Resources	Danger or Safety Zones	Dust	Light Pollution	Noise	Observability (OPSEC)	Other	Radar or Spectrum	Range Fire / Wild Fire	Smoke	Species	Tall Structures	Trespass	Water Quality	Water Quantity	Wetlands
Air Force	Avon Park Air Force Range				•		•	•	•		•	•	•	•	•				
	Cannon AFB			•															
	Columbus AFB				•	•	•	•	•	•	•				•			•	
	Dare County Bombing Range							•			•				•				
	Davis-Monthan AFB				•			•			•								
	Ellsworth AFB				•			•							•		•		
	Hill AFB				•		•	•							•			•	
	Homestead Air Reserve Base		•		•			•	•		•				•				
	JBLE-Langley							•	•	•					•				
	JBSA-Lackland				•			•	•	•	•					•			
	JBSA-Randolph				•			•	•	•	•			•	•	•			
	US Air Force Academy					•	•	•	•	•			•		•	•			
	Vandenberg AFB			•	•			•		•	•	•		•	•	•	•	•	•
Army	Aberdeen Proving Ground							•	•					•	•	•			•
	Camp Blanding	•		•			•	•				•	•	•			•		•
	Camp Butner							•					•				•		
	Camp Navajo		•	•	•			•						•					
	Camp Ripley			•		•		•					•	•					
	Camp Roberts	•		•				•					•	•					•
	Camp San Luis Obispo			•		•		•	•				•	•					
	Camp Swift			•		•		•	•			•	•			•			
	Camp Williams							•					•	•					
	Fort A.P. Hill						•	•			•		•	•					
	Fort Bragg				•			•	•	•	•			•					•
	Fort Bragg USASOC							•		•	•						•		
	Fort Campbell						•	•			•				•	•			
	Fort Harrison				•	•		•				•	•			•			
	Fort Hood	•	•		•	•						•	•						
	Fort Huachuca				•			•			•			•					
	Fort Indiantown Gap			•	•	•	•	•						•	•	•			•
	Fort Pickett						•	•	•		•	•	•	•					
	Fort Stewart				•			•			•		•						
	JBSA - Camp Bullis			•			•	•					•	•		•			
	MAJIC	•		•	•	•	•	•	•		•	•	•	•	•		•		
	USAG-HI C			•	•			•				•		•					
	White Sands Missile Range	•		•	•	•	•	•	•		•		•	•	•				
Marine Corps	MCAGCC 29 Palms					•	•	•	•		•			•		•	•		
	MCAS Beaufort				•		•	•	•	•				•					
	MCAS Cherry Point				•			•			•			•	•	•			•
	MCAS Miramar											•		•					
	MCAS Yuma and BMGR-W				•			•		•	•			•	•				
	MCB Camp Lejeune							•			•			•	•				•
	MCB Camp Pendleton		•	•	•			•						•					
	MCB Hawaii				•			•			•			•	•				
Navy	Fallon Range Training Complex													•					
	Guam Region													•					•
	Jacksonville Area Installations				•			•			•		•	•	•				
	Joint Base Pearl Harbor Hickam								•						•	•	•	•	
	NAF El Centro						•	•		•						•			
	NAS Fallon							•	•		•			•					
	NAS Meridian				•			•			•			•					
	NAS Patuxent River		•		•			•			•			•					•
	NAS Pensacola				•		•	•			•			•					•
	NAS Whidbey Island							•											
	NAS Whiting Field		•		•		•	•						•	•	•			•
	Naval Base Coronado (NBC)		•		•	•		•	•	•		•	•	•	•	•	•		
	NB Kitsap				•			•			•			•			•		
	NO Flagstaff		•				•												
	NSA Crane Main Site					•		•	•		•								
	NSA Hampton Roads										•								
	NSB Kings Bay			•				•	•				•	•		•			
	NSF Dahlgren	•	•		•			•							•				
	NSY Portsmouth SERE School						•	•			•	•	•	•	•	•			•
	NWS Earle								•	•								•	
	NWSTF Boardman				•			•	•	•	•			•	•				
	Pacific Missile Range Facility													•					

Source: REPI Proposals from the Military Services

[22] Does not include projects that did not submit this encroachment data as part of their proposals. Includes existing or potential threats avoided or mitigated by the REPI project. Does not include threats addressed by other means.

Figure 15 Restricted Mission Capabilities Reported in REPI Project Proposals[23]

Service	Installation	Construction	Flight	Ground Disturbance	Ground Maneuver	Intelligence (C4ISR)	Live Fire	Maritime Training	Obscurants	Operations Security (OPSEC)	Ordnance Disposal	Other	Pyrotechnics	Radar and Navigation	Space	Static Detonation	Testing	Unmanned Aircraft Systems
Air Force	Avon Park Air Force Range		●		●		●			●	●	●		●		●		●
	Cannon AFB		●				●		●							●		
	Columbus AFB		●															
	Dare County Bombing Range		●				●							●				
	Davis-Monthan AFB		●															
	Ellsworth AFB	●	●	●	●									●				
	Hill AFB		●									●					●	
	Homestead Air Reserve Base		●								●							
	JBLE-Langley		●							●				●				
	JBSA-Lackland		●	●			●			●		●		●				
	JBSA-Randolph		●	●			●			●				●				
	US Air Force Academy		●	●	●		●		●	●			●			●		●
	Vandenberg AFB		●							●		●		●	●			
Army	Aberdeen Proving Ground	●	●	●	●		●	●		●						●		
	Camp Blanding	●	●	●	●		●		●			●				●		●
	Camp Butner		●	●	●		●					●						
	Camp Navajo	●	●	●	●		●		●			●						
	Camp Ripley		●	●	●		●		●									
	Camp Roberts		●		●		●		●									
	Camp San Luis Obispo		●		●		●		●			●						
	Camp Swift	●	●	●	●		●					●	●			●		
	Camp Williams	●		●	●		●					●				●		
	Fort A.P. Hill		●		●		●					●				●	●	
	Fort Bragg	●	●	●	●				●									●
	Fort Bragg USASOC				●					●								
	Fort Campbell		●		●		●							●				●
	Fort Harrison	●	●		●		●					●	●			●		●
	Fort Hood		●		●													
	Fort Huachuca		●		●		●										●	●
	Fort Indiantown Gap	●	●	●	●		●											●
	Fort Pickett		●		●		●		●	●								●
	Fort Stewart		●		●		●		●			●	●			●		●
	JBSA - Camp Bullis	●	●	●	●		●											
	MAJIC		●	●	●		●		●			●				●		
	USAG-HI C		●		●		●				●							●
	White Sands Missile Range	●	●	●	●		●		●					●			●	●
Marine Corps	MCAGCC 29 Palms		●		●		●			●	●	●				●	●	●
	MCAS Beaufort		●															
	MCAS Cherry Point	●	●		●		●						●	●				●
	MCAS Miramar			●	●							●						
	MCAS Yuma and BMGR-W	●	●				●							●			●	●
	MCB Camp Lejeune		●	●	●		●				●			●		●		●
	MCB Camp Pendleton		●	●	●		●											●
	MCB Hawaii		●		●		●											
Navy	Fallon Range Training Complex		●									●						
	Guam Region	●			●	●		●		●		●						
	Jacksonville Area Installations		●														●	
	Joint Base Pearl Harbor Hickam							●	●	●								
	NAF El Centro		●				●											
	NAS Fallon		●										●	●				●
	NAS Meridian		●															
	NAS Patuxent River	●	●	●										●			●	●
	NAS Pensacola		●											●				
	NAS Whidbey Island		●															
	NAS Whiting Field		●											●				●
	Naval Base Coronado (NBC)	●	●				●	●	●	●	●	●						
	NB Kitsap							●	●	●							●	●
	NO Flagstaff											●						
	NSA Crane Main Site															●	●	
	NSA Hampton Roads													●				
	NSB Kings Bay			●			●		●									
	NSF Dahlgren						●									●	●	
	NSY Portsmouth SERE School	●			●					●		●		●				
	NWS Earle						●						●					
	NWSTF Boardman		●							●			●	●				●
	Pacific Missile Range Facility		●				●			●							●	

Source: REPI Proposals from the Military Services

[23] Does not include projects that did not submit this encroachment data as part of their proposals. Includes existing or potential restrictions avoided or mitigated by the REPI project. Does not include restrictions addressed by other means.

APPENDIX B:
MILITARY SERVICE DATA TABLES

Table 1 Encroachment Restrictions Identified in FY 2021 REPI Proposals by Military Service (Number of Proposals)[24]

Encroachment Threat	Army	Navy	Marine Corps	Air Force	Total
Noise	21	14	7	12	54
Danger or Safety Zones	11	9	4	9	33
Species	14	10	5	3	32
Radar or Spectrum	7	10	5	9	31
Tall Structures	4	11	5	10	30
Light Pollution	11	5	2	8	26
Observability (OPSEC)	9	8	2	6	25
Smoke	13	4	0	2	19
Trespass	6	6	2	4	18
Cultural Resources	11	2	2	2	17
Range Fire / Wild Fire	10	2	1	2	15
Other	2	5	2	5	14
Wetlands	6	5	2	1	14
Dust	7	2	1	2	12
Water Quality	5	3	1	2	11
Climate	2	4	1	1	8
Air Quality	5	1	0	0	6
Water Quantity	0	2	0	3	5

Table 2 Total Acres Protected by REPI Projects through FY 2020 by Military Service[25]

Military Service	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total Acres Protected
Army	6,040	28,402	8,114	8,676	23,153	14,540	21,846	18,393	34,505	35,008	25,945	22,318	21,382	33,842	12,252	26,769	40,069	31,815	413,067
Navy		48		2,508	402	430	3,088	1,729	2,595	3,163	8,817	3,398	8,156	8,712	10,555	31,438	11,505	31,874	128,417
Marine Corps			821	475	2,716	16,052	1,777	8,672	3,349	2,200	8,491	3,011	5,508	6,771	30,530	3,057	6,775	861	101,063
Air Force			236		246	275	29	3,670	3,530	8,212	10,131	23,332	2,972	3,338	1,508	6,478	44,725	6,069	114,750
Total Annual Acres Protected	6,040	28,450	9,171	11,659	26,517	31,297	26,740	32,463	43,979	48,583	53,382	52,058	38,018	52,662	54,844	67,741	103,074	70,620	757,297
Cumulative Acres Protected	6,040	34,490	43,661	55,319	81,836	113,133	139,874	172,337	216,316	264,899	318,282	370,339	408,357	461,019	515,863	583,603	686,677	757,297	

[24] Projects may select multiple encroachment threats. Projects that reported more than one encroachment threat are included in all categories selected. Installations that did not submit an FY 2021 proposal are not included. These totals do not reflect the severity of the threat, nor do they include encroachment pressures mitigated by other means.

[25] Data is current as of the end of FY 2020, as reported in the 2021 REPI Report to Congress. Includes reported land protection efforts prior to 2003.

Table 3 Acres Protected in FY 2020 to Preserve or Enhance Mission Capabilities by Military Service[26]

Military Service	Construction	Flight	Ground Disturbance	Ground Maneuver	Live Fire	Maritime Training	Obscurants	Operations Security (OPSEC)	Pyrotechnics	Radar and Navigation	Testing	Unmanned Aircraft Systems
Air Force	-	2,088	-	-	-	-	-	24	-	-	-	-
Army	260	4,843	-	1,244	1,772	-	459	539	350	-	-	410
Marine Corps	-	76	712	41	712	-	-	-	-	-	-	-
Navy	-	1,979	-	-	584	19	636	236	-	374	1,200	-
Grand Total	**260**	**8,986**	**712**	**1,284**	**3,068**	**19**	**1,095**	**798**	**350**	**374**	**1,200**	**410**

Table 4 Cumulative DoD Expenditures and Partner Contributions through FY 2020 (Millions)[27]

Source	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Partner	$0.8	$5.2	$0.2	$3.3	$49.4	$14.9	$32.0	$61.0	$25.4	$49.8
REPI	$0.0	$0.0	$0.0	$0.0	$0.0	$4.6	$5.7	$26.8	$17.0	$32.0
Army	$0.0	$0.0	$0.0	$6.4	$1.0	$1.7	$8.5	$7.8	$9.5	$26.6
Navy	$0.0	$0.0	$0.0	$0.0	$0.5	$0.0	$1.7	$0.4	$0.0	$2.0
Marine Corps	$0.0	$0.0	$0.0	$0.0	$0.0	$1.7	$1.4	$1.6	$2.4	$6.6
Air Force	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2
Grand Total	**$0.8**	**$5.2**	**$0.2**	**$9.7**	**$50.9**	**$23.0**	**$49.3**	**$97.6**	**$54.3**	**$117.1**

Table 4 (continued) Cumulative DoD Expenditures and Partner Contributions through FY 2020 (Millions)[26]

Source	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Partner	$50.2	$29.2	$64.2	$61.2	$50.1	$44.1	$105.4	$61.8	$77.8	$64.3	$124.9
REPI	$37.0	$43.3	$48.7	$37.4	$30.6	$54.4	$54.1	$62.4	$55.6	$70.6	$88.3
Army	$17.5	$41.6	$37.4	$13.5	$30.1	$20.6	$19.2	$10.4	$25.9	$27.9	$17.5
Navy	$0.2	$1.0	$1.2	$0.9	$1.7	$4.5	$4.7	$8.4	$6.5	$2.3	$0.9
Marine Corps	$1.3	$0.0	$3.2	$0.0	$0.3	$0.0	$0.0	$14.2	$0.1	$0.0	$0.4
Air Force	$0.1	$0.0	$0.0	$0.0	$0.2	$0.1	$0.9	$0.7	$4.5	$12.6	$2.4
Grand Total	**$106.4**	**$115.2**	**$154.8**	**$113.0**	**$113.0**	**$123.6**	**$184.4**	**$158.0**	**$170.3**	**$177.6**	**$234.5**

[26] The Military Services may select multiple mission capabilities for each parcel. Acres protected are included in all mission capability categories displayed if the Military Services reported more than one for any given parcel. Excludes 45,403 acres that were protected in FY 2020 but do not have any corresponding mission capability data. Acreage data is current as of the end of FY 2020.

[27] Includes reported land protection efforts prior to 2003.

Table 5 DoD Expenditures in FY 2020 to Address Encroachment Restrictions by Military Service (Millions)[28]

Encroachment Threat	Navy	Marine Corps	Army	Air Force	Total
Air Quality	$0.00	$0.00	$0.67	$0.00	$0.67
Climate	$0.16	$0.00	$0.00	$0.00	$0.16
Cultural Resources	$0.00	$9.06	$0.44	$0.00	$9.50
Danger or Safety Zones	$7.20	$0.00	$2.80	$2.00	$12.00
Dust	$0.00	$0.00	$0.55	$0.00	$0.55
Light Pollution	$0.00	$0.00	$2.21	$0.62	$2.83
Noise	$7.27	$2.10	$20.23	$2.52	$32.11
Observability (OPSEC)	$2.96	$0.00	$1.79	$2.24	$6.98
Radar or Spectrum	$5.34	$0.00	$1.82	$0.51	$7.67
Range Fire / Wild Fire	$0.00	$0.00	$5.59	$0.00	$5.59
Smoke	$0.00	$0.00	$7.31	$0.00	$7.31
Species	$0.86	$9.06	$4.02	$0.00	$13.93
Tall Structures	$4.67	$0.00	$0.67	$0.85	$6.18
Trespass	$0.00	$0.00	$0.73	$0.00	$0.73
Wetlands	$0.00	$0.00	$0.73	$0.00	$0.73

Table 6 Progress Toward Completion through FY 2020 by Military Service[29]

Army	Navy	Marine Corps	Air Force
Complete Projects			
99th Armed Forces Reserve Center	NAS JRB New Orleans		Buckley AFB
Camp Bullis			Cape Canaveral AFS
Fort Bliss			Fairchild AFB
Fort Carson			Robins AFB
Fort Custer			Warren Grove Range
Fort Gordon			
Fort Knox			
Fort Polk			
Southeast Regional Army Project			
50%-99% Complete			
Camp Blanding	Jacksonville Area Installations	MCAGCC 29 Palms	Beale AFB
Camp Ripley	Joint Base Pearl Harbor Hickam (JBPHH) Compatible Land Use Buffers	MCB Camp Lejeune and MCAS New River	JBLE-Langley
Camp Roberts	NAS Fallon	Townsend Bombing Range	
Fort Bragg USASOC			
Fort Campbell ACUB-REPI Proposal			
Fort Pickett			
Fort Stewart			
USAG-HI C			
25%-49% Complete			
Camp San Luis Obispo	Fallon Range Training Complex	MCB Quantico	Avon Park Air Force Range (APAFR)
Fort A.P. Hill	NAS Meridian		Ellsworth AFB
Fort Bragg	NAS Whiting Field		Melrose Air Force Range
Fort Riley	NB Kitsap		
Fort Sill	NSY Portsmouth SERE School		
10%-24% Complete			
Camp Butner REPI proposal	NAS Patuxent River - Atlantic Test Ranges	MCAS Beaufort	
Camp Shelby	NAS Pensacola	MCB Camp Pendleton	
Camp Swift	NAS Whidbey Island		
Camp Williams	Naval Base Coronado (NBC)		
Fort Hood	NSB Kings Bay REPI Buffering Project		
Fort Huachuca Sentinel Landscape	NWS Yorktown		
Fort Indiantown Gap			
Midlands Area Joint Installation Consortium			

Table 6 (Continued) Progress Toward Completion through FY 2020 by Military Service[29]

Army	Navy	Marine Corps	Air Force
		1%-9% Complete	
Aberdeen Proving Ground	NAF El Centro	MCAS Cherry Point	Dare County Bombing Range
Camp Navajo	NB Ventura County	MCAS Miramar	Davis-Monthan AFB
Fort Harrison	NO Flagstaff		Dover AFB
Fort Wainwright	NSA Annapolis		JB Charleston - North Auxilary Air Field
White Sands Missile Range (WSMR)	NSA Hampton Roads Northwest Annex		JBSA - Camp Bullis
	NSF Dahlgren		JBSA-Randolph
	NSF Indian Head		Joint Base McGuire-Dix-Lakehurst
	NWSTF Boardman		Travis AFB
			Tyndall AFB
			Vandenberg AFB
		New Project or No Transactions	
	ARD Bayview	Chocolate Mountain Aerial Gunnery Range	Altus AFB
	Guam Region	MCAS Yuma and Barry M. Goldwater Range-West (BMGR-W)	Cannon AFB
	NSA Crane Main Site and Lake Glendora Test Facility	MCB Hawaii	Columbus AFB
	NWS Earle		Edwards AFB & Plant 42 Installation Complex
			Hill AFB
			Homestead Air Reserve Base
			JBSA-Lackland
			Joint Base Elmendorf-Richardson
			Scott AFB
			US Air Force Academy
			US Air Force Academy

[29] Progress is represented by the number of acres that a project has preserved as a proportion of its desired end state goal requiring protection under 10 U.S.C. § 2684a. Does not include projects that have not closed any parcels or projects with incomplete or invalid desired end state data. Completed acreage is current as of the end of FY 2020. This year's analysis includes all installations listed in the FY21 Report to Congress with the exception of those projects that lack sufficient desired end state data or expenditure history.

REPI investments protect training, testing, and operational assets that the Department spent much of the past decade building or modernizing. As training, testing, and operations increase, the ability to leverage REPI partner contributions to relieve restrictions becomes even more important. Investing in and taking advantage of current opportunities to advance REPI's key objectives is paramount to securing the training, testing, and operational viability of local installations. Through REPI's partnerships and engagement efforts we can continue to support the warfighter, provide value to the taxpayer, and protect military readiness.

For more information about the REPI program and supportive DoD efforts, visit **www.REPI.mil** *or contact* **osd.repi@mail.mil**.

2021 Report on REPI Program Outcomes and Benefits to Military Mission Capabilities

This report has been prepared by Booz Allen Hamilton in support of the Office of the Assistant Secretary of Defense for Sustainment.