



REPI

UNITED STATES DEPARTMENT OF DEFENSE
READINESS AND ENVIRONMENTAL
PROTECTION INTEGRATION PROGRAM

2023 REPI CHALLENGE RECIPIENTS



REPI Challenge

For the 12th consecutive year, the REPI Program hosted its annual REPI Challenge, a competition with dedicated funding to advance REPI project outcomes through large-scale innovation and conservation. The REPI Challenge aims to:



Cultivate new projects that protect natural and cultural resources using diverse funding avenues.



Protect critical testing and training capabilities while fostering long-term sustainability for communities surrounding installations.



Support DOD's strategic priorities and the REPI Program in meeting its ambitious goals.



Harness the private sector's creativity to access unconventional funding sources and leverage market-based approaches.

2023 REPI Challenge Harnesses Partnerships to Protect National Security Priorities

For the 2023 REPI Challenge, the REPI Program contributed **\$24 million** in funds, coupled with **\$50 million** in partner contributions, to advance innovative projects that limit development pressures, enhance military installation resilience, and relieve current or anticipated environmental restrictions on military testing, training, or operations. By distributing funds across **13 projects**, the REPI Challenge contributed to initiatives **benefiting 26 installations** and their communities across the country. **Figure 1** displays the 2023 REPI Challenge projects across the country, advancing multiple missions through collaboration with conservation partners and state and local governments.

2023 REPI Challenge Protects DOD Missions in the Indo-Pacific Region and Advances the Sentinel Landscapes Partnership

Of the 13 REPI Challenge projects, **six are located within the Indo-Pacific Region** and will help implement partnership efforts to improve coastal and forest resilience, which benefits long-term sustainability for local communities and their neighboring installation. The Sentinel Landscapes Partnership also represents locations of strategic importance. Three selected projects fall within the **Fort Huachuca Sentinel Landscape, Camp Bullis Sentinel Landscape, and Joint Base Lewis-McChord Sentinel Landscape**, contributing directly to the goals of the [Sentinel Landscapes Partnership](#).





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



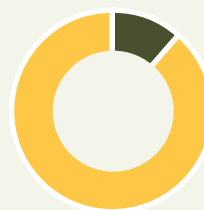
Naval Observatory Flagstaff Station & Camp Navajo, Arizona

Northern Arizona Fuels and Wildfire Risk Reduction

- Naval Observatory (NO) Flagstaff is **the national dark-sky observatory site for DOD**, located in north-central Arizona, with the ideal geographic, climatic, and atmospheric conditions for scientific observation and research of the night sky. Camp Navajo is an expansive United States Army training facility and ammunition storage depot near Flagstaff, Arizona. Primarily used by the Arizona Army National Guard, the facility spans over 44 square miles, making it the **largest military installation in the state**.
- Unhealthy forests and sustained drought increase the risk of high-intensity wildfires.** In Northern Arizona, **catastrophic wildfires threaten the Army National Guard's training mission at Camp Navajo, NO Flagstaff**, and the **Naval Precision Optical Interferometer at Anderson Mesa**, located 20 miles southeast of NO Flagstaff. Reducing the risk of disastrous wildfires and post-fire flooding will enable flexible execution of the mission and construction of new facilities.
- This project improves the **resiliency of military assets and communities in Coconino County by thinning unhealthy forests to reduce hazardous fuels**. Protecting installations from the threat of catastrophic wildfires, post-wildfire flooding, and the smoke pollution produced by devastating wildfires will promote safety for installation infrastructure, employees, and the surrounding community.



A National Guardsman climbs a rope wall on the confidence course during the 2021 Army National Guard Best Warrior Competition at Camp Navajo Military Reservation.



REPI Funds:
\$1.0M
Partner Contributions:
\$9.6M

Total: \$10.6M

NOMINATING PARTNER

National Forest Foundation



U.S. Army Garrison-Hawai'i, Pacific Missile Range Facility Barking Sands, Marine Corps Base Hawai'i, O'ahu, Kaua'i, & Hawai'i Island

Increasing Resilience of Endangered Wildlife Found on Critical Landscapes

- U.S. Army Garrison-Hawai'i, Pacific Missile Range Facility Barking Sands, and Marine Corps Base Hawai'i are working in close collaboration with the National Fish and Wildlife Foundation (NFWF) **to protect and enhance native habitats that support conservation and climate resilience**. NFWF is an independent 501(c)(3) non-profit that **protects and restores imperiled species, promotes healthy oceans and estuaries, improves working landscapes for wildlife, advances sustainable fisheries, and conserves water for wildlife and people**.
- The island of Lāna'i, located in the Maui Nui complex, is home to numerous **threatened, endangered, and at risk species**, many of which are similar to those also found on DOD installations on other islands, such as Pōhakuloa Training Area (PTA) and Pacific Missile Range Facility (PMRF). This project will **create a predator-protected nesting area** for endangered band-rumped storm petrels, restore rare native dry-forest habitat, **establish a protected, artificial habitat** for reintroducing endangered orangeblack Hawaiian damselflies, and **preserve and restore native forest habitat** critical for recharging the island's freshwater aquifer.
- This ground-breaking project will **build the first landscape-scale fenced management area on Lāna'i to cultivate at-risk native landscapes and species in a compatible environment** free of non-native, damaging animals like feral pigs and deer. The shared benefit to all partners is large-scale habitat improvement on Lāna'i, ultimately **increasing numbers of at-risk species** found primarily within critical DOD training areas, away from military operations.



Akē'akē or Band-rumped storm-petrel is the smallest and rarest seabird that breeds in Hawai'i.



REPI Funds:
\$2.9M
Partner Contributions:
\$4.8M

Total: \$7.7M

NOMINATING PARTNER

National Fish and Wildlife Foundation





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



Pōhakuloa Training Area, Hawai'i Island

Nāpu'u Natural Resource Protection: Mitigating Rare Plant Impacts

- In collaboration with Pōhakuloa Training Area, this landscape-scale conservation project will combine efforts with the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife to **provide natural resource protection on Hawai'i Island**. Through local partnerships and community efforts, the Division of Forestry and Wildlife **protects, manages, and restores the natural and cultural resources of Hawai'i**.
- The Nāpu'u region of Hawai'i Island, state-managed lands in North Kona that are adjacent and ecologically similar to those found within PTA, has a combination of degraded, non-native, and fire-prone grasslands inhabited by non-native, hooved animals. Wildfires and invasive species present an **extreme threat to native vegetation and at-risk species** scattered throughout the region, reducing their resilience to climate change and chances for survival. This project employs **fence installation and habitat restoration activities that will protect and increase at-risk species** numbers by reducing non-native species cover and removing non-native mammals, thereby improving and increasing the habitat for those at-risk species. Outreach and education support through this project will provide opportunities for the community to learn about bio-cultural restoration and fire awareness while, in turn providing volunteer work such as out planting of native species, weeding of restoration areas, and fire fuels reduction.
- Shared benefits of this critical work include enacting a **collaborative approach to natural resource management** that will help **address impacts from and provide support for essential mission capabilities** of PTA while **stabilizing and increasing important habitat and state-wide populations of multiple at-risk species** in Hawai'i.



Marines, along with soldiers from Australia and New Zealand, watch as ordnance is fired during Rim of the Pacific exercise at Pōhakuloa Training Area, Hawai'i, July 18, 2018.



REPI Funds:
\$1.3M

Partner Contributions:
\$1.3M

Total: \$2.6M

NOMINATING PARTNER

State of Hawai'i Department of
Land and Natural Resources,
Division of Forestry and Wildlife



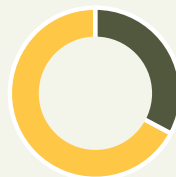
U.S. Army Garrison–Hawai'i: Makua Military Reservation, Schofield Barracks, Kahuku Training Area, Poamoho Training Area, O'ahu

Ecosystem Restoration and Rare Plant and Animal Preservation on O'ahu

- The proposed work to **preserve threatened and endangered species and enhance watersheds** throughout O'ahu is made possible through coordination between the U.S. Army Garrison–Hawai'i, the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife, and the Wai'anae Mountains Watershed Partnership (WMWP). WMWP, and nine other watershed partnerships across the state, are voluntary alliances of government and private landowners and land stewards committed through collaborative management to the common value of protecting Hawai'i's forested watersheds – the islands' only source of fresh water – and the natural and cultural values and benefits they provide.
- O'ahu is home to **numerous plant and animal species**; many are **threatened and endangered** and found on no other islands. Several of these plants and animals reside on DOD installations and adjacent state lands, presenting both a **threat to their health and survival and constraints on military capabilities and readiness**. This project would significantly **increase the effective management of rare species and their habitats through collection, propagation, and return into protected off-site habitats**. Active habitat support, including fire prevention and invasive species control activities, will also **enhance the nearby watershed, aquifer, and installation resilience** in the long term.
- Shared benefits of this project include **species conservation, watershed improvement, and installation resilience**. On state lands adjacent to military installations, the project partners will work collaboratively on invasive species management, watershed planting and enhancement, and fire prevention through hazardous fuels reduction. This joint effort will **benefit threatened and endangered species and habitats, support freshwater sources, reduce restrictions on military operations, and prevent the listing of other species within DOD training areas**.



The lo'i kalo—or wetland taro—of Ka'ala Farms, located beneath the Wai'anae Mountains, serve as a reminder of the importance of healthy watersheds.



REPI Funds:
\$2.7M

Partner Contributions:
\$6.8M

Total: \$9.5M

NOMINATING PARTNER

State of Hawai'i Department of
Land and Natural Resources,
Division of Forestry and Wildlife





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



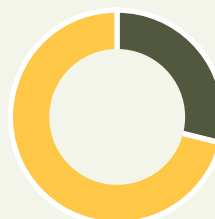
Fort Huachuca, Arizona

Land Protection and Climate Resilience, Fort Huachuca Sentinel Landscape Partnership

- Fort Huachuca is a Major Range Test Facility Base and the home of Army Intelligence. It has the world's largest Unmanned Aircraft System training center and is uniquely able to conduct full-frequency, full-power jamming as part of the DOD's cyber warfare testing and training. **The Fort Huachuca Sentinel Landscape** includes Sky Island Mountain ranges, important native grasslands, mesquite and creosote-dominated desert areas, and one of the most ecologically significant river systems in the Southwest, the San Pedro River, and the San Pedro Riparian National Conservation Area.
- Fort Huachuca's operations and mission capabilities must always consider **groundwater use and continuing development pressure**. A changing climate, long-term drought, and continued groundwater pumping may impact water supplies and endangered species in this region. Population growth and land-use conversion have increased competition for limited water resources while fragmenting essential wildlife habitats and encroaching upon Fort Huachuca's critical airspace.
- Through the **permanent protection of 7,300 acres of high-conservation value land as well as due diligence for critical water infrastructure, this project will support** ecological and water supply resilience across the Fort Huachuca Sentinel Landscape and provide significant and varied strategic benefits to the installation's mission.



Soldiers from Charlie Company, 40th Expeditionary Signal Battalion conduct a land navigation exercise Oct. 17, 2018 at Tinker Land Navigation Site.



REPI Funds:
\$1.3M
Partner Contributions:
\$3.2M

Total: \$4.5M

NOMINATING PARTNER

Arizona Land and Water Trust



Joint Base Lewis-McChord, Washington

Advancing Sentinel Landscape Priorities to Build Prairie and Working Landscape Resilience

- Joint Base Lewis-McChord (JBLM) is the **third largest Army installation and combines artillery and maneuver training missions** with airlift operations. The installation **anchors the Joint Base Lewis-McChord Sentinel Landscape**, which encompasses **the largest remaining prairie tract in the South Puget Sound region**.
- Prairie habitat degradation** and ongoing **development pressure** have resulted in **Endangered Species Act listings** of multiple species that rely on the ecosystems that encompass JBLM. Development has **increased military training restrictions** on critical open lands while creating **costly habitat management** and **population monitoring requirements** for JBLM.
- By establishing **diverse partnerships** with state, federal, private, tribal, and working landowners, this project aims to **alleviate environmental restrictions and habitat degradation outside JBLM**. Through coordination with project partners, the JBLM Sentinel Landscape Partnership Program will support the **installation's prairie restoration and farmland protection** to limit neighboring development and increase short- and long-term military mission flexibility and readiness.



Fire consumes a stand of invasive scotch broom and prairie grass as firefighters walk the interior of the 70-acre prescribed burn unit on JBLM Training Area 21.



REPI Funds:
\$2.4M
Partner Contributions:
\$2.4M

Total: \$4.8M

NOMINATING PARTNER

Joint Base Lewis-McChord Sentinel Landscape Partnership Program

SENTINEL LANDSCAPES





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



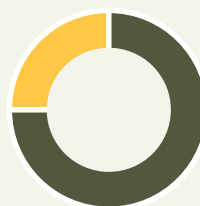
Joint Region Marianas: Marine Corps Base Camp Blaz, Andersen Air Force Base, Guam

Landscape Scale Feral Pig Control in Northern Guam

- Joint Region Marianas (JRM) is a unique command comprised of Naval Base Guam, Andersen Air Force Base (AAFB), and Marine Corps Base (MCB) Camp Blaz. JRM **provides installation support ashore to all DOD components and tenants in the Mariana Islands to enable military training and operations in the archipelago and greater Indo-Pacific.**
- For decades, **feral pigs have caused considerable damage to the island ecosystems in Guam and pose risks to an already fragmented and declining native ecosystem as well as Guam's sole source aquifer.** Feral pig management is a priority for Guam's agricultural community, village mayors, and the Government of Guam Department of Agriculture. The successful protection and restoration of threatened and endangered species and native habitats help fulfill measures described in DOD and Government of Guam environmental management plans. The collaborative efforts of the partners will reduce future environmental restrictions on DOD operations and protect island-wide water supplies.
- Through **military and local reforestation programs, the Joint Region Marianas project will work to implement** successful landscape-level feral pig control in the areas surrounding Camp Blaz and lands adjacent to AAFB. This project will support military and local reforestation programs to establish native plant species, protect endangered invertebrates, protect the integrity of groundwater recharge areas, and reduce feral pig populations to a level that decreases negative interactions with the local human population.



Air Force Airman 1st Class Martavius White points out a simulated visible threat to Staff Sgt. Lewis Drake during terrain familiarity training at Andersen Air Force Base, Guam, Oct. 28, 2022.



REPI Funds:
\$1.2M

Partner Contributions:
\$400K

Total: \$1.6M

NOMINATING PARTNER

White Buffalo, Inc.



White Buffalo Inc.

Conserving Native Species and Ecosystems

Joint Region Marianas: Naval Base Guam, Marine Corps Base Camp Blaz, Andersen Air Force Base, Guam

Guam Department of Agriculture: Native Plant Nursery Upgrades for Island-Wide Habitat Enhancement

- Joint Region Marianas (JRM) is unique command comprised of Naval Base Guam, Andersen Air Force Base, and Camp Blaz. JRM provides **installation support ashore** to all DOD components and tenants in the **Mariana Islands, enabling military training and operations** in the **archipelago** and the greater **Indo-Pacific region.**
- Guam is home to endemic limestone forest and savanna complex habitats threatened by **development pressure, invasive plants and animals, insect pests, and climate change impacts.** The **impacts** put pressure on military lands and ranges, subsequently affecting military training and operations as well as the communities' enjoyment of the natural environment.
- This project will **improve habitat and the ecological baselines of threatened, endangered and at-risk species** by supporting landscape-scale restoration on several savanna and forest conservation areas that are important to maintaining water quality.



The Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) is moored in Apra Harbor, Naval Base Guam for a planned port visit.



REPI Funds:
\$1.9M

Partner Contributions:
\$4.2M

Total: \$6.1M

NOMINATING PARTNER

Guam Department of Agriculture





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



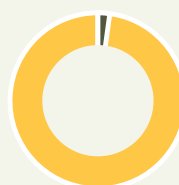
Joint Base McGuire-Dix-Lakehurst, Warren Grove Range, Naval Weapons Station Earle, Sea Girt National Guard Training Facility, AEGIS Combat System Engineering Site, New Jersey

Infrastructure Resilience and Natural Resource Enhancement

- Joint Base McGuire-Dix-Lakehurst (JBMDL) is a tri-Service installation that combines McGuire Air Force Base, Fort Dix, and Naval Air Engineering Station Lakehurst, making it the **largest and most advanced unit in the world for aircraft launching missions**. The Greenwood Triangle (Rt 70 – Rt 72- Rt 539) firebreak project includes part of the JBMDL property and will create wildfire fuel mitigation and firebreaks over 536 acres and provide protection to a 46,000-acre area. In addition, Warren Grove Range is one of the most heavily used Air National Guard training ranges in the U.S., and its location provides unique operational capabilities for all Services. Naval Weapons Station Earle operates a receipts, storage, segregation, and issue (RSSI) ordnance facility to support the Atlantic fleet, including Navy, Marine Corps, Coast Guard, and DOD conventional ammunition requirements.
- Due to hazardous fuel loads adjacent to JBMDL and Warren Grove Range, there has been a **surge in forest fires** that suspend military operations and result in overall mission hindrance.
- Through an inter-governmental approach, the REPI Challenge project will bolster **pre-event wildfire mitigation and post-event emergency response measures** to address fire fuel undergrowth that puts military missions and public safety in danger.



U.S. Army Soldiers assigned to the 113th Infantry Regiment conduct a platoon attack drill at Joint Base McGuire-Dix-Lakehurst, N.J. on Oct. 15, 2022. During the drill the platoon lead squad locates and suppresses the enemy, establishes supporting fire, and assaults the enemy position using fire and maneuver.



REPI Funds:
\$995K

Partner Contributions:
\$19.6M

Total: \$20.6M

NOMINATING PARTNER
New Jersey Department of
Environmental Protection



Pacific Missile Range Facility Barking Sands, Marine Corps Base Hawai'i, Pōhakuloa Training Area, Kaua'i, O'ahu, Hawai'i Island

Detection and Management of High-Impact Aquatic and Terrestrial Invasive Species

- DOD installations across Kaua'i, O'ahu, and Hawai'i Island are working with the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife to **manage invasive species**. Participating organizations, such as the Ko'olau Mountains Watershed Partnership, fosters **landowner collaboration and perpetuate the water resources of O'ahu by protecting and enhancing native ecosystems**.
- Pacific Island communities are experiencing unprecedented climate change** in the formation of invasive biological communities, and the risk of climate impacts is likely to occur disproportionately in these regions. For example, **coral reefs**, between Kāne'ohe Bay and Kailua Bay, that **protect** Marine Corps Base Hawai'i (MCBH) **from the effects of large surf, strong currents, and storm surges are threatened by invasive species**. Without healthy, intact reefs surrounding Mokapu Peninsula, DOD installations will not be protected from storms that are growing in intensity from climate change. This project employs **the development of eDNA technology for the detection of invasive aquatic species** in Hawai'i harbors, **expansion of native urchins to manage widespread invasive algae** in Kāne'ohe Bay, and **use of conservation detection dogs and DOD-approved unmanned aerial vehicle surveys to manage priority pests and weeds** on Hawai'i, O'ahu, and Kaua'i.
- This innovative project requires close partner coordination to achieve the shared benefits of **healthy reef conservation, increased climate resilience, and enhanced installation resilience**. Through joint efforts with the State of Hawai'i, this project will **strengthen the shores of Hawai'i while providing increased water supply and quality, decreased wildfire fuels, enhanced storm resistance, and reduced high-impact invasive species in the vicinity of PMRF, MCBH, and PTA**.



Healthy reef conservation at Kāne'ohe Bay, pictured above, is critical to increasing climate resilience at installations like Marine Corps Base Hawai'i and surrounding coastal communities.



REPI Funds:
\$3.1M

Partner Contributions:
\$5.6M

Total: \$8.7M

NOMINATING PARTNER
State of Hawai'i Department of
Land and Natural Resources,
Division of Forestry and Wildlife





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



Marine Corps Base Camp Pendleton, Naval Base Coronado, Naval Base Ventura County Point Mugu, Naval Weapons Station Seal Beach, California

West Coast Beach Breeding Bird Conservation Fund

- Camp Pendleton hosts one of only **three Marine Expeditionary Forces strategically positioned for global missions**. The base provides diverse training opportunities while playing a critical ecological role in housing some of the **last remaining habitats for several threatened and endangered species**.
- The federally and California State endangered **Least Tern population has declined significantly over the past decade**. A significant percentage of the species' nesting distribution **occurs on DOD installations in habitats surrounding southern and central California**. The environmental baseline of the species has deteriorated, which **could negatively affect future planned military training exercises, especially considering the additional habitat loss or degradation predicted to occur with sea level rise**.
- Through coordinated partner efforts, the West Coast Beach Breeding Bird Conservation Fund project will establish a **habitat and species management** framework for moving these species toward recovery. Improved status of the species population, particularly by increasing reproductive output and survival off-installation, will help to **maintain military mission activities within a changing environmental and regulatory landscape**.



U.S. Marines and civilians listen to a water guzzler installation brief by Mike Tucker, the chief game warden for Marine Corps Base Camp Pendleton, before installing a guzzler near the X-Ray Impact Area on Camp Pendleton, Calif., Jan. 15, 2022. Water guzzlers have been a vital part of animal conservation since the early years of Camp Pendleton. There are 19 endangered species on the base that rely on the water guzzlers each day in order to maintain a healthy population.



■ REPI Funds:
\$75K

■ Partner Contributions:
\$75K

Total: \$150K

NOMINATING PARTNER
Wildlife Innovations



Marine Corps Base Quantico Shoreline Erosion, Virginia

Resilience Improvements Planning

- Marine Corps Base Quantico (MCBQ), the crossroads of the Marine Corps, is located on the shores of the Potomac River and shares boundaries with Prince William County. **The base supports the only Marine Corps Air Facility (MCAF) near Washington, D.C.**, and is strategically vital to DOD, the Marine Corps, and the region.
- In recent years, MCBQ has experienced significant **natural infrastructure challenges off base, impacting the mission and operations of the base**. Increased Little Creek flooding from stormwater affects the primary entry gate access, causing significant impacts on MCBQ's mission and transportation in the National Capital Region. Additionally, if not addressed, shoreline erosion along the Potomac River threatens approximately 25 buildings on MCAF.
- Undertaking a proactive approach, the Marine Corps Base Quantico project will address **solutions for the pluvial flooding of Little Creek and shoreline stabilization** along MCAF and MCBQ. To address flooding at the base's main entry gate, a watershed survey will evaluate the sources of flooding from the headwaters of Little Creek to Fuller Gate, a primary access point for MCBQ.



Marine Corps Base Quantico Shoreline Erosion



■ REPI Funds:
\$286K

■ Partner Contributions:
\$286K

Total: \$572K

NOMINATING PARTNER
Northern Virginia
Regional Commission





REPI

UNITED STATES DEPARTMENT OF DEFENSE
2023 REPI CHALLENGE RECIPIENTS



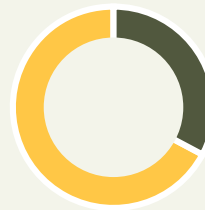
Joint Base San Antonio Camp Bullis, Texas

Camp Bullis Sentinel Landscape

- Camp Bullis Military Training Reservation is a U.S. Army training camp comprising 27,990 acres in Bexar County, Texas, northwest of San Antonio. **Camp Bullis hosts all student medic field training for DOD.** The Camp Bullis **Sentinel Landscape** encompasses ranch lands, spring-fed rivers, and one of the fastest-growing regions in the country.
- **Rapid population growth, hotter temperatures, and extended droughts have led to the loss of spring flow and drawdowns from the Edwards Aquifer,** impacting water supplies for Camp Bullis and rural landowners, towns, and cities.
- Through collaborative efforts with partner organizations, the Camp Bullis Sentinel Landscape project will use multiple protection measures to **implement natural infrastructure solutions that enhance groundwater replenishment and mitigate climate threats associated with drought and inland flooding.** By increasing groundwater replenishment and protecting recharge areas, the project aims to sustain the water well at Camp Bullis and build drought and inland flood resilience for the installation and the broader landscape.



A helicopter releases water onto a large wildfire Apr. 9, 2022 at Joint Base San Antonio - Camp Bullis demolition range area. JBSA-Camp Bullis comprises more than 27,000 acres of ranges, training areas, and wild-lands on San Antonio's North side and is a crucial training location for service members from Joint Base San Antonio. (U.S. Air Force photo by Brian Boisvert).



■ REPI Funds:
\$5.1M

■ Partner Contributions:
\$10.4M

Total: \$15.5M

NOMINATING PARTNER
Compatible Lands
Foundation

