

Securing Military Readiness Through Strategic Regional Collaboration to Address Installation Encroachment Concerns

October 28, 2025



Speakers:

- Beth Lachman, Senior Operations Researcher, RAND
- Amber Morin, LegacyWorks Group
- Shelia McNamara, Central Florida Regional Planning Council (CFRPC)

**Association of
Defense
Communities (ADC)
Installations
Innovation Forum
2025**

Outline

- **Background on encroachment threats**
- **Role of REPI and Sentinel Landscapes partnerships**
- **Examples of installation and community Sentinel Landscapes**

Military Installation Encroachment Threats

- **Encroachment are external pressures that limit a military installation ability to test, train, and operate including**
 - Land use impacting military use of land, waterways, and air space, e.g.,
 - Conversion of neighboring compatible natural or working lands to incompatible commercial or residential development
 - Adds to noise complaints, light pollution, spectrum interference, and security concerns that can restrict installation operations
 - Regional natural hazards such as wildfires, flooding, and drought
 - Foreign land ownership and increasing use of unauthorized drones
 - Environmental restrictions that limit military activities
- **Many of these threats are regional in nature, e.g.,**
 - Wildfire and invasive species spreading from nearby properties
- **Strategic regional and landscape scale collaboration is needed to address many of these threats, e.g.,**
 - Regional ecosystem, watershed, and fireshed management with different stakeholders and partners
 - Maintaining ecosystem health to enhance resiliency

Sources : REPI, "REPI PROGRAM 101," U.S. Department of Defense, factsheet, undated; USDA, DoD, and DOI, "The Sentinel Landscapes Partnership," factsheet, July 2025.

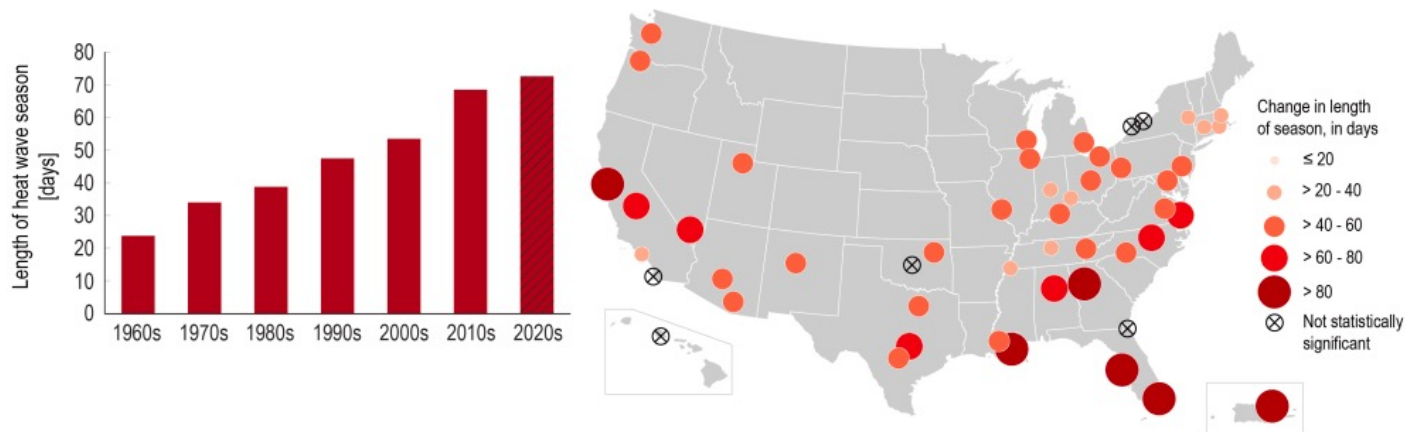
U.S. Wildfire Risk is Increasing

- **Increased wildfire risk across the U.S. because of**
 - More high temperature days
 - More intense, more widespread, and longer periods of drought & dryness
 - Development patterns near/in forests and other terrestrial ecosystems
 - Forest vulnerabilities from diseases, pests, and invasive species
 - Forest and other natural resource management history
 - Insufficient controlled burns to manage fuels and to benefit forest health and ecosystems
 - Degraded and vulnerable ecosystems and loss of biodiversity
- **Many regions are and/or will likely experience an increase in wildfire size, total area burned, intensity, number of, and the length of the wildfire season**
- **Regional problems by ecosystem, fireshed, and fire scape, requiring regional and local collaboration across stakeholders to address**

Sources include: Zachary L. Steel, et al., "The Fire Frequency-severity Relationship and the Legacy of Fire Suppression in California Forests," *Ecosphere*, Vol. 6, No. 1, January 2015; Emily J. Fusco, et al., "Invasive Grasses Increase Fire Occurrence and Frequency across US ecoregions," *Proceedings of the National Academy of Sciences*, Vol. 116, No. 47, November 2019;; etc.

Excessive Heat Threat is Increasing

- **Excessive heat impacts human health and infrastructure**
 - Increases risk for heat stroke, cramps and exhaustion
 - Can increase chemical air pollution and risk of wind blown dust
 - Can restrict military operations, e.g., testing and training
 - Can negatively affect roads, electrical grid, and water systems
 - Agriculture and natural landscapes can be stressed or degraded
- **Military uses a heat condition flag warning system because of human health risks called “wet-bulb globe temperature” (WBGT)**
 - Based on temperature, humidity, sunlight amount, and wind speed
 - Black flag days which halt training exercises are increasing



U.S. Heat Wave Season Length

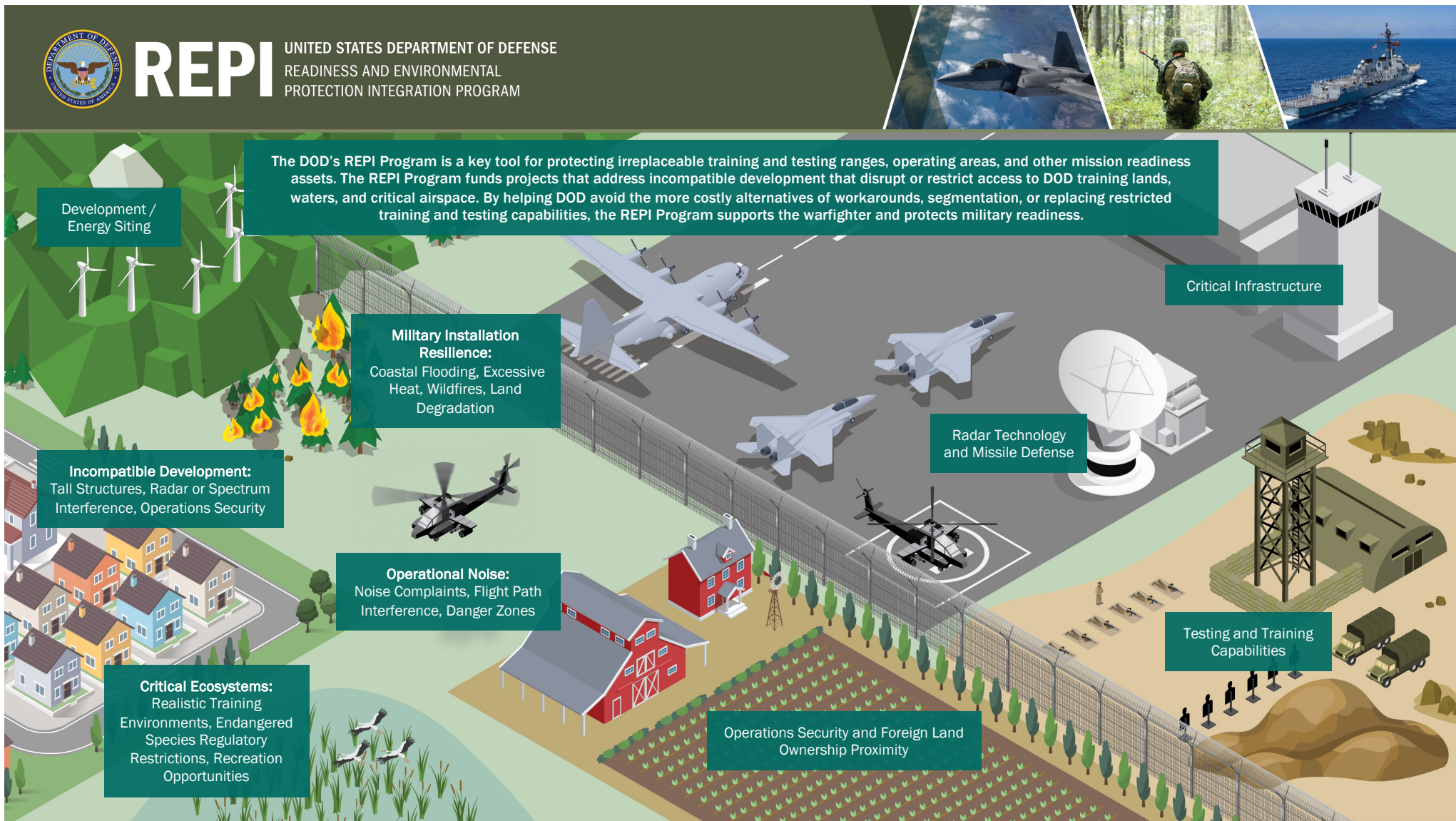
Source: APAFR, “Avon Park Air Force Range Military Installation Readiness Review,” July 2025.

Federal, State, and Local Government Policies and Activities Can Help Address Encroachment Threats

- **DoD grants and technical assistance, e.g.,**
 - REPI and Sentinel Landscapes partnerships
- **Examples of other federal agency activities**
 - DOI and USDA grants and technical assistance to protect working lands and healthy ecosystems
 - Wilderness areas on federal lands
 - 2001 USDA Roadless Rule which restricts road construction and timber harvests on over 58 million acres of national forests and grasslands to help maintain healthy ecosystems
- **Examples of state and local policies**
 - Zoning for local development
 - Stormwater management policies
- **However, many of these policies and activities are changing, e.g.,**
 - USDA plans to rescind the 2001 Roadless Rule
 - Florida SB 180 limits local governments' ability to adopt land-use and construction restrictions after major storms*

* Jesse Scheckner, "Gov. DeSantis signs hurricane recovery law that preempts local land use authority," Florida Politics, June 27, 2025. At <https://floridapolitics.com/archives/745260-gov-desantis-signs-hurricane-recovery-law-that-preempts-local-land-use-authority/>

The REPI Program works closely with programs under the Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E)) to fund projects that sustain military readiness, preserve operational capabilities, and protect critical landscapes and infrastructure essential to defense operations.



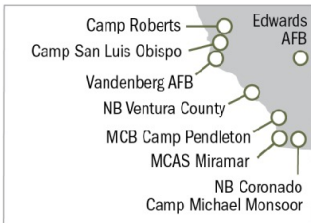
Source: REPI, "REPI 101 Briefing," Oct. 22, 2025.

REPI Program Partnership Map

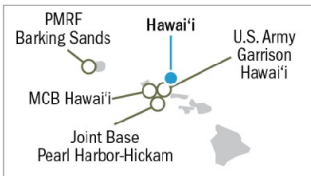
Alaska:



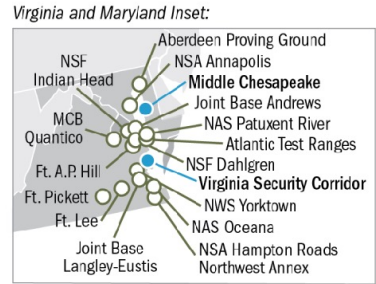
California Inset:



Hawaii:



Guam:



SENTINEL LANDSCAPES



- Avon Park AFR
- Camp Bullis
- Camp Ripley
- Eastern New Mexico
- Eastern North Carolina
- Fort Huachuca
- Georgia
- Great Salt Lake
- Guahan
- Hawaii
- Joint Base Lewis-McChord
- Kittatinny Ridge
- Middle Chesapeake
- Mojave Desert
- Northwest Florida
- South Carolina Lowcountry
- Southern Indiana
- Virginia Security Corridor

Source: REPI, "REPI 101 Briefing," Oct. 22, 2025.

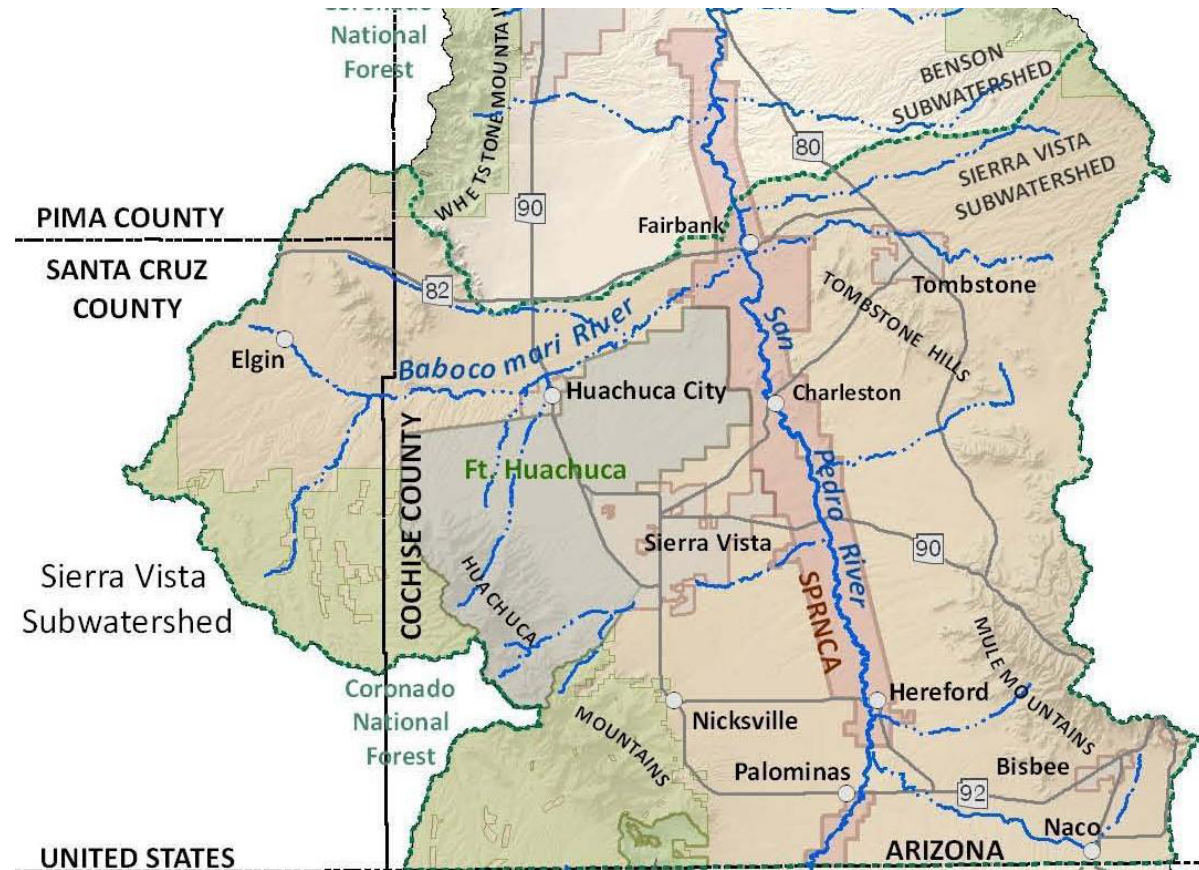
Regional Installation and Community Sentinel Landscape Partnership Examples

- **Fort Huachuca Sentinel Landscape Partnership (FHSL)**
 - Multiple factors contribute to a major regional wildfire threat, including topology, weather patterns, and national forest history
 - Drought and groundwater depletion are major issues partly because of development and growth in the Upper San Pedro Watershed
 - Speaker: Amber Morin, FHSL Partnership Coordinator
- **Avon Park Air Force Range (APAFR) Sentinel Landscape**
 - High regional natural hazard threats are excessive heat, wildfire, severe storms, and flooding
 - Regional partnerships related to landuse, ecosystems, and vegetation help address excessive heat and wildfire threats
 - Shelia McNamara, Central Florida Regional Planning Council (CFRPC)

Overview of Fort Huachuca in Southeast Arizona

- **Army testing and training installation**
 - Major range test facility
 - Hub for electromagnetic technology testing
 - Extensive unmanned aerial vehicle training facilities
- **Arid remote landscape facing development and population growth**
 - Grassland valleys and forested mountain ranges, used for livestock grazing
 - Growth causes increases in water demand, habitat fragmentation, and encroachment on the fort's airspace and electronic range
 - Also increasing wildfire risk

Map of Fort Huachuca in Relationship to its Neighbors



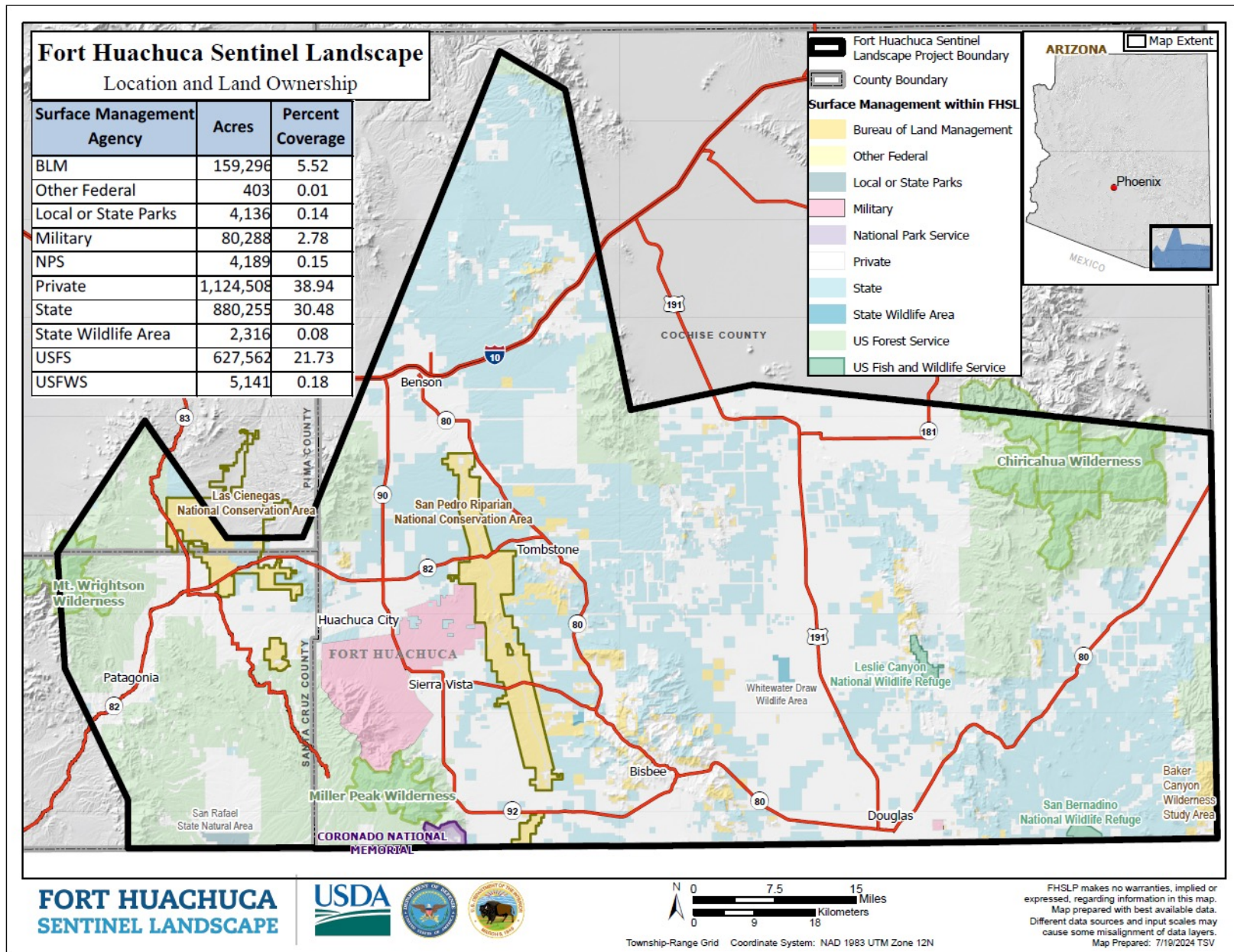
Sources include: USDA, DoD, and DOI, "Fort Huachuca Sentinel Landscapes," fact sheet, 2024; and USDA, DoD, DOI, "Landscapes: Fort Huachuca Sentinel Landscape," undated.

Overview of Fort Huachuca Sentinel Landscape Partnership (FHSL)

- **Purpose**
 - Support Fort Huachuca’s training capabilities and mission readiness
 - Promote compatible land uses and common partner missions
 - Foster community partnerships and leverage collective resources
- **Collaboration by over 40 partners, representing local, state, and federal agencies, NGOs, and landowners across varying land ownership**
 - Builds installation readiness through mission protection, water conservation, wildfire mitigation, agricultural support, and habitat restoration
 - Identify common partner goals and developing strategies to achieve those goals
 - Mutual sharing of resources saves taxpayer dollars
- **Regional encroachment threats include development, wildfire, and drought and groundwater depletion**

Sources include: USDA, DoD, and DOI, “Fort Huachuca Sentinel Landscapes,” fact sheet, 2024.

Fort Huachuca Sentinel Landscape Partnership



FSHL Partnership Examples of Regional Activities to Address the Wildfire Threat

- **FHSL Wildfire Focus Group**

- Ad-hoc subgroup of the standing FHSL Restoration Working Group, convened in a committee-like format when needed.
- Partners include USFS Coronado National Forest, BLM Gila District, USGS Southwest Biological Science Center, AZ Dept. of Forestry & Fire Management, Fry Fire District, Cochise County

- **Activities include**

- 50,000+/- acres of wildfire mitigation treatments surrounding Fort Huachuca and local communities on USFS, BLM, and private lands
- Terrestrial LiDAR pre/post effectiveness treatment monitoring
- USGS Innovative Landscape Network collaboration for threat mapping and loss avoidance study
- For wildfire management created potential operational delineation (PODs) planning units with Coronado NF and other stakeholders

FSHL Partnership Examples of Activities to Address Drought and Groundwater Depletion

- **FHSL Water and Riparian Group**
 - Ad-hoc subgroup of the standing FHSL Restoration Working Group, convened in a committee-like format when needed
 - Partners include Cochise County, City of Sierra Vista, BLM, USGS
- **Leverages a network of partnerships, e.g.,**
 - Upper San Pedro Partnership, Cochise Conservation & Recharge Network, and the San Pedro Riparian National Conservation Adaptive Management Committee
 - Cochise Conservation & Recharge Network conserves and improves riparian habitats in the Upper San Pedro Watershed
 - Identifies conservation easements to prevent development
 - Facilitates groundwater replenishment projects
- **Activities include**
 - 20+ years of groundwater monitoring along the San Pedro River
 - A network of 8 groundwater recharge projects in development
 - 52,625 AF of water benefits to the local aquifer

Lessons Learned from FHSL Experiences

- **Identify common goals with all relevant stakeholders**
 - E.g., encroachment challenges
- **Create a vision for success**
- **Know when your partnership should facilitate discussions or participate as a partner in other groups**
 - History and sustained leadership regarding a topic/project often make this clear
- **Get creative with financing projects and welcoming new partners to the table**
 - E.g., the USGS Innovation Landscapes Network
- **Tell your story**
 - Small successes create momentum

Location of Avon Park Air Force Range and Nearby Counties

Central Florida includes

- Florida Wildlife Corridor
- The headwaters of the Everglades

Avon Park Air Force Range

Major Air-to-ground Training Range in Central FL

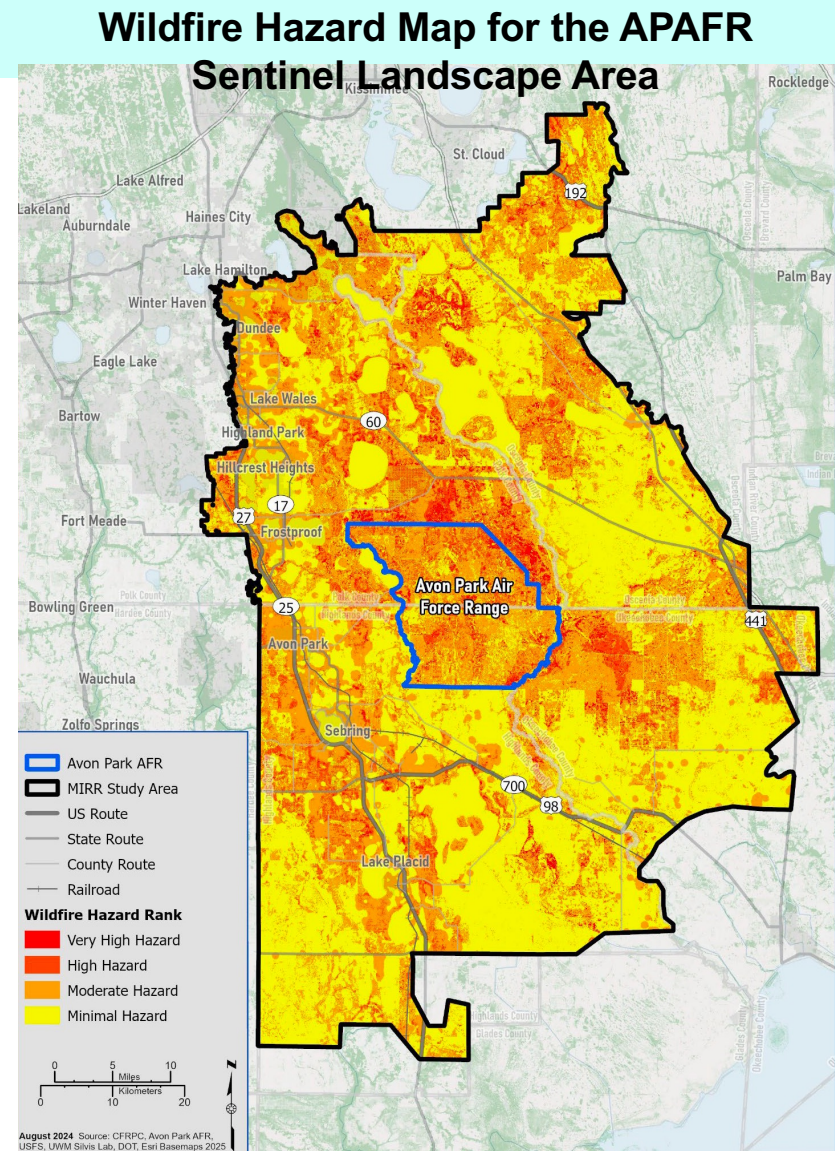
- Bombing and gunnery range used by all the Services
- Over 106,638-acres of ground range
- 12 million acres of airspace
- Significant biodiversity



Sources: APAFR, "Avon Park Air Force Range Military Installation Readiness Review," July 2025; APAFR, "Avon Park Air Force Range," briefing, April 16, 2024; and USDA, DoD, DOI, "Landscapes: Avon Park Air Force Range Sentinel Landscape," undated.

Overview of APAFR Sentinel Landscape (SL)

- **Started in 2016 to**
 - Strengthen military readiness
 - Protect the region's natural resources
 - Support agricultural working lands
 - Contribute to Florida's economy
- **Military readiness focus is on**
 - Limiting potential incompatible development
 - Decreasing noise complaints
 - Preventing light pollution
- **Includes over 40 partners, e.g.,**
 - Central Florida Regional Planning Council (CFRPC), county and state agencies, USFS, USFWS, and TNC
- **Recent APAFR Military Installation Readiness Review (MIRR) study used the SL boundary**



Sources: USDA, DoD, DOI, "Landscapes: Avon Park Air Force Range Sentinel Landscape," undated. At: <https://sentinel landscapes.org/landscapes/avon-park-air-force-range/> and APAFR, "Avon Park Air Force Range Military Installation Readiness Review," July 2025

Sample APAFR Partnership Regional Activities to Address Excessive Heat Threat

- **Excessive heat can be mitigated by vegetation and healthy native ecosystems, e.g.,**
 - In efforts to address urban heat islands, trees can reduce air temperatures up to 10° F and surface temperatures up to 25° F¹
 - Micro-forests of native species in Cambridge, MA, during hottest part of the day were 36° F cooler than the surrounding grass²
- **Approaches to maintain and increase vegetation in the surrounding areas by AFPAR Sentinel Landscape³**
 - Landscape-scale protection to conserve “mega parcels” from urban/suburban development through REPI projects, e.g.,
 - Already protected over 63,000 acres
 - Nature based solutions that use natural processes and ecosystem-based approaches to address environmental & economic issues, e.g.,
 - Using wetland restoration, reforestation, green infrastructure, prescribed fire, landscape-scale conservation

Sources:

¹ Arnab Ghosh, “A National Framework For Sustainable Urban Forestry To Combat Extreme Heat,” Federation of American Scientists, April 4, 2024.

² Benjamin G. Hitchings, “The Magic of Mini Forests,” *Planning Magazine*, Oct. 9, 2025.

³ APAFR, “Avon Park Air Force Range Military Installation Readiness Review,” July 2025.

Sample APAFR Partnership Regional Activities to Address Wildfire Threat

- **Polk County, CFRPC, and other jurisdictions are developing a local government ordinance template**
 - Develop model ordinances that counties can adopt to encourage development practices that reduce wildfire and flood risks
- **Increasing capacity of existing prescribed fire programs with different partners including**
 - USFS, counties, TNC, Florida Department of Agriculture and Consumer Services (FDACS), and Florida Forest Service (FFS)
 - Expand resources and develop a long-term funding source for controlled burns in the region
- **Partnership to develop a voluntary private landowner prescribed fire program**
 - Partners include FDACS, USFS, Archbold Biological Station, CFRPC, and APAFR

Sources: APAFR, “Avon Park Air Force Range Military Installation Readiness Review,” July 2025.

Lessons Learned from Avon Park AFR Sentinel Landscape Partnership

- **Overlapping of mutual interests and objectives sets the foundation for the partnerships**
- **Importance of having a wide range of different partners and partnerships**
 - It helps bring a wider variety of potential solutions to the table
- **Challenges with complex partnerships with different stakeholder interests**
 - Increases the length of time to accomplish the objectives
 - More approval processes need to be navigated
- **Critical to have all regional landowners involved from the start of the partnership**
 - Especially with an LLC with multiple owners

Discussion and Backups

Questions ?

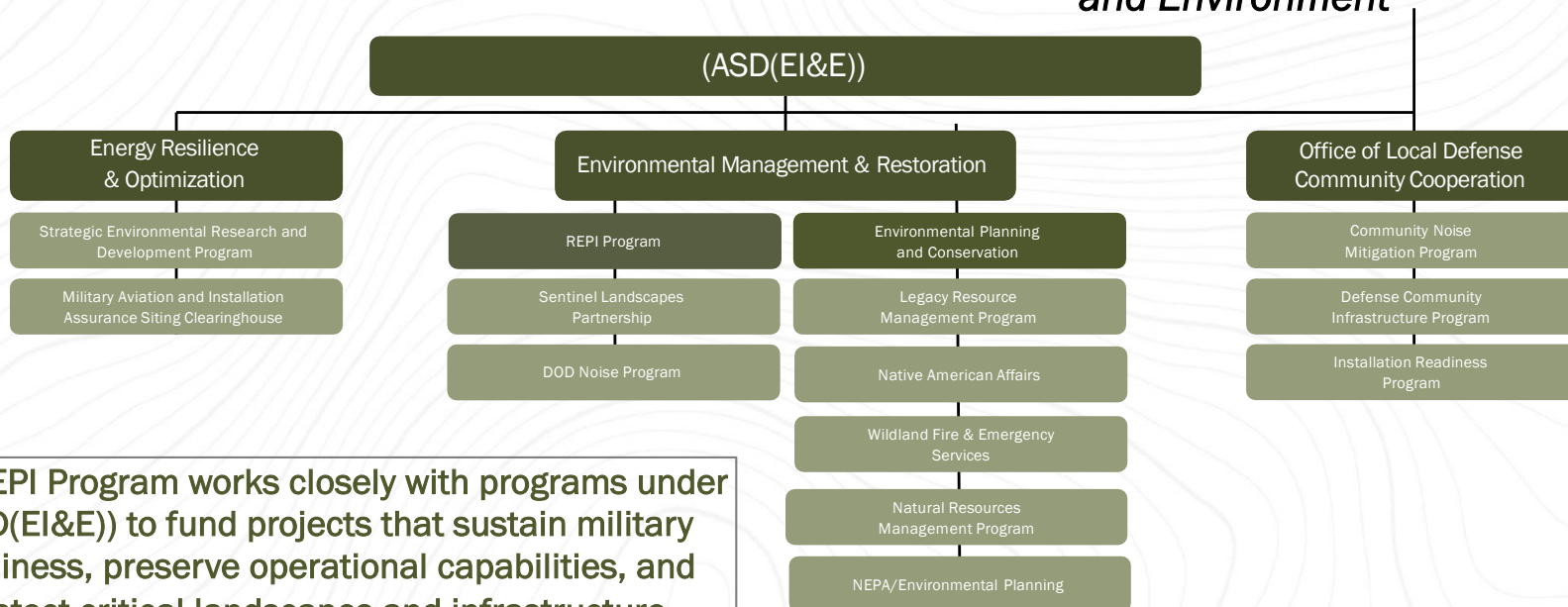


REPI

UNITED STATES DEPARTMENT OF DEFENSE
READINESS AND ENVIRONMENTAL
PROTECTION INTEGRATION PROGRAM



Safeguarding Critical Missions Through the Assistant Secretary of Defense for Energy, Installations, and Environment



The REPI Program works closely with programs under (ASD(EI&E)) to fund projects that sustain military readiness, preserve operational capabilities, and protect critical landscapes and infrastructure essential to defense operations.

Source : REPI, "REPI 101 Briefing," Oct. 22, 2025.

REPI Program Overview

- **Accomplishments:** From FY 2003 through FY 2024, the Department has leveraged over **\$1.5 billion** with nearly **\$1.4 billion** from partner contributions to protect **over 1.3 million acres** of land at **140 locations** across **40 states and territories** to preserve key operational assets, infrastructure, and capabilities. This represents a total investment of nearly **\$2.9 billion**.
- **Bipartisan Support from Congress:** The program has a bipartisan track record of building local, state, and regional installation-community partnerships that conserve valuable land around installations and ranges to avoid costly training workarounds and maximize taxpayer dollars. Program successes have led to steady increases in funding from Congress since its inception in 2003.
- **Mission Critical Partnerships:** To sustain critical operations, the REPI Program leverages funding from other Federal agencies, state and local governments, educational institutions, and private organizations to accelerate project implementation. These mutually beneficial partnerships are key to local community relationships in Hawaii, Guam, and CNMI, directly supporting Indo-Pacific mission posture and strategic deterrence.
- **Sentinel Landscapes Partnership:** Through DOD's involvement in the Sentinel Landscapes Partnership, the REPI Program advances mission assurance, builds enduring partnerships, and optimizes resource use across installations and ranges. As of 2025, there are 19 Sentinel Landscapes across 60 military installations and ranges.



Source : REPI, "REPI 101 Briefing," Oct. 22, 2025.