REPI

READINESS AND ENVIRONMENTAL PROTECTION INTEGRATION PROGRAM

2022 | 16TH ANNUAL REPORT TO CONGRESS

Submitted on behalf of the Secretary of Defense by the Under Secretary of Defense for Acquisition and Sustainment.

This document responds to the reporting requirements in accordance with 10 United States Code (U.S.C.) § 2684a(g) on the Department of Defense (DoD) Readiness and Environmental Protection Integration (REPI) program's use of agreements to limit encroachment and other constraints on military training, testing, and operations as well as 10 U.S.C. § 670c-1(b)(3) for methods of funding cooperative agreements under the Sikes Act.

Cover photo credits: (clockwise from top)

A U.S. Army combat engineer, assigned to 1st Armored Brigade Combat Team, 34th Infantry Division, Minnesota National Guard, rushes to breach a wire obstacle during platoon lane training on Camp Ripley, Minn., May 21, 2015 (U.S. Army photo by Staff Sgt. Anthony Housey).

U.S. Air Force F-22 Raptors from the 95th Fighter Squadron, 325th Fighter Wing, Tyndall Air Force Base, Fla., taxi on the flightline at Spangdahlem Air Base, Germany, Aug. 29, 2018. The 95th FS deployed to Spangdahlem to conduct familiarization flight training with U.S. Air Forces in Europe-Air Forces Africa aircraft and Airmen (U.S. Air Force photo by Airman 1st Class Valerie Seelye).

USS Theodore Roosevelt (CVN 71) departs Naval Base Guam (U.S. Navy photo by Mass Communication Specialist Seaman Kaylianna Genier/Released).

A United Launch Alliance Atlas V rocket launches into the air from Launch Complex 41 during the AFSPC 11 launch, April 14, at Cape Canaveral Air Force Station, Fla. (U.S. Air Force photo by Staff Sgt. Christopher Stoltz).

BOLSTERING MILITARY READINESS BY MITIGATING ENCROACHMENT THREATS

The Department of Defense (DoD) must have the ability to train combat-ready military forces; test implications of new technologies and advanced autonomous systems; access land, air, and sea space that replicates the operational environment; and swiftly navigate across domains to defend national security. Testing and training in highly realistic environments is critical for mission assurance. However, encroachment pressures create new vulnerabilities and challenges at installations and ranges across the country. In response to longstanding and emerging pressures, DoD has identified three of its most critical encroachment threats: nearby land uses that conflict with missions, regulatory restrictions associated with the protection of vulnerable species and habitats, and extreme weather events and climate-related hazards which can exacerbate existing encroachment challenges.

Land use conflicts, including increases in development, may disrupt the Department's ability to access testing and training lands, critical airspace, or offshore training areas and, as a result, may reduce the ability to conduct realistic operations that safeguard mission capabilities. Urbanization and new residential sites near installations can decrease the amount of undisturbed, natural landscapes in the region, causing threatened or endangered species to seek shelter within installation and range boundaries, thereby increasing DoD's responsibility to manage the at-risk species. Installation resources, personnel, and testing activities and training exercises are also vulnerable to climate-related hazards such as drought, heat, wildfire, thawing permafrost, and coastal and riverine flooding, which can damage installation infrastructure, cause testing and training delays, and threaten public safety. Similarly, extreme weather events, which may be exacerbated by climate change, can lead to water shortages from prolonged droughts, decaying infrastructure and erosion from coastal or riverine flooding, and conditions from wildfires and high heat days that make testing and training unsustainable.

The Department has the authority to address encroachment pressures under 10 U.S. Code (U.S.C.) § 2684a, or "the 2684a authority." Congress enacted the 2684a authority in Fiscal Year (FY) 2002 to help address land use changes that could impact the Department's operational capabilities. DoD executes the 2684a authority through the Readiness and Environmental Protection Integration (REPI) program by establishing off-base projects to limit incompatible development, address endangered species restrictions, and improve installation resilience to climate change and severe weather events. In FY 2021, Congress amended the 2684a authority to make activities that enhance military installation resilience to climate change and severe weather events a standalone justification and primary objective under 2684a. The Department implements REPI projects by entering into cost-sharing agreements with state and local governments and private conservation organizations to promote compatible land uses, enhance climate change adaptation measures, and restore habitat near installations and ranges to preserve DoD's mission.

Natural lands at Marine Corps Base Camp Pendleton provide marines with realistic live fire and maneuver range training conditions to prepare for global missions (credit: U.S. Marine Corps photo by Marine Corps Sgt. Jeremy Laboy).

The REPI program enables DoD to bolster military readiness by efficiently and cost-effectively mitigating encroachment threats. The program helps installations adapt to existing and impending climate change risks, prevent costly workarounds, and avert time-consuming relocations. The mutually beneficial partnerships among DoD, state and local governments, and private organizations that are a key component of REPI projects help sustain installations' operations and resilience. As a byproduct, they also increase the longevity of compatible working lands such as farms, forests, and ranchlands; promote at-risk species preservation and recovery; and enhance recreational and public access to parks, trails, and culturally protected areas for residents, active military families, and veterans. The REPI program is, therefore, integral to the continuation of the Department's current and future missions.

SAFEGUARDING MILITARY MISSIONS BY LEVERAGING OVER $1 BILLION IN NON-DOD FUNDS

This 16th annual report on the 2684a authority details the REPI program's evolving partnership activities and achievements across all projects, from the enactment of the 2684a authority in FY 2002 through FY 2021.

This report includes:

- Information about Congressional appropriations for the REPI program over the past seven FYs (Figure 1);
- A summary of the Military Services' accomplishments using REPI partnerships at 118 locations across 35 states and territories (Table 1);
- A summary of REPI, Military Service, and partner cost-sharing through FY 2021 (Figure 2);
- A summary of 2021 REPI Challenge projects and locations (Figure 3);
- A summary of REPI obligations and expenditures and acres protected or managed by DoD projects implemented using authorities other than 10 U.S.C. § 2684a (Table 2);
- A map of REPI project locations (page 14); and
- Detailed information by individual project (Tables 3-6) (full project summaries are available on **www.REPI.mil**).

Comparable to the overhead costs for similar federal land protection programs, the cost for REPI's program management averages less than eight percent of total program costs annually.

Through FY 2021, DoD has leveraged $1.18 billion with over $1.05 billion in non-Department partner contributions—nearly a 1:1 match—to protect nearly 830,000 acres of land and preserve key operational assets, infrastructure, and capabilities.

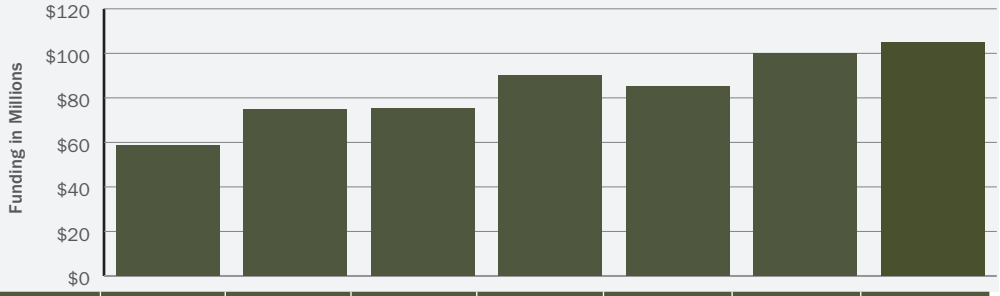
The REPI program follows a well-established procedure that allows the Military Services to enter into cost-sharing agreements with state and local governments and conservation organizations to support activities that meet the requirements and objectives of the 2684a authority. Military Services initiate the process by first identifying

Table 1: Accomplishments by Service from the Enactment of 10 U.S.C. § 2684a through FY 2021

Military Service	Transactions	Acres Protected	REPI	Service	Partner	Total Expenditures
Army	1,022	439,548	$348,883,426	$331,401,448	$527,167,176	**$1,207,452,050**
Navy	781	167,247	$187,226,622	$37,439,184	$281,612,374	**$506,278,179**
Marine Corps	101	101,075	$117,430,679	$33,388,106	$136,621,346	**$287,440,131**
Air Force	461	121,999	$96,708,720	$25,799,172	$108,669,194	**$231,177,086**
Total[#]	**2,365**	**829,869**	**$750,249,447**	**$428,027,910**	**$1,054,070,090**	**$2,232,347,447**

[#]Subtotals may not sum to combined totals due to rounding.
Select Service totals reported in Table 1 may vary slightly from Service totals reported in Tables 3 through 6 because of consolidation due to Joint Basing.

Figure 1: REPI Fiscal Year Funding (in millions)



	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Appropriation	$58.57	$75.00	$75.17	$90.00	$85.00	$100.00	$105.00
Less DoD-wide Priorities	$9.47	$7.65	$12.42	$0.00	$1.91	$0.00	$13.00
Less Program Management	$4.04	$4.19	$5.13	$3.46	$5.54	$4.96	$7.60
Less Landscape Management	$0.50	$0.50	$0.50	$1.02	$0.71	$0.63	$1.43
Additional Office of the Secretary of Defense (OSD) Funding	$6.95[*]	$2.81[*]	$1.64[*]	$1.20[*]	$0.00	$1.22[**]	$0.00
Allocation to Services	$51.51	$66.60	$58.76	$86.72	$76.84	$95.62	$82.96
Locations	32	45	39	42	38	51	54

[*]Represents direct funding from other OSD sources to the Military Services in support of range sustainment through REPI projects.
[**]Represents direct funding from other OSD sources to the Military Services in support of military installation resilience through REPI projects.

projects at the installation or range level that address current or anticipated encroachment threats to mission capabilities. Once the encroachment threat is determined, the Military Service works with local partners to develop projects, then requests funding for their projects from the REPI program annually. Since FY 2015, the Military Services' funding requests have exceeded available REPI funding amounts by $97.9M on average due to the ever-increasing number of current or impending encroachment threats to mission requirements. As a result, the program must assess and prioritize the projects based on several factors, including:

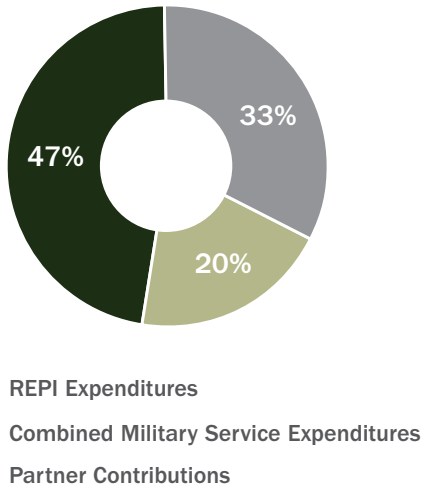
- Potential to mitigate encroachment that impacts the military mission;
- Advancement of DoD's strategic priorities;
- Capacity, usage, and uniqueness of the military capability being protected;
- Innovation that increases mission sustainability, leverages additional funds, or creates new tools to support readiness;
- Timeliness to complete land transactions;
- Community support and planning efforts that address land use and demonstrate significant participation in local and regional planning efforts (e.g., Compatible Use Plans, Military Installation Resilience Reviews, and sustained involvement in collaborative land use and resilience planning);
- Benefits to, and investments from, partner organizations, other federal agencies, and the community; and
- Advancement of designated sentinel landscapes goals.

The REPI program facilitates the management, coordination, and implementation of funding decisions while empowering the Military Services to advance initiatives based on their specific mission requirements.

REPI'S PROACTIVE PARTNERSHIPS SAVE DOD $1 BILLION

The REPI program has established support from over 500 partners, including many private organizations, resulting in a cost savings of over $1 billion over the program's lifetime. As shown in Figure 2, partner contributions account for 47 percent of dollars spent since the REPI program's inception, allowing the program to safeguard and enhance the continued operation of valuable DoD assets. Between REPI, Military Service, and partner investments, DoD is able to protect key assets and capabilities in support of strategic priorities and enable unrestricted access to training, testing, and operating areas to secure mission readiness.

Figure 2: Cost-Share through FY 2021



	Funding Amount
REPI Expenditures	**$749,016,753**
Combined Military Service Expenditures	**$428,020,410**
Partner Contributions	**$1,054,070,090**

DESIGNATING NEW SENTINEL LANDSCAPES TO PROMOTE SUSTAINABILITY AND RESILIENCY

To encourage strategic planning, coordination, and collaboration across local, state, and federal agencies, DoD partnered with the U.S. Department of Agriculture (USDA) and the U.S. Department of the Interior (DOI) in 2013 to create the Sentinel Landscapes Partnership. Congress affirmed the Partnership in statute under Section 317 of the National Defense Authorization Act for FY 2018, authorizing the Secretary of Defense, the Secretary of Agriculture, and the Secretary of the Interior to coordinate actions among their departments and designate new sentinel landscapes. The Partnership's mission is to strengthen military readiness, conserve natural resources, bolster agricultural and forestry economies, and enhance resilience to climate change. The Partnership accomplishes this mission by advancing shared land use objectives in designated project areas known as "sentinel landscapes."

To celebrate Earth Day, Deputy Defense Secretary Kathleen Hicks, REPI Program Director Kristin Thomasgard, NAS Patuxent River Commanding Officer CAPT John Brabazon, and a group of conservation partners visited the Middle Chesapeake Sentinel Landscape (U.S. Air Force photo by Air Force Staff Sgt. Brittany A. Chase).

"REPI funds can also be leveraged by our partners to satisfy any matching or cost-sharing requirement of any conservation or resilience program of any federal agency. This presents an incredible opportunity for DoD to collaborate with our inter-agency partners, and enhance state, local, and non-governmental initiatives that complement REPI's climate resilience efforts."

—Deputy Defense Secretary Hicks

Sentinel landscapes are located in areas of strategic importance for DoD, DOI, and USDA and support mission-compatible, sustainable management practices such as farming, ranching, and forestry that offer economic and natural resources benefits in areas anchored by military installations and ranges. Partners within sentinel landscapes accelerate sustainable management practices by connecting private landowners with voluntary state and federal land conservation programs that fund land protection and natural resource restoration projects.

As of FY 2021, the Partnership recognized seven designated sentinel landscapes across the nation: Avon Park Air Force Range, Florida; Camp Ripley, Minnesota; Eastern North Carolina anchored by Fort Bragg, Dare County Bombing Range, Marine Corps Base (MCB) Camp Lejeune, Marine Corps Air Stations (MCAS) Cherry Point and New River, and Seymour Johnson Air Force Base (AFB); Fort Huachuca, Arizona; Joint Base Lewis-McChord, Washington; Middle Chesapeake, Maryland, anchored by Naval Air Station (NAS) Patuxent River-Atlantic Test Ranges; and significant areas in Georgia anchored by Fort Stewart, Fort Benning, Townsend Bombing Range, Robins AFB, and Naval Submarine Base (NSB) Kings Bay.

From FY 2012 through FY 2020, within these seven sentinel landscapes, DoD has leveraged $178 million in funds with $250 million in USDA funds, $57 million in DOI funds, $230 million in state funds, $16 million in local funds, and $104 million in private funds to support projects across sentinel landscapes, a nearly 4:1 match. This crucial investment has permanently protected more than 515,000 acres of land around high-value military testing, training, and operating areas and implemented sustainable management practices and climate adaptation actions on an additional 2.7 million acres.

Every few years, the Sentinel Landscapes Federal Coordinating Committee (FCC) designates new sentinel landscapes to advance compatible land use goals and objectives within high-priority areas for DoD, USDA, and DOI. A sentinel landscape designation provides installations and surrounding communities with a platform for exchanging ideas, best practices, and available opportunities among government agencies, private organizations, and local communities, leading to a greater number of mutually beneficial projects. Additionally, once a designation occurs, the FCC provides resources to sentinel landscapes to build capacity in order to enhance relationships among local defense, conservation, and agricultural partners.

During the 2021 application cycle, the FCC designated three new sentinel landscapes: Camp Bullis, Texas; Northwest Florida; and Southern Indiana. These newly designated landscapes now have greater opportunities for federal agencies and programs to work collaboratively to advance shared initiatives using fewer resources.

Projects within sentinel landscapes support DoD's strategic priorities by protecting against encroachment impacts that may negatively impair current or planned operations and capabilities, including live-fire exercises at Joint Base Lewis-McChord, electronic and special warfare training at MCAS Cherry Point, and critical flight operations at NAS Patuxent River-Atlantic Test Ranges. Over the next year, as the number of sentinel landscapes increase, nature-based solutions, sustainable agricultural and forestry practices, and species recovery will further protect the Department's missions.

For more information about the Sentinel Landscapes Partnership and to view the sentinel landscapes documentary, visit the Partnership website at: **https://sentinellandscapes.org/**.

REGIONAL CLIMATE RESILIENCE INITIATIVES BUILDING ON SUCCESSFUL CONSERVATION MODELS

In FY 2021, the REPI program continued its support of several regional initiatives that aim to restore and conserve natural ecosystems, leading to positive outcomes for endangered species, local economies, climate change resilience, and national defense. One regional initiative, America's Longleaf Restoration Initiative, is a prime example of DoD joining with other federal agencies, state agencies, universities, private industry, and private landowners to restore longleaf pine ecosystems across nine southern states, including Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Texas, and Louisiana.

In FY 2020, partners of America's Longleaf Restoration Initiative established more than 138,000 acres of longleaf pine, conducted prescribed burns on over 1,446,000 acres, and protected almost 35,000 acres of land across the Southeastern United States. Out of these total accomplishments, DoD contributed over 6,000 acres of longleaf pine restoration, over 294,000 acres of prescribed fires, over 223,000 acres of forest maintenance activities, and over 27,000 acres of protected land. Compared to other pine species, longleaf pine ecosystems create a stronger, more resilient landscape due to the tree's reduced susceptibility to wind damage, wildfires, and major insect infestations and diseases. These forests also provide critical habitat for 29 federally listed threatened or endangered species, like the federally protected red-cockaded woodpecker, eastern indigo snake, flatwoods salamander, and gopher tortoise. Therefore, restoring these ecosystems and performing frequent prescribed burns strengthens the Department's climate resiliency at critical training areas, reduces the risk of wildfire or catastrophic damage following extreme weather events, improves and expands habitat for wildlife, and decreases the likelihood that DoD installations and ranges will become the last remaining home for threatened and endangered species.

The 96th Test Wing vice commander, bends down to release a gopher tortoise into its new home deep within the Eglin Air Force Base range. The first of approximately 250 tortoises were released into their 100-acre habitat after being rescued from urban development at their previous home in South Florida. Increasing the gopher tortoise population here could prevent the U.S. Fish and Wildlife Service from listing the animal on the Threatened and Endangered Species list, allowing more flexibility for the military missions on Eglin (U.S. Air Force photo/Samuel King Jr.).

For example, Tyndall AFB in Florida suffered catastrophic damage from Hurricane Michael in 2018, leading to massive cleanup efforts on more than 12,000 acres of upland pine forests. Before Hurricane Michael, the landscape surrounding the installation largely consisted of slash pine, which is more susceptible to wind and storm damage compared to longleaf pine. Following the devastating hurricane, Tyndall AFB committed to restoring longleaf pine on 9,000 acres and has already planted more than 3,700 acres across the region. The new longleaf pine ecosystem will increase the installation's climate resilience and ensure that Tyndall AFB can withstand and recover quickly from future storm events.

The success of America's Longleaf Restoration Initiative is largely due to the creation and execution of a regional Conservation Plan, which serves as an outcome-based catalyst to further conservation and restoration actions. In May 2021, the Southeast Regional Partnership for Planning and Sustainability (SERPPAS) used this proven model to launch the South Atlantic Salt Marsh Initiative. SERPPAS is a six-state partnership covering Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina that promotes collaborative decision-making to support the conservation and resilience of national defense, natural resources, working lands, and local communities across the Southeastern United States. This partnership serves as a forum to build working relationships among local, state, and federal partners. Through the South Atlantic Salt Marsh Initiative, SERPPAS partners will protect 1 million acres of salt marsh along the South Atlantic coast from North Carolina to Northeast Florida. Preserving these habitats will increase military installation resilience at over a dozen military installations and ranges in the Southeastern United States by shielding the shorelines from recurring flooding, erosion, and storm surge.

FOSTERING INNOVATIVE PARTNERSHIPS THROUGH REPI AND THE REPI CHALLENGE

For the 11th consecutive year, the REPI program hosted the annual REPI Challenge, a competition with dedicated funding to advance REPI project results through large-scale innovation and conservation. The goal of the challenge is to encourage recipients to develop creative approaches to conservation by engaging new partners, attracting new sources of funding, and including market-based strategies and private investment.

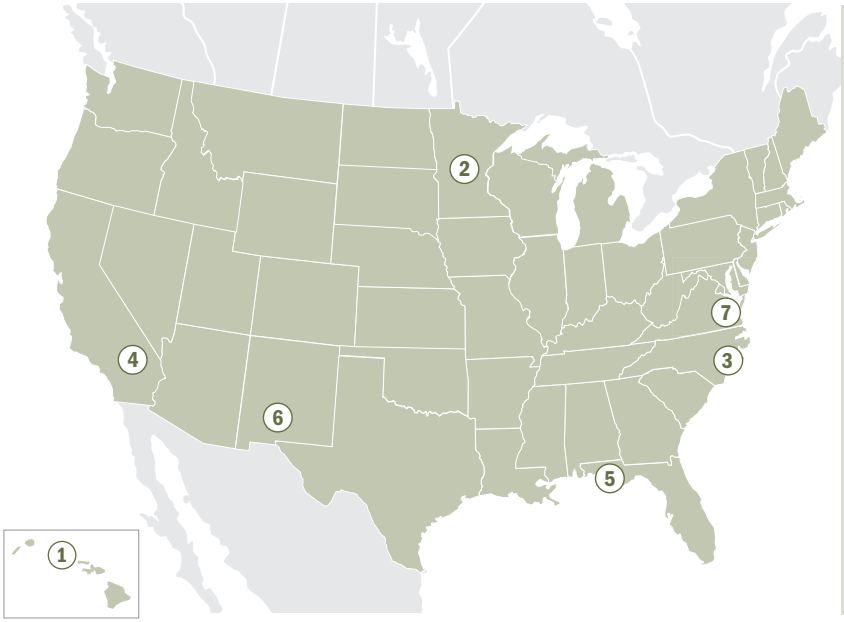
To date, the REPI Challenge has resulted in approximately $89 million in REPI program funds being leveraged with more than $322 million in partner contributions across 32 locations. In FY 2021, the REPI Challenge focused on projects that limited incompatible development, enhanced military installation resilience to climate change and extreme weather events, or relieved current or anticipated environmental restrictions at locations hosting key capabilities of strategic importance to DoD. Projects that leveraged the REPI program's ability to engage in activities to plan and prepare for, recover from, and minimize the effects of extreme weather events or climate change effects received additional consideration, as did projects that demonstrated the ability to incorporate multiple authorities including the Sikes Act under 16 U.S.C. § 670c-1 and intergovernmental support agreements (IGSA) under 10 U.S.C. § 2679.

REPI partners are essential to REPI Challenge projects and support the Military Departments' ability to protect capabilities necessary for defending the nation against adversaries. As seen in Figure 3, the FY 2021 REPI Challenge showcased installations across the United States that are advancing multiple missions through collaboration with private conservation groups and state and local governments.

One recipient of FY 2021 REPI Challenge funding, White Sands Missile Range, is a large, fully instrumented open-air range that is critical to DoD's testing mission. However, the range's low-flying missile operations are at risk due to concerns relating to safety, noise, air quality degradation, dust, and spectrum interference. To manage the growing development along the installation's border, White Sands Missile Range received more than $5 million in FY 2021 REPI Challenge funds and $5.6 million in partner contributions to protect 120,000 acres of land with the State of New Mexico that, if developed, could compromise critically important long range weapons testing and training operations for F-22 and F-16 pilot training. Preventing development on this land will ensure realistic training environments for 100 percent of the military's Remote Pilot Aircraft and also preserve prehistoric archeological sites.

Another FY 2021 REPI Challenge funding recipient was U.S. Army Garrison, Hawaii, which includes Pohakuloa Training Area, Makua Military Reservation, and Schofield Barracks. In recent years, these installations have experienced extreme wildfires that have severely disrupted military training, damaged property, and created public safety concerns. U.S. Army Garrison, Hawaii's FY 2021 REPI Challenge project received more than $1 million to implement wildfire management tools, such as firebreaks, to ensure continued mission performance. The Hawaii Department of Land and Natural Resources and other

Figure 3: 2021 REPI Challenge Award Locations



1. **U.S. Army Garrison, Hawaii: Pohakuloa Training Area, Makua Military Reservation, and Schofield Barracks, HI.** Wildfire mitigation management and restoration. $1.1M.
2. **Camp Ripley, MN.** Resilience and implementation strategic planning. $0.2M.
3. **Seymour Johnson Air Force Base, Marine Corps Base Camp Lejeune, Marine Corps Air Station Cherry Point, NC.** Protection of family farms and forests. $1.0M.
4. **Marine Corps Air Ground Combat Center Twentynine Palms, National Training Center Fort Irwin, CA.** Desert tortoise habitat restoration and management. $1.5M.
5. **Tyndall Air Force Base, FL.** Living shoreline construction and coastal restoration. $4.8M.
6. **White Sands Missile Range, NM.** Compatible land protection. $5.1M.
7. **Naval Weapons Station Yorktown, VA.** Living shoreline construction and coastal restoration. $2.0M.

partners contributed over $1.45 million to the project and will also work with local landowners to encourage landscaping practices that mitigate fire risks. Through these combined efforts, the Army, Marine Corps, Air Force, and National Guard are protecting the largest maneuver area in the Pacific for joint, interagency, and multinational forces.

Climate driven threats are also impacting Seymour Johnson AFB, MCB Camp Lejeune, and MCAS Cherry Point in North Carolina. All three installations are within the Eastern North Carolina Sentinel Landscape and support training and development for F-15E aircrew, F-35 aircraft operations, and Marine Expeditionary Force ground and air components. The installations' access to the North Carolina coast is ideal for training operations; however, the shoreline is susceptible sea-level rise and coastal erosion, which cause infrastructure and mission limitations while reducing neighboring farmland, forestland, and natural areas. To protect this critical coastline, the three installations leveraged more than $2.45 million in partner contributions with $1 million in REPI Challenge funds to manage and protect wildlife habitats, including large expanses of coastal marsh and longleaf pine that increase the landscape's resilience to extreme weather events and changing climate patterns.

In total, DoD awarded $15.6 million in 2021 REPI Challenge funding to seven projects that attracted nearly $21.6 million in partner contributions.

By spreading funding across seven projects, the awards contribute to compatible land use, installation resilience, habitat preservation, and mission security at 12 installations that support DoD's strategic priorities: U.S. Army Garrison, Hawaii, including Pohakuloa Training Area, Makua Military Reservation, and Schofield Barracks; Camp Ripley, Minnesota; Seymour Johnson AFB, MCB Camp Lejeune, MCAS Cherry Point, North Carolina; Marine Corps Air Ground Combat Center Twentynine Palms and National Training Center Fort Irwin, California; Naval Weapons Station (NWS) Yorktown, Virginia; Tyndall AFB, Florida; and White Sands Missile Range, New Mexico.

LEVERAGING COST-EFFECTIVE OPPORTUNITIES TO PROTECT CRITICAL MISSIONS

Both the Sikes Act and IGSAs represent innovative and cost-effective opportunities for projects to address encroachment threats without the need to acquire a real property interest, allowing more flexibility for landowners to participate. Table 2 shows that the REPI program has committed or expended nearly $11 million under authorities other than 10 U.S.C. § 2684a, such as the Sikes Act and IGSA authority. Of this amount, as of the end of FY 2021, DoD has deposited a total of $1 million into interest-bearing accounts under the Sikes Act for the long-term management of natural resources beyond installation boundaries.

BUILDING NATURAL INFRASTRUCTURE SOLUTIONS TO COMBAT THE CLIMATE CRISIS

In the past year, climate change threats including coastal and riverine flooding, drought, thawing permafrost, heat, and wildfires have become a growing concern at installations and ranges across the nation. The changing climate is strengthening the intensity of hurricanes, winter storms, and other extreme weather events in addition to causing damage to existing infrastructure on installations, forcing training workarounds and posing risks to the safety of service members and communities.

Table 2: REPI Expenditures and Remaining Obligations at DoD Projects under Authorities other than 10 U.S.C. § 2684a

Lead Military Service	Project	State or Territory	REPI Funds Expended Through FY 2021	REPI Obligations Remaining Through FY 2021	Authority Used
Navy	Fallon Range Training Complex	NV	$0	$700,000	Sikes Act (16 U.S.C. § 670c-1(b)(3))
	Guam Region	GU	$2,001,549	$2,000,000	Sikes Act (16 U.S.C. § 670c-1(b)(3))
	NWS Earle	NJ	$0	$2,935,565	IGSA (10 U.S.C. § 2679)
	Naval Observatory Flagstaff	AZ	$0	$499,457	Sikes Act (16 U.S.C. § 670c-1(b)(3))
	Naval Base Kitsap	WA	$5,000,000	$0	Sikes Act (16 U.S.C. § 670c-1(b)(3))
	NWS Yorktown	VA	$0	$3,000,000	Sikes Act (16 U.S.C. § 670c-1(b)(3))
	Pacific Missile Range Facility Barking Sands	HI	$1,000,000	$260.000	Sikes Act (16 U.S.C. § 670c-1(b)(3))
Marine Corps	MCB Camp Pendleton	CA	$826,000	$0	Sikes Act (16 U.S.C. § 670c-1(b)(3))
Air Force	Eglin AFB	FL	$2,107,931	$0	Sikes Act (16 U.S.C. § 670c-1(b)(3))
		Totals	**$10,935,480**	**$9,395,022**	

SHOWCASING PROGRAM BENEFITS THROUGH QUANTITATIVE METRICS

Every year, the REPI program analyzes data from the Military Services to quantify the program's value to the Department's mission. For the second consecutive year, the Department published a FY 2021 metrics report, summarizing more than 16 years of REPI program data on the Military Services' growing encroachment threats and military missions protected by REPI projects.

In FY 2021, the Military Services submitted 65 proposals to address growing encroachment pressures that harm the Department's ability to conduct realistic training and testing vital to preparing Service members, and their equipment, for real-world combat. Of the 65 proposals, 53 requested funding to address noise complaints and pressure to avoid noise impacts near installations and ranges. This result makes noise impacts the most commonly reported threat to installations for the third year in a row, followed by development near danger or safety zones, and endangered species restrictions.

At Camp Ripley, the primary U.S. winter training site for the National Guard, development along the southeastern border heightens existing concerns regarding noise, smoke, and dust generated from live-fire and artillery operations. To prevent noise restrictions and impacts from development, the REPI program has helped protect more than 40,000 acres surrounding Camp Ripley. This REPI investment leveraged $39.2 million in DoD funding with $85.5 million in partner contributions to preserve or enhance at least $430 million in critical assets and mission capabilities at Camp Ripley, including operations at a $130 million small caliber weapons firing range and a $120 million large caliber weapons firing range. These contributions complement ongoing initiatives at the Camp Ripley Sentinel Landscape, which has protected over 16,000 acres and enrolled over 75,000 acres in landowner assistance programs since their designation through a combination of USDA, DoD, and state funds.

As climate change vulnerabilities become more apparent, the Military Services are submitting REPI proposals designed to increase military installation resilience to climate change. In FY 2021 alone, projects that listed installation resilience as the primary justification requested $42 million from the REPI program, coupled with an estimated $110 million in partner contributions. Proposals that listed climate change adaptation as a secondary benefit or primary justification requested a total of $97 million that came with an expected $211 in partner contributions, boasting a partner cost share of over 68 percent.

Tyndall AFB is leveraging REPI funding to increase resilience to coastal flooding and protect F-22 Raptor operations (U.S. Air Force photo by 1st Lt Savanah Bray).

The top climate change vulnerability identified was erosion, appearing in 10 of 16 proposals, with coastal flooding and sea-level rise rounding out the top three threats.

To learn more about REPI program benefits to military mission capabilities, read the 2021 REPI Metrics Report at: **https://www.repi.mil/Resources/Reports-and-Fact-Sheets/**.

The REPI program has seen considerable success with the Military Departments in developing off-base natural infrastructure solutions to sustain military readiness and mission assurance. For example, in FY 2021, NWS Earle, New Jersey, received $1 million in REPI funding to establish a new IGSA with Monmouth County, complementing the installation's first IGSA with the State of New Jersey. Through these IGSAs, NWS Earle will work with the state and county to implement natural infrastructure solutions such as beach nourishment, living shoreline establishment, stormwater capacity enhancement, and wildfire mitigation. This project will enhance the resilience of NWS Earle and the local communities by minimizing the overall impacts from flooding, drought, and wildfire events. Increasing the installation's resilience will also protect critical resources for NWS Earle, including the Navy's longest pier and several ammunition staging areas.

The Military Departments continue to leverage the REPI program to address climate change vulnerabilities at installations and ranges. Over 50 percent of Military Service requests for FY 2021 REPI funding included a discussion of installation resilience to climate change. Of that 50 percent, many of the requests were focused on projects with primary or secondary resilience benefits.

PROTECTING CRITICAL RESOURCES IN THE INDO-PACIFIC REGION

The Department continues to advance and prioritize missions, strategies, and regional lines of effort in the Indo-Pacific region, contributing to key defense objectives. To support this focus, the REPI program has accelerated several projects across the Indo-Pacific region to help foster new partnerships to maintain mission success.

In Guam, Naval Base Guam, Naval Munitions Site, Andersen AFB, and other installations are working with the Government of Guam, the U.S. Fish and Wildlife Service, and the National Fish and Wildlife Foundation to support recovery goals for endangered species. The high concentration of threatened and endangered species in Guam can constrain military testing, training, and operations. To protect the at-risk species and prevent potential mission restrictions, the Navy is implementing ecosystem-level restoration projects and working with the U.S. Fish and Wildlife Service to develop tools to streamline any federal consultation processes. These efforts are contributing to the protection of diverse airfield operations at Andersen AFB and Naval Base Guam's critical logistics support to the U.S. Pacific Fleet and the berthing, ship operations and maintenance, refueling, and ordnance handling for the Navy's largest vessels.

At Joint Base Pearl Harbor-Hickam, Hawaii, the installation faces threats from incompatible development that interferes with data communication services and antennas for low-earth orbiting satellites. Working with the Trust for Public Land, this project will protect the installation's neighboring lands from incompatible development to create a security buffer for the base's essential communication services. These efforts will also bolster state plans to jump-start farming on Oahu and enhance groundwater recharge into the Pearl Harbor aquifer, thereby improving water security for the surrounding area.

Naval Base Guam can accommodate the Navy's largest vessels, including the USS Ronald Reagan, and is critical for operating the U.S. Pacific Fleet (U.S. Navy photo by MC2 Nick Bauer).

THE WAY FORWARD

This year, the REPI program continued focusing on traditional encroachment pressures, such as incompatible development and species and habitat concerns, while increasing its contributions to building climate literacy for partners and military installations and ranges. Through publishing a variety of online resources, including the new REPI climate resilience primer, "*Building Resilience to Climate Change Through Off-Base Natural Infrastructure Solutions*," the REPI program leveraged external expertise to educate project staff and partners about the risks climate change poses to military mission requirements, the benefits of enhancing natural infrastructure to a larger audience, and best practices for designing and proposing a climate resilience project.

Additionally, the REPI program continued to support longstanding relationships with partners while also accessing new partners and solutions to address emerging encroachment threats as existing projects evolved. Many of these partners are found at the local installation level, but REPI is actively taking advantage of higher-level education and engagement activities to raise awareness and garner additional support. For example, in FY 2021 the REPI program continued working with the Federal Emergency Management Agency's Building Resilient Infrastructure and Communities Program to leverage each organization's funding opportunities and enhance resilience in communities of mutual interest. By engaging with multiple partners, the REPI program can accelerate project outcomes to safeguard national security, maximize taxpayer benefits, and promote sustainable land management practices.

Through the REPI program, the Military Services preserve critical national defense capabilities while simultaneously advancing the goals and objectives of dedicated partner organizations. The benefits of these innovative partnerships extend far beyond an installation's boundaries and positively impact surrounding communities, supporting the longevity of working lands and natural landscapes. The ability to leverage the REPI program's adaptability, supported by forward-thinking legislation and new strategic objectives, ensures the viability of key DoD mission requirements for decades into the future.

Table 3: Army Projects through FY 2021

Project	State	Transactions	Acres	Expenditures
99th Armed Forces Reserve Center	CT	1	54	$1,749,000
Aberdeen Proving Ground	MD	17	2,700	$25,796,050
Camp Blanding	FL	23	28,071	$84,988,599
Camp Butner	NC	12	1,457	$4,908,011
Camp Navajo	AZ	1	245	$1,748,960
Camp Rilea	OR	3	2,673	$4,248,792
Camp Ripley	MN	218	40,811	$124,924,849
Camp Roberts	CA	14	7,655	$35,296,437
Camp San Luis Obispo	CA	10	3,099	$8,550,651
Camp Shelby	MS	20	4,667	$12,802,784
Camp Swift	TX	6	634	$3,669,185
Camp Williams	UT	20	2,443	$51,416,447
Fort A.P. Hill	VA	23	13,151	$44,884,706
Fort Benning	GA	42	34,670	$105,164,525
Fort Bliss	TX	3	7,441	$2,754,015
Fort Bragg	NC	81	23,845	$78,318,120
Fort Bragg USASOC	NC	15	3,152	$13,443,209
Fort Campbell	TN	60	13,826	$45,920,677
Fort Carson	CO	18	25,661	$41,471,533
Fort Custer	MI	1	326	$2,092,100
Fort Drum	NY	29	8,214	$13,357,581
Fort Gordon	GA	1	114	$205,400
Fort Harrison, Limestone Hills	MT	4	685	$4,752,163
Fort Hood	TX	20	4,293	$20,016,085
Fort Huachuca	AZ	21	18,295	$48,655,009
Fort Indiantown Gap	PA	17	9,479	$24,260,440
Fort Knox	KY	3	462	$1,045,711
Fort Pickett	VA	98	19,158	$45,372,413
Fort Polk	LA	5	1,555	$5,009,299
Fort Riley	KS	25	15,962	$12,948,280
Fort Sill	OK	39	3,767	$15,541,407
Fort Stewart	GA	80	41302	$94,354,598
Fort Wainwright	AK	20	629	$5,071,440
Joint Base Lewis-McChord	WA	16	2,026	$32,964,175
Joint Base San Antonio-Camp Bullis	TX	8	8,046	$35,063,200
MAJIC	SC	40	22,392	$24,510,865
Southeast Regional Army Project	GA	1	6,990	$17,867,215
U.S. Army Garrison Hawaii	HI	7	13,157	$108,796,164
White Sands Missile Range	NM	5	46,454	$8,365,750
Army Totals#		**1,027**	**439,558**	**$1,212,305,844**

Table 4: Navy Projects through FY 2021

Project	State	Transactions	Acres	Expenditures
ARD Bayview*	ID	0	0	$0
Atlantic Test Ranges	MD	57	8993	$31,258,956
El Centro Range Complex	CA	10	1,537	$743,955
Fallon Range Training Complex^	NV	21	4,937	$4,019,102
Guam Region*	GU	0	0	$0
Joint Base Pearl Harbor-Hickam	HI	6	2,175	$22,022,801
NAS Fallon	NV	100	9,426	$25,072,259
NAS Jacksonville	FL	2	135	$7,973,525
NAS JRB New Orleans	LA	1	202	$7,322,419
NAS Lemoore	CA	1	57	$907,000
NAS Meridian	MS	21	1,184	$1,077,408
NAS Oceana	VA	50	2,859	$44,327,813
NAS Patuxent River	MD	28	3,059	$19,297,341
NAS Pensacola	FL	6	58	$2,514,758
NAS Whidbey Island	WA	8	158	$3,742,693
NAS Whiting Field	FL	71	12,097	$36,347,065
NAWS China Lake	CA	54	26,287	$19,489,439
NB Coronado, Camp Michael Monsoor	CA	25	4,518	$19,489,439
NB Kitsap, NAVMAG Indian Island^	WA	165	18,020	$58,551,436
NB Ventura County	CA	2	33	$2,651,567
NCBC Gulfport	MS	0	0	$9,500
NO Flagstaff^	AZ	2	300	$7,323,000
NS Mayport	FL	11	16	$1,289,454
NSA Annapolis	MD	1	19	$7,825,495
NSA Crane*	IN	0	0	$0
NSA Hampton Roads	VA	2	682	$3,910,000
NSB Kings Bay	GA	11	27,258	$85,732,763
NSF Dahlgren	VA	12	2,946	$18,929,564
NSF Indian Head	MD	2	294	$1,107,990
NSY Portsmouth SERE School	ME	3	19,258	$4,549,000
NWS Earle*^	NJ	0	0	$0
NWS Yorktown^	VA	1	403	$3,327,000
NWSTF Boardman	OR	6	12,334	$16,221,128
OLF Coupeville	WA	66	1,302	$15,469,624
OLF Whitehouse	FL	25	3,002	$21,830,257
PMRF Barking Sands*^	HI	0	0	$0
Navy Totals#		**770**	**163,549**	**$491,258,467**

** This project has an established and funded REPI partnership but has not completed any real estate transactions through FY 2021.*

^ In addition to the real estate transactions reported here, this project has expended REPI funds under authorities other than 10 U.S.C. § 2684a such as natural resources management activities under 10 U.S.C. § 2679 under the IGSA authority or Section 103A of the Sikes Act, 16 U.S.C. § 670c-1, without necessitating an investment in land acquisition under 10 U.S.C. § 2684a. See Table 2.

 # Subtotals may not sum to combined totals due to rounding.

Select Service totals reported in Table 1 may vary slightly from Service totals reported in Tables 3 through 6 because of consolidation due to Joint Basing.

Table 5: Marine Corps Projects through FY 2021

Project	State	Transactions	Acres	Expenditures
Chocolate Mountain Aerial Gunnery Range*	CA	0	0	$0
MCAGCC Twentynine Palms	CA	11	5,433	$8,096,574
MCAS Beaufort	SC	20	3,730	$57,859,740
MCAS Cherry Point Piney Island	NC	18	11,836	$40,540,404
MCAS Miramar	CA	1	410	$9,525,761
MCAS Yuma and BMGR-W*	AZ	0	0	$0
MCB Camp Lejeune, MCAS New River	NC	18	19,705	$43,758,951
MCB Camp Pendleton^	CA	13	3,228	$44,557,694
MCB Hawaii*	HI	0	0	$0
MCB Quantico	VA	7	996	$5,566,388
Townsend Bombing Range	GA	13	55,738	$77,534,620
Marine Corps Totals#		**101**	**101,075**	**$287,440,131**

Table 6: Air Force Projects through FY 2021

Project	State	Transactions	Acres	Expenditures
Altus AFB*	OK	0	0	$0
Avon Park AFR	FL	12	13,239	$27,574,026
Beale AFB	CA	6	7,650	$11,490,612
Buckley AFB	CO	6	663	$20,755,656
Cannon AFB*	NM	0	0	$0
Cape Canaveral AFS	FL	11	190	$3,693,258
Columbus AFB*	MS	0	0	$0
Dare County Range	NC	18	16,495	$20,247,003
Davis-Monthan AFB	AZ	20	217	$12,656,056
Edwards AFB*	CA	1	14,631	$5,527,153
Eglin AFB^	FL	5	24,027	$24,862,365
Eielson AFB*	AK	0	0	$0
Ellsworth AFB	SD	75	2,874	$17,512,825
Fairchild AFB	WA	1	150	$600,000
Hill AFB	UT	0	0	$44,183
Homestead ARB*	FL	0	0	$0
Joint Base Andrews	MD	2	142	$1,271,441
Joint Base Charleston	SC	2	363	$509,673
Joint Base Elmendorf-Richardson	AK	0	0	$52,148
Joint Base Langley-Eustis	VA	4	56	$1,027,037
Joint Base McGuire-Dix-Lakehurst	NJ	58	9,192	$43,841,360
Joint Base San Antonio-Lackland*	TX	0	0	$0
Joint Base San Antonio-Randolph	TX	18	222	$11,481,379
Melrose AFR	NM	1	30,493	$1,745,050
Robins AFB	GA	216	737	$19,676,270
Scott AFB*	IL	0	0	$0
Tinker AFB	OK	2	19	$493,707
Travis AFB	CA	1	147	$3,678,500
Tyndall AFB	FL	1	3,047	$6,938,000
U.S. Air Force Academy*	CO	0	0	$0
Vandenberg AFB	CA	2	951	$5,221,000
Warren Grove Range	NJ	5	179	$444,301
Air Force Totals#		**467**	**125,687**	**$241,343,003**

** This project has an established and funded REPI partnership but has not completed any real estate transactions through FY 2021.*

^ In addition to the real estate transactions reported here, this project has expended REPI funds under authorities other than 10 U.S.C. § 2684a such as natural resources management activities under 10 U.S.C. § 2679 under the IGSA authority or Section 103A of the Sikes Act, 16 U.S.C. § 670c-1, without necessitating an investment in land acquisition under 10 U.S.C. § 2684a. See Table 2.

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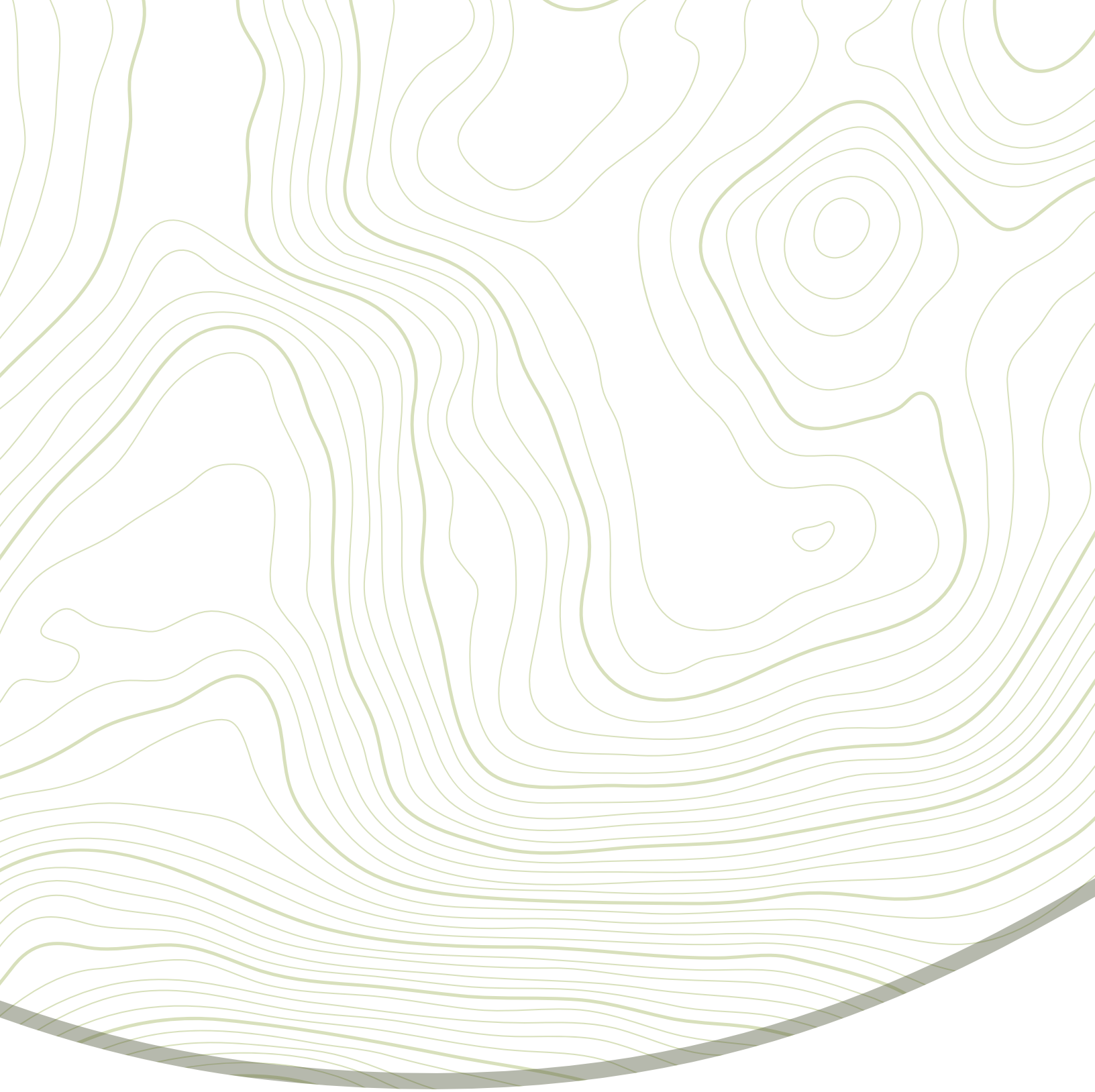
2022 REPI Program Locations



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