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**DEPARTMENT OF THE AIR FORCE**  
**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**  
**CREECH AIR FORCE BASE**



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*(See INRMP signature pages for plan approval date)*

10 **ABOUT THIS PLAN**

11 This installation-specific Environmental Management Plan (EMP) is based on the Department of the Air  
12 Force's (DAF) standardized Integrated Natural Resources Management Plan (INRMP) template. This  
13 INRMP has been developed in cooperation with applicable stakeholders, which includes Sikes Act  
14 cooperating agencies and/or local equivalents, to document how natural resources will be managed. Where  
15 applicable, external resources, including Department of Air Force Instructions (DAFIs); Department of Air  
16 Force Manuals (DAFMANs); Department of Defense Instructions (DoDIs); DAF Playbooks; federal, state,  
17 and local requirements; Biological Opinions (BOs); and permits are referenced.

18 Certain sections of this INRMP begin with standardized, DAF-wide "common text" language that addresses  
19 DAF and Department of Defense (DoD) policy and federal requirements. This common text language is  
20 restricted from editing to ensure that it remains standard throughout all plans. Immediately following the  
21 DAF-wide common text sections are installation sections. The installation sections contain installation-  
22 specific content to address local and/or installation-specific requirements. Installation sections are  
23 unrestricted and are maintained and updated by the approved plan owner.

24 *NOTE:* The terms "Natural Resources Manager," "NRM," and "NRM/Point of Contact (POC)" are used  
25 throughout this document to refer to the installation person responsible for the natural resources program,  
26 regardless of whether this person meets the qualifications within the definition of a natural resources  
27 management professional in DoDI 4715.03, *Natural Resources Management*.

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145 **DOCUMENT CONTROL**

146 ***Standardized INRMP Template***

147 In accordance with (IAW) the Air Force Civil Engineer Center (AFCEC) Environmental Directorate (CZ)  
148 Business Rule 08, *EMP Review, Update, and Maintenance*, the standard content in this INRMP template is  
149 reviewed periodically, updated as appropriate, and approved by the Natural Resources Subject Matter  
150 Expert.

151 This version of the template is current as of 11 October 2024 and supersedes the 2020 version.

152 *NOTE:* Installations are not required to update their INRMPs every time this template is updated. When it  
153 is time for installations to update their INRMPs, they should refer to the eDASH EMP Repository to ensure  
154 they have the most current version.

155 ***Installation INRMP***

156 **Record of Review**—The INRMP is updated no less than annually or as changes to natural resource  
157 management and conservation practices occur, including those driven by changes in applicable regulations.  
158 IAW the Sikes Act and Department of the Air Force Manual (DAFMAN) 32-7003, *Environmental*  
159 *Conservation*, the INRMP is required to be reviewed for operation and effect no less than every 5 years.  
160 An INRMP is considered compliant with the Sikes Act if it has been approved in writing by the appropriate  
161 representative from each cooperating agency within the past 5 years. Approval of a new or revised INRMP  
162 is documented by signature on a signature page signed by the installation commander (or designee) and a  
163 designated representative of the United States Fish and Wildlife Service (USFWS), state fish and wildlife  
164 agency, and National Oceanic and Atmospheric Administration (NOAA) Fisheries when applicable  
165 (DAFMAN 32-7003).

166 Annual reviews and updates are accomplished by the installation NRM and/or a Section Natural Resources  
167 Media Manager. The installation shall establish and maintain regular communications with the appropriate  
168 federal and state agencies. At a minimum, the installation NRM (with assistance as appropriate from the  
169 Section Natural Resources Media Manager) conducts an annual review of the INRMP in coordination with  
170 internal stakeholders and local representatives of USFWS, state fish and wildlife agency, and NOAA  
171 Fisheries, where applicable, and accomplishes pertinent updates. Installations will document the findings  
172 of the annual review in an Annual INRMP Review Summary. By signing the Annual INRMP Review  
173 Summary, the collaborating agency representative asserts concurrence with the findings. Any agreed  
174 updates are then made to the document, at a minimum updating the work plans.

175 **INRMP APPROVAL/SIGNATURE PAGES**

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**432D WING**

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**CONCURRENCE WITH CREECH AIR FORCE BASE**

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**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

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181 Pursuant to the Sikes Act (16 US Code § 670 et seq.), Creech Air Force Base has completed a 5-year update  
182 of the installation's Integrated Natural Resources Management Plan (INRMP). The 432d Wing has  
183 reviewed the INRMP and concurs with the findings and management recommendations therein.

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190 \_\_\_\_\_  
191 TREVOR T. MERRELL, Colonel, DAF  
192 Commander, 432d Wing

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**US DEPARTMENT OF THE INTERIOR**  
**FISH AND WILDLIFE SERVICE**  
**CONCURRENCE WITH CREECH AIR FORCE BASE**  
**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

Pursuant to the Sikes Act (16 US Code § 670 et seq.), Creech Air Force Base has completed its 5-year update of the installation’s Integrated Natural Resources Management Plan (INRMP). The US Fish and Wildlife Service has reviewed the INRMP and concurs with the findings and management recommendations therein.

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BRIAN CROFT, Field Supervisor  
Southern Nevada Fish and Wildlife Office,  
US Fish and Wildlife Service

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**NEVADA DEPARTMENT OF WILDLIFE**  
**CONCURRENCE WITH CREECH AIR FORCE BASE**  
**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

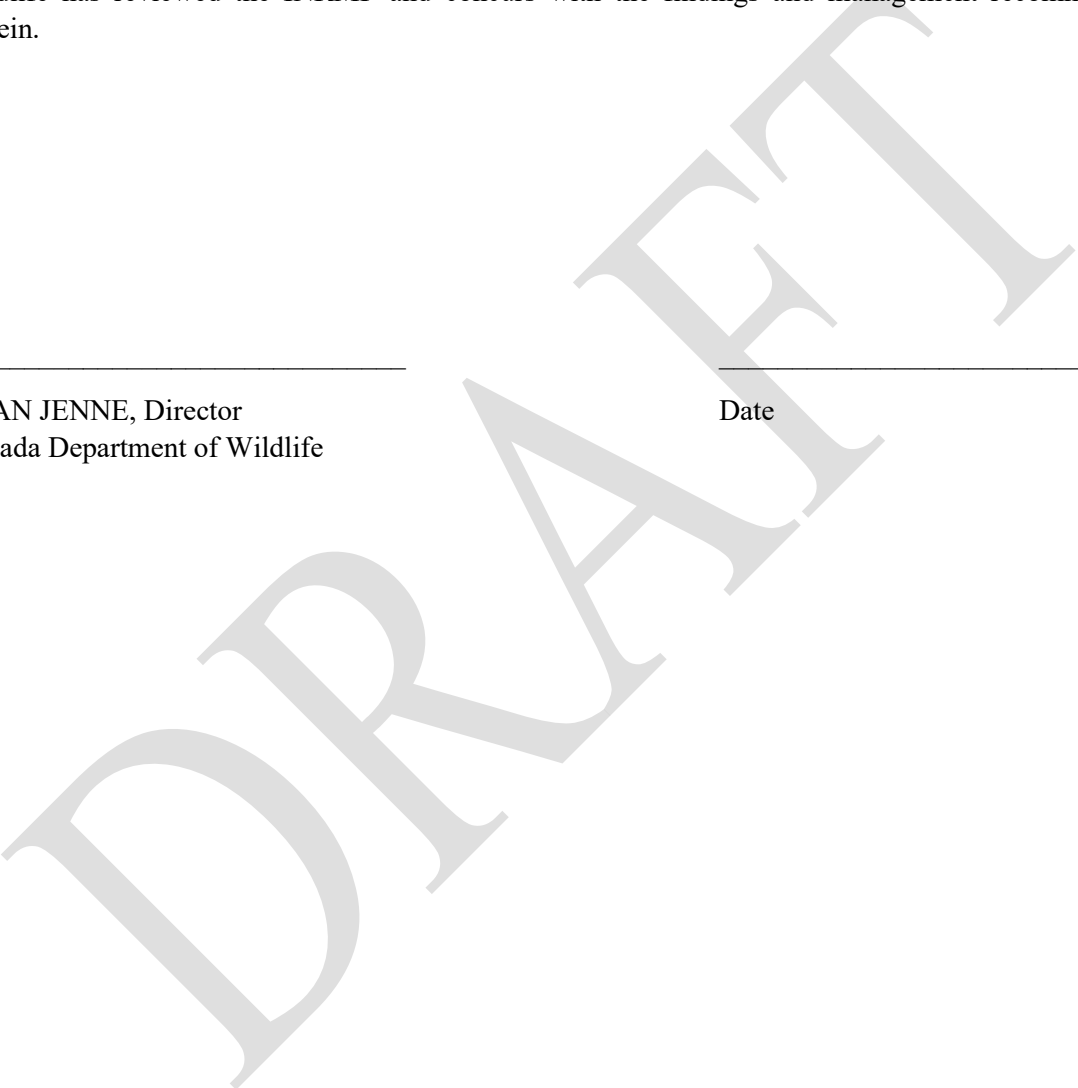
Pursuant to the Sikes Act (16 US Code § 670 et seq.), Creech Air Force Base has completed a 5-year update of the installation’s Integrated Natural Resources Management Plan (INRMP). The Nevada Department of Wildlife has reviewed the INRMP and concurs with the findings and management recommendations therein.

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ALAN JENNE, Director  
Nevada Department of Wildlife

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Date



**230 EXECUTIVE SUMMARY**

231 In 2019, command of Creech Air Force Base (AFB) separated from Nellis AFB and the Nevada Test and  
232 Training Range (NTTR) to allow for greater support and growth in the Creech AFB mission to test and  
233 conduct remotely piloted aircraft (RPA) operations. Previously, natural resources management at Creech  
234 AFB was integrated with natural resources management for Nellis AFB and the NTTR. Much of the  
235 material in this INRMP is new, but some information was adapted from the Nellis AFB/Creech AFB/NTTR  
236 Integrated Natural Resource Management Plan (INRMP) that was specific to Creech AFB or that pertained  
237 to all 3 units was retained. Implementing this INRMP will not entail a significant change in the installation's  
238 management direction.

239 Under the Sikes Act, as amended (16 U.S.C. 670 et seq.), the Secretary of Defense is directed to “. . . carry  
240 out a program to provide for the conservation and rehabilitation of natural resources on military  
241 installations.” The INRMP provides guidance to (1) ensure mission sustainability to the highest degree in  
242 accordance with (IAW) the Sikes Act, (2) support the military mission by ensuring compliance with Section  
243 670a of the Act, and (3) ensure no net loss in the military capability of Creech AFB.

244 The primary responsibility of the DAF is to project American airpower for enhancing the nation's defensive  
245 capabilities. Operations at Creech AFB assist this by supporting continuous overseas remotely piloted  
246 aircrafts (RPA) contingency operations and providing RPA initial qualifications. Management and  
247 maintenance of natural resources on base is necessary to support mission-critical infrastructure and avoid  
248 future mission restrictions.

249 The INRMP provides guidance to help new construction/expansion projects on Creech AFB avoid impacts  
250 to natural resources during the planning, designing, and management phases, where practicable. The  
251 INRMP ensures that landscaping at new construction areas and some existing facilities will use xeriscaping  
252 with native species where possible, especially where development interfaces with natural habitats. It also  
253 ensures that sensitive habitats supporting species such as the Mojave population of the desert tortoise  
254 (*Gopherus agassizii*), which is listed by the Endangered Species Act (ESA) as threatened and protected by  
255 the State of Nevada, are also considered during planning, site selection, and decision-making.

256 Department of Air Force Manual (DAFMAN) 32-7003, Section 3.3, directs that the INRMP defines natural  
257 resources management goals and objectives consistent with the military mission and ensures no net loss in  
258 the capability of installation lands to support the military mission. Management strategies for achieving the  
259 installation's natural resources goals and objectives are based on adaptive management principles. The  
260 natural resources management goals for Creech AFB are as follows:

- 261 • Ensure long-term wildlife and ecosystem viability on Creech AFB;
- 262 • Maintain compliance with federal, state, local, and military regulations;
- 263 • Sustain the military mission while implementing ecosystem management;
- 264 • Update the natural resources management database.

265 The Creech INRMP provides specific goals, objectives, and projects set towards achieving the installation's  
266 natural resource management goals. Goals and objectives for Creech AFB are detailed in [Section 8.0](#). The  
267 INRMP describes these recurring and future projects and identifies internal processes and policies that  
268 support natural resource management objectives to ensure regulatory compliance. Some projects may  
269 require Environmental Assessments (EA) and/or Environmental Impact Statements (EIS) to fulfill National  
270 Environmental Policy Act (NEPA) requirements. Projects may also require Section 7 consultation with the  
271 US Fish and Wildlife Service (USFWS), IAW the ESA. Implementation of projects identified in this

272 INRMP or those required by another regulatory authority are programmed for funding as directed by the  
273 DAF, and implementation of those projects depends on the availability of adequate funding.

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## 274 **1.0 OVERVIEW AND SCOPE**

275 This Integrated Natural Resources Management Plan (INRMP) was developed to provide effective  
276 management and protection of natural resources. It summarizes the natural resources present on the  
277 installation and outlines strategies to adequately manage those resources. Natural resources are valuable  
278 assets of the Department of the Air Force (DAF). They provide the natural infrastructure needed for testing  
279 weapons and technology, as well as for training military personnel for deployment. Sound management of  
280 natural resources increases the effectiveness of DAF adaptability in all environments. The DAF has  
281 stewardship responsibility for the physical lands on which installations are located to ensure all natural  
282 resources are properly conserved, protected, and used in sustainable ways. The primary objective of the  
283 DAF natural resources program is to sustain, restore, and modernize natural infrastructure to ensure  
284 operational capability and no net loss in the capability of DAF lands to support the military mission of the  
285 installation. The plan outlines and assigns responsibilities for the management of natural resources,  
286 discusses related concerns, and provides program management elements that will help to maintain or  
287 improve the natural resources within the context of the installation's mission. The INRMP is intended for  
288 use by all installation personnel. The Sikes Act is the legal driver for the INRMP.

### 289 ***1.1 Purpose and Scope***

290 The INRMP serves as a practical management guideline for the management of natural resources on Creech  
291 Air Force Base (AFB). INRMP development and implementation will be integrated with the development  
292 and implementation of Creech AFB's Installation Development Plan and other associated plans. The  
293 INRMP is "integrated" for the following reasons:

- 294 • It brings together DAF mission requirements and natural resource management goals within a  
295 single document.
- 296 • It communicates federal, state, and local regulations, requirements, and DAF policy.
- 297 • It is mutually supportive and not in conflict with other installation plans.
- 298 • It is derived from multiple scientific disciplines.
- 299 • It describes an integrated ecosystem approach to environmental management, considering  
300 information from the environment.
- 301 • It provides guidelines to sustain and conserve native vegetation at Creech AFB and to maintain  
302 realistic training areas while protecting desert ecosystems.

303 The Creech AFB Natural Resources Program (CNRP) has spent a substantial amount of time documenting  
304 the environment and ecology across Creech AFB. Despite this effort, many data gaps still exist and require  
305 continuous data collection and analysis to identify trends due to the ongoing nature of major environmental  
306 challenges. These challenges are described in [Section 2.4.1](#) and [7.16](#).

307 The INRMP will accomplish the following tasks for Creech AFB:

- 308 • Identify remaining data gaps;
- 309 • Recommend and prioritize tasks to fill those gaps;
- 310 • Provide the framework for a geographic information system (GIS) database that will maintain and  
311 store current and past natural resource data in a format to be used as a tool for natural resource  
312 management; and
- 313 • Provide specific guidelines to assist managers when making natural resource-based decisions to  
314 support mission operations and ensure compliance with federal laws, Executive Orders (EOs), and  
315 Department of Defense (DoD) manuals, instructions, policies.

316 Because the INRMP must accommodate changes in the military mission, state and federal regulations, and  
 317 the environment, the following are completed when preparing and subsequently updating this document:

- 318 • Review past natural resource studies that are pertinent to management decisions and incorporate  
 319 these studies by reference;
- 320 • Provide technical guidance to assist in decision making;
- 321 • Implement adaptive management; and
- 322 • Provide an easily updated GIS database to catalog natural resources found on Creech AFB.

323 The GIS database can be used by natural resource managers (NRM) to identify sensitive areas on Creech  
 324 AFB; thus, new infrastructure can be sited based on the requirements of the mission, while minimizing  
 325 impacts to the environment. The GIS database will be useful for developing environmental assessments  
 326 (EAs), environmental impact statements (EISs), and other planning documents.

327 This plan also summarizes natural hazards and other variables that may threaten natural resources and the  
 328 mission. By incorporating natural hazard considerations into relevant sections of this plan, the installation  
 329 addresses guidance from Department of Defense Directive (DoDD) 4715.21 *Improving Military*  
 330 *Installation and Critical Resources Resilience*, Department of Defense Manual 4715.03 *Integrated Natural*  
 331 *Resources Management Plan Implementation Manual*, and Department of the Air Force Manual  
 332 (DAFMAN) 32-7003 *Environmental Conservation*.

### 333 **1.2 Management Philosophy**

334 The INRMP serves as a key component of the Installation Development Plan, which provides background  
 335 and rationale for the policies and programming decisions related to land use, resource conservation,  
 336 facilities and infrastructure development, and operations and maintenance to ensure that they meet current  
 337 requirements and provide for future growth. The INRMP fosters environmental stewardship by identifying  
 338 the natural resources present on the installation and developing management goals for these resources. The  
 339 management objectives are integrated into mission operations and support requirements and regulatory  
 340 compliance to minimize natural resource constraints.

341 The Creech AFB Natural Resources Program assumes the responsibility of managing the ecosystems within  
 342 Creech AFB in coordination with the United States Fish and Wildlife Service (USFWS) and the Nevada  
 343 Department of Wildlife (NDOW). The goal in managing ecosystems on Creech AFB is to support the  
 344 military mission through conservation and enhancement of ecosystem integrity. The principles of the DAF  
 345 for ecosystem management will be to maintain or restore ecological processes, hydrological processes, and  
 346 ecosystem types across their natural range where practical and consistent with the military mission  
 347 (DAFMAN 32-7003).

348 Department of Defense Manual 4715.03 describes how the DoD incorporates ecosystem-based  
 349 management by:

- 350 • Maintaining and improving the sustainability and native biodiversity of ecosystems;
- 351 • Considering ecological units and timeframes;
- 352 • Supporting sustainable human activities;
- 353 • Developing a vision of ecosystem health (through collaboration with regulators and stakeholders);
- 354 • Developing coordinated approaches to work towards ecosystem health;
- 355 • Relying on the best science and data available;
- 356 • Using goals and objectives to monitor and evaluate outcomes;

- 357 • Using adaptive management (that accommodates training and test mission changes and resultant  
358 impacts on ecosystems); and
- 359 • Implementing through installation plans and programs.

360 Creech AFB also implements adaptive management. This approach uses a systematic process to continually  
361 improve natural resources management policy and practices by monitoring ongoing operations and  
362 applying lessons learned to adjust programs as needed (DAFMAN 32-7003). Adaptive management helps  
363 ensure proper management of natural resources, given the highly variable nature of the ecosystems present.  
364 By conducting monitoring programs required under federal and state environmental laws, DAF activities  
365 at Creech AFB comply with those laws and prevent issues that could slow or halt mission operations.  
366 Furthermore, a proactive conservation strategy enables the DAF to align the interests of the military mission  
367 with those of regulatory agencies.

368 Creech AFB's ecosystem is typical of the Mojave Desert, which has highly variable growing seasons. The  
369 conditions require that monitoring programs be developed to define and prioritize the measurable  
370 parameters of various natural resources, thus allowing for proper evaluation of the effectiveness of  
371 management measures. Because natural resources are continually changing, their responses to disturbances,  
372 management actions, and environmental trends can be quantified only after long-term monitoring efforts  
373 have been evaluated.

374 Environmental conditions that result in slow rates of biotic changes on Creech AFB also result in slow  
375 recovery rates for ecosystems exposed to anthropogenic stressors. Desert vegetation that is disturbed,  
376 whether by trampling, vehicles, grading, or ordnance, is unlikely to return to its pre-disturbance condition  
377 during an average human lifetime without some form of active management. The slow recovery of disturbed  
378 desert ecosystems necessitates patient and far-sighted approaches to natural resources management. If such  
379 areas are to benefit from environmental restoration, remediation activities should begin at the earliest  
380 practical opportunity.

381 Natural resource strategies described in this plan are in alignment with the ecosystem-based and adaptive  
382 management approach. Most depictions of the adaptive management cycle include phases for planning,  
383 acting, and evaluation. Managers should explicitly address vulnerabilities to natural hazards at several  
384 stages of the adaptive management cycle in support of DoDI 4715.28, *Military Installation Resilience*.

385

### 386 ***1.3 Integration with Other Plans***

387 This INRMP describes the integration of the CNRP with other installation plans. Because Creech AFB has  
388 only recently come under separate command from Nellis AFB and the Nevada Test and Training Range  
389 (NTTR), not all plans relevant to the Creech AFB INRMP have been developed yet. Future Creech AFB-  
390 specific plans may be developed and will be updated in the subsequent INRMP updates, after plan  
391 completion. Existing plans include the Bird Aircraft Strike Hazard (BASH) Plan ([Section 7.12](#)), an  
392 Installation Development Plan, and an Air Installation Compatible Use Zone (AICUZ) Program, the  
393 Integrated Pest Management Plan (IPMP) ([Section 7.11](#)), and the Integrated Cultural Resource  
394 Management Plan (ICRMP) ([Section 7.14](#)).

#### 395 *Installation Development Plan*

396 Within the DAF, an environmental impact analysis process (EIAP) is written into Air Force Instruction  
397 (AFI) 32-1015, *Integrated Installation Planning*. Planners shall alert the EIAP Program Manager as early  
398 in the planning process as possible to initiate requirements of the National Environmental Policy Act

399 (NEPA). Planning activities must integrate the NEPA processes to ensure that planning and decisions reflect  
400 environmental values; identify alternatives considered; document which alternatives will be carried forward  
401 for full analysis, including the rationale for those dismissed; and avoid delays later in the process and  
402 potential conflicts. Additionally, the EIAP supports the formulation of strategies to avoid or mitigate  
403 adverse environmental impacts. The INRMP supports these activities by detailing the location of natural  
404 resources and conservation actions as required by law. The INRMP identifies the relevant regulatory  
405 agencies and DAF stakeholders and provides guidance on who to contact and collaborate with during  
406 planning activities.

#### 407 *Air Installation Compatible Use Zone Program*

408 Another program where integration with the INRMP is necessary is the AICUZ program. The purpose of  
409 the AICUZ program is to achieve compatibility between air installations and neighboring communities  
410 through the following actions:

- 411 • Protect the health, safety, and welfare of civilians and military personnel by encouraging land uses  
412 compatible with aircraft operations.
- 413 • Reduce noise impacts caused by aircraft operations while meeting operational, training, and flight  
414 safety requirements, both on and in the vicinity of air installations.
- 415 • Inform the public about the AICUZ program and seek opportunities for cooperative efforts to  
416 minimize impacts of noise and aircraft accident potential by promoting compatible development in  
417 the vicinity of military air installations.

418 Given that land use is a large component of the AICUZ program, the INRMP delineates how future  
419 development is to be overseen from an environmental perspective. It also indicates which pertinent laws,  
420 regulations, and collaborations must be addressed regarding changes in land use and construction.  
421 Furthermore, the INRMP provides an avenue for cooperation with external organizations in support of  
422 natural resources conservation, and to ensure land use decisions outside of the property boundaries are  
423 compatible with an air installation.

#### 424 **1.4 Authority**

425 The Sikes Act, 16 United States Code (U.S.C.) § 670a, requires INRMP development and implementation  
426 for all DoD installations with significant natural resources. The installation, USFWS, and Nevada  
427 Department of Wildlife cooperatively developed this INRMP. The DAF natural resources program ensures  
428 continued access to land, air, and water resources to conduct realistic military training and testing, as well  
429 as to sustain the long-term ecological integrity of the resource base.

430 This INRMP is developed under and proposes actions in accordance with (IAW) applicable DoD and DAF  
431 policies, directives, and instructions. DAFMAN 32-7003 provides the necessary direction and instruction  
432 for preparing an INRMP. The plan addresses issues using guidance provided under legislation, EOs,  
433 Directives, and Instructions including Department of Defense Instruction (DoDI) 4715.03; Air Force Policy  
434 Directive (AFPD) 32-70, *Environmental Quality*; and DAFMAN 32-7003. DoDI 4715.03 provides  
435 direction for DoD installations to establish procedures for an integrated program for multiple-use  
436 management of natural resources. AFPD 32-70 discusses general environmental quality issues, including  
437 proper cleanup of polluted sites, compliance with applicable regulations, conservation of natural resources,  
438 and pollution prevention. DAFMAN 32-7003 provides guidance and procedures for cultural and natural  
439 resources programs at DAF installations. [Appendix A](#) of this plan, the “Annotated Summary of Key  
440 Legislation Related to Design and Implementation of the INRMP” Table, summarizes key legislation and  
441 guidance used to create and implement this INRMP. Refer to the complete listing of AFIs, DAFMANs, the

442 Federal Register, and the U.S.C.s to ensure that all applicable guidance documents, laws, and regulations  
443 are reviewed below.

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444 **2.0 INSTALLATION PROFILE**

445

|  |  |
|--|--|
| Office of Primary Responsibility (OPR)   | 432d Support Squadron Civil Engineer has overall responsibility for implementing the natural resources management program and is the lead organization for monitoring compliance with applicable federal, state, and local regulations.  |
| Natural Resources Manager/Point of Contact (POC)   | Name: Sean Dorrough<br>Phone: (702) 404-1836<br>Email: sean.dorrough.1@us.af.mil   |
| State and/or local regulatory POCs (Include agency name for Sikes Act cooperating agencies)  | Brian Croft<br>Field Supervisor, US Fish and Wildlife Service<br>Southern Nevada Fish and Wildlife Office<br>4701 North Torrey Pines Drive<br>Las Vegas, NV 89130-2301<br><br>Alan Jenne<br>Director, Nevada Department of Wildlife<br>6980 Sierra Center Pkwy #120<br>Reno, NV 89511  |
| Total acreage managed by installation  | 2,409 acres  |
| Total acreage of wetlands  | 0 acres  |
| Total acreage of forested land   | 0 acres  |
| Does installation have any Biological Opinions? (If yes, list title and date, and identify where they are maintained)  | N/A  |
| Natural Resources Program Applicability (Place a checkmark next to each program that must be implemented at the installation. Document applicability and current management practices in <a href="#">Section 7.0</a> ) | <input checked="" type="checkbox"/> Fish and Wildlife Management<br><input type="checkbox"/> Outdoor Recreation and Access to Natural Resources<br><input checked="" type="checkbox"/> Conservation Law Enforcement<br><input checked="" type="checkbox"/> Management of Threatened, Endangered, and Host Nation-Protected Species<br><input checked="" type="checkbox"/> Water Resource Protection<br><input type="checkbox"/> Wetland Protection<br><input checked="" type="checkbox"/> Grounds Maintenance<br><input type="checkbox"/> Forest Management<br><input checked="" type="checkbox"/> Wildland Fire Management<br><input type="checkbox"/> Agricultural Outleasing<br><input checked="" type="checkbox"/> Integrated Pest Management Program<br><input checked="" type="checkbox"/> Bird/Wildlife Aircraft Strike Hazard (BASH)<br><input type="checkbox"/> Coastal Zone and Marine Resources Management<br><input checked="" type="checkbox"/> Cultural Resources Protection<br><input checked="" type="checkbox"/> Natural Hazards<br><input checked="" type="checkbox"/> Public Outreach<br><input checked="" type="checkbox"/> Geographic Information Systems (GIS) |

446

## 447 **2.1 Installation Overview**

### 448 *2.1.1 Location and Area*

449 Creech AFB is a 2,409-acre installation located along US Highway 95 in Nevada, 1 mile northwest of  
450 Indian Springs and about 40 miles northwest of Las Vegas. The average elevation of the base is  
451 approximately 3,110 feet above mean sea level (MSL). Department of Air Force facilities are found on both  
452 the north and south sides of the highway, with most assets located to the north, including all runways,  
453 hangars, administration buildings, air traffic control tower, and other structures and facilities associated  
454 with maintenance and operation. South of the highway is a parcel of land known as “T-Shirt,” which  
455 includes a defunct recreational vehicle campground (consisting today of only old concrete pads and some  
456 water spigots) and several small structures, including the 99th Ground Combat Training building and the  
457 Echoes of Faith church. Figures 1 and 2 in [Appendix I](#) depict Creech AFB’s location and overview.

458 Portions of Creech AFB are withdrawn from Bureau of Land Management (BLM) and USFWS jurisdiction  
459 for use by the DAF. The DAF has primary jurisdiction on this land but must coordinate with BLM and  
460 USFWS to ensure mutually beneficial management. Management responsibilities are further discussed in  
461 [Section 4.0](#) Figures 1 and 2 in [Appendix I](#) display the withdrawn lands at Creech AFB.

### 462 *2.1.2 Installation History*

463 Creech AFB arose from a small, military sub-post training site, known as Indian Springs Airport. It was  
464 established as a training center after the December 1941 aerial attack on Pearl Harbor. By March 1942, it  
465 had 3 landing strips and taxiways and was being used as a divert field and a base for air-to-air gunnery  
466 training. In early 1943, facilities construction began. Soon thereafter, a ground training school for B-17 co-  
467 pilots was established, and the airport’s fleet included 29 B-17s, 18 TC-26s, and 6 AT-61 trainers. After  
468 World War II ended, use of the airfield diminished, and it was inactivated in early 1947.

469 With onset of the Cold War and establishment of an independent Air Force, Indian Springs Airport was  
470 reactivated in January 1949 and assigned to the Air Training Command, which redesignated the field as  
471 Indian Springs AFB. In 1950, the base received its first permanently assigned Air Force unit. In 1952, the  
472 base was transferred to the Air Research and Development Command and realigned under the Air Force  
473 Special Weapons Center in Albuquerque, New Mexico. Four years later, the base became the primary  
474 practice site for the “Thunderbirds”, the 3600th Air Demonstration Team.

475 In 1961, Indian Springs AFB came under control of the Tactical Air Command. Its roles included  
476 provisioning support to both on- and off-site missions, such as the Continental Nuclear Test Program. In  
477 1964, the Air Force re-designated Indian Springs AFB as Indian Springs Air Force Auxiliary Field (AFAF)  
478 (USAF 1993) and assigned it to Nellis AFB (NAFB) to provide range maintenance on the NTTR and to  
479 host airmen and aviators from all services needing realistic field training. The base, however, had no  
480 operational mission of its own, and a detachment of UH-1N helicopters in the 1970s to 1980s was the only  
481 aircraft unit assigned to the installation.

482 In 1992, the Tactical Air Command was inactivated, and Indian Springs AFAF was assigned to the new Air  
483 Combat Command (ACC). Four years later, the airfield launched the first flight of the RQ-1 Predator  
484 remotely piloted aircraft (RPA) and, in early 2001, the Predator successfully launched a Hellfire missile on  
485 the NAFB Range, effectively transforming Indian Springs AFB from a support center to an operations  
486 center. The RPA mission subsequently transferred to Indian Springs AFAF and grew rapidly.

487 In 2005, the USAF re-designated Indian Springs AFAF as Creech AFB in honor of General Wilbur L.  
488 Creech, who commanded the Tactical Air Command from 1978 to 1984. As vice commander of

489 Aeronautical Systems Division, his advocacy for systems development and acquisition paved the way for  
 490 the Predator RPA. Two years later, the first MQ-9 Reaper ([Figure 2-1](#)) arrived and the USAF activated the  
 491 432d Wing and the 432d Air Expeditionary Wing at Creech AFB. In 2012, the 799th Air Base Group  
 492 improved the base's operational support. Two years later, the 726th Operations Group of the Air Force  
 493 Reserve Command was established at Creech AFB and, in early 2015, the 99th Ground Combat Training  
 494 Squadron was inactivated.

495



496

497 Figure 2-1. MQ-9 Reaper on the flight line at Creech Air Force Base. United States Air Force photo by  
 498 Senior Airman Haley Steven.

499

500 In 2017, the Persistent Attack and Reconnaissance Operations Center was activated at Creech AFB, once  
 501 again shifting Creech AFB's primary roles and missions. In 2019, stewardship changed from the 99th Air  
 502 Base Wing to the 432d Wing, and the 432d Mission Support Group was activated. Currently, Creech AFB  
 503 has a workforce of 4,000 and continues serving as the main operating base of the 432d Wing and 432d Air  
 504 Expeditionary Wing. For more detail about the base's history, see the Creech AFB history webpage at  
 505 [https://www.creech.af.mil/About-Us/Fact-Sheets/Display/Article/449127/history-of-creech-air-force-](https://www.creech.af.mil/About-Us/Fact-Sheets/Display/Article/449127/history-of-creech-air-force-base/)  
 506 [base/](https://www.creech.af.mil/About-Us/Fact-Sheets/Display/Article/449127/history-of-creech-air-force-base/).

507 *2.1.3 Military Missions*

508 *Current Operations*

509 Presently, Creech AFB is the home of the Air Force's lead RPA Wing. A key component of Creech AFB's  
 510 mission is to train professionals in remotely piloted aircraft, which fly missions across the globe. Training  
 511 occurs over a landscape north of Indian Springs, Nevada, which includes mountain ranges and valleys from  
 512 3,000 to 5,000 feet in elevation. The landscape at Creech AFB contributes to the realistic combat conditions  
 513 necessary for military testing and training on the use of new concepts, equipment, and technology. The  
 514 base's 4,000-person workforce includes pilots, sensor operators, support, command and maintenance  
 515 personnel, as well as the control facilities required to support these specialized aircraft. Creech AFB sustains  
 516 continuous overseas contingency operations. The MQ-9 Reaper RPAs are maintained and operated by the

517 432d Wing and the 432d Air Expeditionary Wing. Creech AFB is anticipating a beddown of Collaborative  
518 Combat Aircraft (CCA) after the finalization of this INRMP. Mission actions will be similar to the current  
519 RPA mission. The EA for CCA beddown is in draft form as of February 2026.

520 *Major Units*

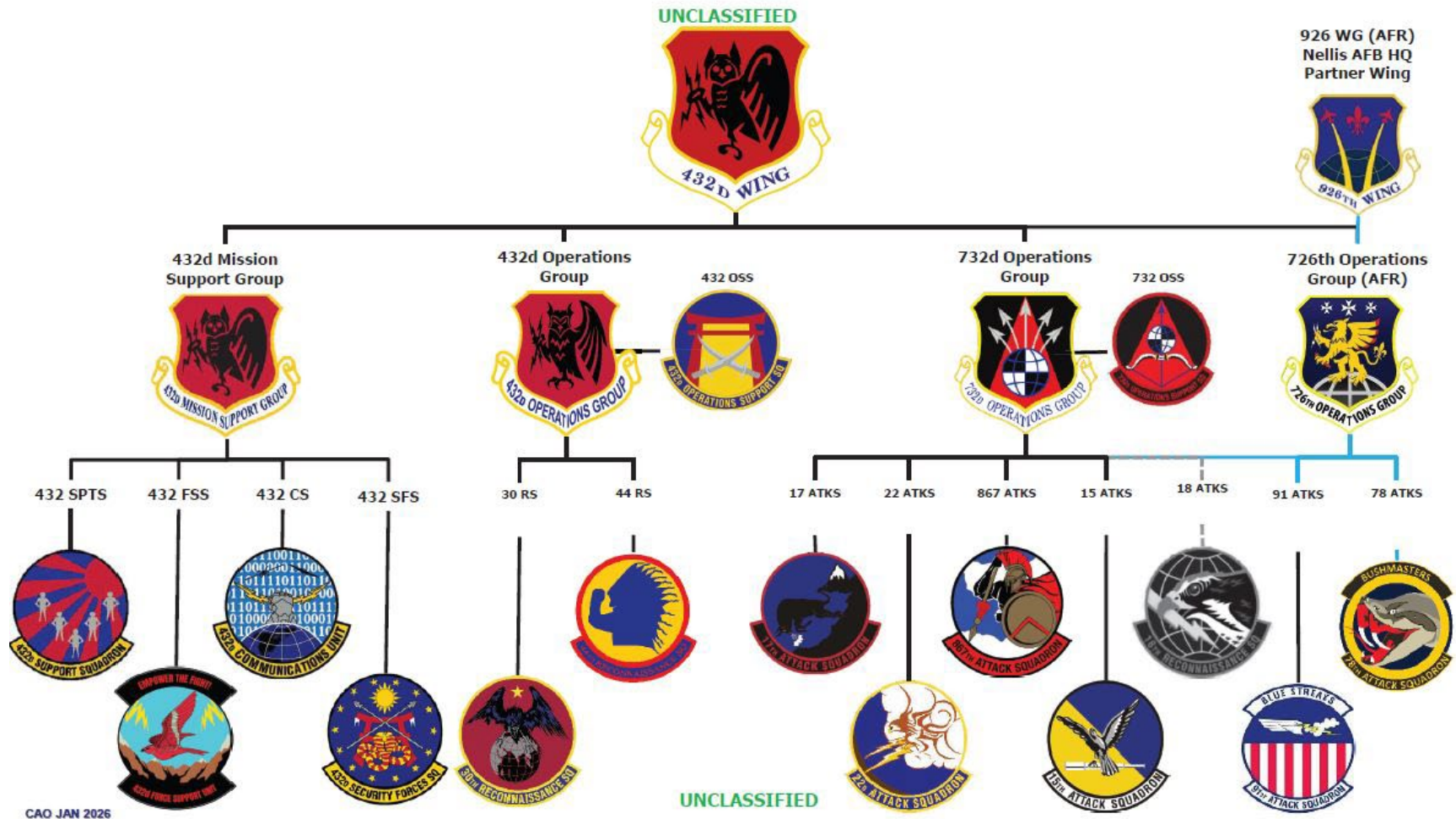
521 The 432d Wing and 432d Air Expeditionary Wing “Hunters” consist of combat-ready airmen who fly MQ-  
522 9 Reaper RPAs in direct support to the joint forces warfighter. The RPA systems provide real-time  
523 intelligence, surveillance, and reconnaissance, as well as precision attack against fixed- and time-critical  
524 targets. The “Hunters” also conduct RPA initial qualification training for aircrew, intelligence, weather,  
525 and maintenance personnel.

526 [Figure 2-2](#) presents the organizational structure at Creech AFB, and [Figure 2-3](#) shows the tenant units. All  
527 tenants are required to comply with the INRMP and all natural resource requirements of 432d SPTS/CEIE.

528

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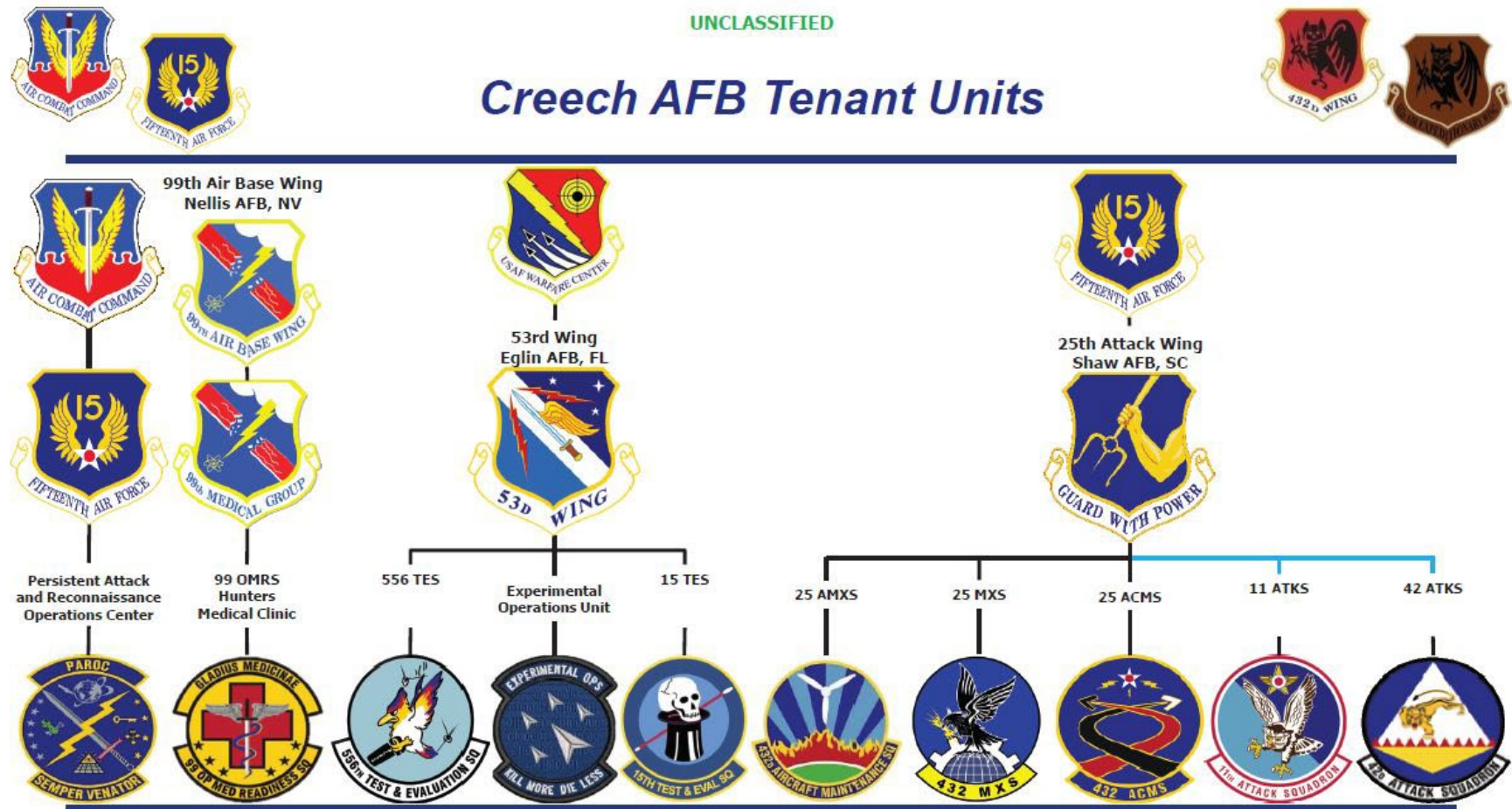
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531 Figure 2-2. Organizational chart for Creech Air Force Base

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533

534 Figure 2-3. Creech Air Force Base tenant units

#### 535 2.1.4 *Natural Resources Needed to Support the Military Mission*

536 Creech AFB is small and has few natural resources. The primary natural resources needed for safe and  
537 effective operations at Creech AFB are stable soils and open areas for aircraft operations. Soil stability  
538 helps to ensure the integrity of infrastructure supporting ground-based aircraft operations, and open areas  
539 ensure that aircraft operations can be conducted safely and without undue constraints that would  
540 compromise the base's military mission.

#### 541 2.1.5 *Surrounding Communities*

542 Creech AFB is in Clark County, which had a population of approximately 2.25 million in 2020 (US Census  
543 Bureau 2020b). More specifically, the base is located near the town of Indian Springs, which had a  
544 population of approximately 832 in 2020 (US Census Bureau 2020a). To the north and east of Creech AFB  
545 are largely undeveloped lands cooperatively managed by the DoD (the NTTR in particular), the USFWS  
546 (Desert National Wildlife Refuge [DNWR]), and BLM. To the southeast is Las Vegas, characterized largely  
547 by commercial, industrial, and residential development. The high growth rate of Las Vegas indicates the  
548 potential for continued development southeast of Creech AFB, but significant encroachment around Creech  
549 AFB is unlikely due to its rural location and buffering by federal lands.

#### 550 2.1.6 *Local and Regional Natural Areas*

551 Several protected natural areas are in the vicinity of Creech AFB. The most prominent is the DNWR, which  
552 is owned by USFWS. Over 826,000 acres of the 1.6-million-acre refuge lie within the boundaries of NTTR  
553 South and are jointly managed by USFWS and the NTTR. Most of the DNWR, that encompassing the  
554 Sheep Range, the Las Vegas Range, and the East Desert Mountain Ranges, is managed as a proposed  
555 wilderness area. The DNWR was originally the larger Desert Game Range, established in 1936, which  
556 overlapped the NTTR/DNWR joint-use area, Creech AFB, and the northern half of the Spring Mountains.  
557 The primary mission of the DNWR is to manage and maintain habitat for desert bighorn sheep (*Ovis*  
558 *canadensis nelsoni*). Public access to the DNWR is gained by 2 roads originating at the USFWS Corn Creek  
559 Field Station, approximately 23 miles north of downtown Las Vegas and east of US 95, as well as 2 roads  
560 off US 93. Figures 1 and 2 in [Appendix I](#) provide maps depicting Creech AFB and the location overview.

561 The DNWR is part of USFWS's DNWR Complex. Management of the Complex includes 3 additional  
562 protected areas or refuges: the 5,380-acre Pahrangat National Wildlife Refuge (NWR), the 116-acre  
563 Moapa Valley NWR east of the NTTR in Lincoln and Clark Counties, and the 23,528-acre Ash Meadows  
564 NWR in Nye County to the west. Together, the 4 refuges protect a broad range of native plants,  
565 invertebrates, and vertebrate species, some of which are endemic to southern Nevada. Lists of rare species  
566 protected by the DNWR are available from the USFWS. In addition, the permanent lakes and marshes of  
567 the Pahrangat NWR are an important link in the Pacific Flyway for birds migrating between their summer  
568 and winter habitats. The 3 smaller units of the DNWR Complex provide unique aquatic and wetland habitats  
569 for plants and animals that are rare or nonexistent on Creech AFB.

570 Several Wilderness Study Areas (WSA) managed by the BLM are located within the airspace boundaries  
571 of the NTTR. These include the 54,320-acre Kawich Mountains WSA, 106,200-acre South Reveille WSA,  
572 99,550-acre Palisade Mesa WSA, and 38,000-acre The Wall WSA (USAF 2017c). These areas are set aside  
573 to protect the wilderness characteristics of these lands until they are officially designated as wilderness or  
574 the BLM is directed to manage them for other multiple uses.

575 To the west of the NTTR and US 95, within Clark and Nye Counties, is the Spring Mountains National  
576 Recreation Area, administered primarily by the Humboldt-Toiyabe National Forest. The recreation area is

577 adjacent to the Red Rock Canyon National Conservation Area, managed by the BLM, which is  
578 approximately the same size.

579 Three National Monuments (NM) are located near Creech AFB. Basin and Range NM, created in 2015,  
580 consists of more than 704,000 acres of near-roadless desert west of US Highway 93 and north of Crystal  
581 Springs and Alamo, Nevada. Tule Springs Fossil Beds NM, established in 2014, encompasses 22,650 acres  
582 between US-95 and DNWR south of the NTTR. The newest NM in the area, Gold Butte NM, was created  
583 in 2016 and spans 296,937 acres northeast of Lake Mead National Recreation Area.

## 584 **2.2 Physical Environment**

585 This section of the INRMP will familiarize the reader with the physical environment at Creech AFB and  
586 natural hazards that present potential impacts to natural resources and the military mission, discussed  
587 throughout the INRMP.

### 588 **2.2.1 Climate**

589 Creech AFB is situated in the Mojave Desert of interior western North America at 36–35'22" N latitude  
590 (Figure 3 in [Appendix I](#)). The region's climate is continental, with pronounced winter and summer seasons  
591 and little rainfall. These climatological characteristics are strongly influenced by the Sierra Nevada Range,  
592 which is approximately 90 miles west of the installation.

593 Creech AFB lies within some of the most arid terrain in North America. Data from a weather station near  
594 Creech AFB indicate that the mean annual precipitation is just 4.3 inches (NOAA 2023), with the driest  
595 months being May and June ([Table 2-1](#)). The valley floors receive significantly less precipitation than the  
596 nearby mountaintops. Regular, strong winds, combined with low relative humidity, result in an annual  
597 evaporation rate that exceeds the amount of precipitation by as much as 10 times. The lack of rainfall and  
598 the vast surrounding region of undeveloped acreage contribute to making the Creech AFB location ideal  
599 for military air exercises and training.

600 A mean low temperature of approximately 29 degrees Fahrenheit (°F) in January, and a mean high of 102  
601 °F in July, as recorded at the DNWR weather station at the Corn Creek Field Station, are generally  
602 representative of Creech AFB (NOAA 2023). Data collected on nearby NTTR South have never included  
603 a daily mean temperature below freezing in January. Average annual temperatures in the state of Nevada  
604 have risen nearly 2.4 °F since 1900. The state also experienced above-average annual numbers of very hot  
605 days and warm nights for two decades beginning in 2000 (Runkle et al. 2022).

Table 2-1. Temperature and precipitation data\* at the USFWS Corn Creek Field Station, Clark County, Desert Game Range,\*\* Nevada, 1940 to 2022

| Month     | Mean Monthly Temperature (°F) |         | Mean Monthly Precipitation (inches) |
|-----------|-------------------------------|---------|-------------------------------------|
|           | Maximum                       | Minimum |                                     |
| January   | 57.5                          | 29.9    | 0.45                                |
| February  | 61.8                          | 33      | 0.53                                |
| March     | 68.1                          | 37.9    | 0.53                                |
| April     | 76.7                          | 44.4    | 0.32                                |
| May       | 86                            | 52.6    | 0.17                                |
| June      | 96.3                          | 60.7    | 0.1                                 |
| July      | 101.7                         | 67.5    | 0.4                                 |
| August    | 99.7                          | 66      | 0.42                                |
| September | 92.5                          | 58.1    | 0.34                                |
| October   | 80                            | 47.1    | 0.33                                |
| November  | 66.1                          | 36.5    | 0.33                                |
| December  | 57.1                          | 30.2    | 0.43                                |

\*Source: NOAA National Centers for Environmental Information (2023), <https://www.ncei.noaa.gov/cdo-web/>

\*\*Desert Game Range is now known as Desert National Wildlife Refuge.

606

607 *2.2.2 Landforms*

608 Creech AFB is located within the Mojave Desert ecosystem of the Basin and Range physiographic province  
 609 in the western US (Figure 3 in [Appendix I](#)). The region is characterized by a series of relatively high, north-  
 610 south trending mountain ranges and broad desert basins that extend from southeast Oregon into Mexico  
 611 (Fenneman 1931). Creech AFB lies within one such basin and is absent of any significant landforms.

612 However, there are numerous landforms in the surrounding area. Individual mountain ranges, which rise  
 613 out of the Mojave and Great Basin Deserts and the intervening basins, tend to increase in elevation along a  
 614 south–north gradient. In NTTR South, the mountains reach a maximum elevation of more than 6,000 feet  
 615 MSL and the basins vary from 2,900 to 3,600 feet MSL. The alignment of the mountains and basins along  
 616 similar axes provides some connectivity for the high-elevation habitats of the 2 deserts, particularly for bird  
 617 species. The combination of increasing elevation with increasing latitude contributes to the south–north  
 618 decline in temperatures and, therefore, the changes in vegetation along the south–north gradient. The  
 619 topography over much of the adjacent NTTR South remains undisturbed. The alluvial fans, or bajadas, that  
 620 flank the mountains are prominent physiographic features and attain relatively steep grades. The lower  
 621 portions of the alluvial fans typically have slopes of 5% or less and end at playas that occupy the floors of  
 622 closed valleys.

623 Tertiary volcanic rock forms the surface of the North Range. Volcanic ash forms the surface of western  
 624 Pahute Mesa, and volcanic rocks compose the mountains of this area (e.g., Timber, Stonewall, and Black  
 625 Mountains, the Cactus and Kawich Ranges [Cornwall 1972]). The topographic landscape of the nearby  
 626 NTTR South links habitats, species, communities, and ecosystems without fragmentation, which frequently  
 627 occurs in areas beyond the NTTR (Noss and Cooperider 1994).

628 *2.2.3 Geology and Soils*

629 The geologic formations on Creech AFB are mostly Paleozoic sedimentary rock (Nevada Bureau of Mines  
 630 and Geology 1997). The mountain ranges of nearby NTTR South are dominated by Paleozoic carbonate

631 rocks mixed with smaller amounts of quartzite, sandstone, and shale. Valleys in this area contain thick  
632 deposits of alluvium originating from erosion of adjacent mountain ranges. Bajadas that lie downwind of  
633 valley-bottom playas are often characterized by a sand sheet composed of sediments originating from the  
634 playas. Since the prevailing wind in this region is from the west, sand ramps mantle the bajadas of the west  
635 side of the Desert and Pintwater Ranges, where they extend into the Three Lakes and Indian Springs  
636 Valleys. Sedimentary rocks from lakes and rivers have been deposited in shallow basins and outcrops in  
637 several areas of the NTTR, particularly in the southern Spotted Range, the Pintwater Range, and the Desert  
638 Range (Figure 4 in [Appendix I](#)). Older Tertiary valley fill sediments that were uplifted with the underlying  
639 Paleozoic bedrock are exposed on the flanks of the mountains (Longwell et al. 1965, Nevada Bureau of  
640 Mines and Geology 1997).

641 The tectonic history of the region is complex. Most faults are a result of regional thrust, folds, and wrench  
642 faults developed during compressional deformation associated with mountain building. A more detailed  
643 discussion of faults in southern Nevada can be found in Armstrong (1968) and Caskey and Schweickerty  
644 (1992). Although most faults on Creech AFB are considered inactive, the base lies entirely within Seismic  
645 Zone 2B, an area that carries a moderate potential for damage. The Yucca fault lies in the south-central  
646 portion of the NTTR. Not far from Creech AFB, is the only fault that is considered active based on  
647 displacement of surface alluvium.

648 Maps providing accurate locations of geologic outcrops (a visible exposure of bedrock or ancient superficial  
649 deposits) at Creech AFB and nearby NTTR South are not available. In addition, accurate information on  
650 faults and other evidence of tectonic activity is lacking. However, an accurate knowledge of geologic  
651 outcrops allows biologists to predict potential habitat for various plant and animal species of concern. For  
652 example, the Las Vegas bearpoppy (*Arctomecon californica*) and the Las Vegas buckwheat (*Eriogonum*  
653 *corymbosum* var. *nilesii*) are both adapted to gypsum outcrops commonly found in alluvial fans and basins  
654 in and around NAFB, and there is a slight possibility that these species could occur on Creech AFB as well.  
655 In addition, specific geologic strata are more conducive to use by the desert tortoise (*Gopherus agassizii*).  
656 An accurate geologic map could assist in streamlining the siting process for mission development. In  
657 summary, improved, accurate mapping of geologic formation outcrops is critical to proper management of  
658 natural resources within Creech AFB and surrounding lands. This information should be collected and  
659 incorporated into GeoBase.

#### 660 2.2.4 Hydrology

661 Creech AFB is in a semiarid to arid region with no surface water resources, where groundwater is hundreds  
662 of feet below the surface (Figure 5 in [Appendix I](#)).

663 Precipitation regimes for Creech AFB are detailed in [Section 2.2.1](#). Average annual rainfall ranges from  
664 about 4 inches on the lower elevations of the desert floor to about 16 inches in nearby higher-elevation  
665 areas. Although some thunderstorms are sufficiently intense to produce flash flooding, most precipitation  
666 in the summer is lost to evaporation a short time after storm events. Precipitation in the winter forms  
667 snowpacks in the high elevations, but not on Creech AFB. These snowpacks store moisture and allow runoff  
668 to overcome high rates of evaporation and transpiration in the warm summer months. Melting snow  
669 provides water for drainages and riparian corridors in early spring.

670 Most of the surface water drains internally into playas found throughout the area. Water collects in the  
671 playas and eventually evaporates, leaving behind high concentrations of salts and other materials that often  
672 preclude vegetative growth in the playas. Surface waters are ephemeral and exist only in dry washes and  
673 on playa surfaces for a few hours following summer storms and possibly a few weeks following winter

674 storms. The watershed in which Creech AFB sits is a contained basin and does not connect to navigable  
675 waters of the U.S.

676 Two areas fall under the requirements for National Pollutant Discharge Elimination System permitting.  
677 These include Creech AFB and the NTTR, which discharge stormwater IAW Creech's Multi-Sector General  
678 Permit (MSGP) Industrial Storm Water-NVR050000 (Annual fee to maintain).

679 According to the EIS prepared for the floodplain analysis (USAF 1997), surface waters found in the region  
680 characteristically show 3 different watershed features.

- 681 • Alluvial fans
- 682 • Valley collectors
- 683 • Dry lake beds or playa lakes

684 Alluvial fans are found at the base of mountains where flooding is characterized by high-velocity flows,  
685 active processes of erosion, sediment transport and deposition, and unpredictable flow paths. Alluvial fans  
686 differ from normal stream channels in that flooding in the upper portion of the alluvial fan is confined to a  
687 single channel that disperses into multiple channels as it flows downhill. Conventional stream channels  
688 tend to coalesce into larger channels as they move down slopes. Farther downslope from the mountain front,  
689 the alluvial fans join and coalesce. When the slope flattens out, shallow flooding may occur.

690 At the bottom of alluvial fan systems, a single channel often forms, known as a “valley collector”. The  
691 valley collector transmits the flow from several systems of alluvial fans to a topographic outlet connected  
692 to other waters of the U.S., or to a playa lake when no outlet is present. Valley collectors are important  
693 features within the ecosystems surrounding Creech AFB. Even though these features are dry for a  
694 significant portion of the year, they tend to support higher densities of vegetation along and near their banks.  
695 This vegetation is supported by higher moisture levels that last longer after precipitation and provides  
696 critical food and cover for various wildlife species.

697 Dry lakebeds are typically located at the lowest elevation compared to the surrounding watersheds. During  
698 or immediately after storm events, these dry lakebeds fill with water, either directly from precipitation  
699 falling on the lakebed or from valley channels that drain surrounding upland areas. Dry lakebeds will hold  
700 water for shorter periods. The water flowing into the lakebeds contains sediments and dissolved solids.  
701 Sediments spread evenly over the lake’s surface, creating the flat topography commonly associated with  
702 these lakebeds. As water evaporates, dissolved solids are deposited on top of the older sediments. This  
703 results in a barren surface that does not support vegetation. Lakebeds are important to migratory birds when  
704 inundated. They provide food sources, such as brine shrimp, insects, and other invertebrates.

705 *Groundwater*

706 Creech AFB is located within the carbonate rock province of the Great Basin (Prudic et al. 1993). This  
707 province extends across much of eastern and southern Nevada and western Utah. Due to the permeability  
708 of carbonate rocks, the area supports an extensive regional groundwater flow system. Groundwater is stored  
709 within 2 interconnected aquifer systems: a regional system that is largely within deeply buried carbonate  
710 bedrock, and additional shallow alluvial aquifer systems residing in individual basins or watersheds (Figure  
711 5 in [Appendix I](#)). Winter precipitation recharges these systems. Groundwater discharge occurs primarily  
712 through evapotranspiration from the valley floors and from large springs.

713 The amount of groundwater recharge in mountains in and adjacent to Creech AFB depends on precipitation,  
714 evapotranspiration, permeability of the surface soils, and the types and abundance of vegetation. The  
715 greatest opportunity for groundwater recharge is in areas of permeable surface materials during periods

716 when the amount of precipitation exceeds the rate of evapotranspiration. Evaporation at the nearby NTTR,  
717 however, usually exceeds precipitation at rates ranging from 50 to 65 inches annually (Hazardous Waste  
718 Remedial Action Program 1992); therefore, the amount of recharge from valley floors to the groundwater  
719 is limited. Creech AFB has 3 groundwater wells used as part of the installation's water supply.

720 See [Section 2.3.5](#) for more information on wetlands and floodplains.

## 721 **2.3 Ecosystems and the Biotic Environment**

### 722 **2.3.1 Ecosystem Classification**

723 Bailey (2014) produced a classification of ecoregions based on soils, physiography, and habitat types to  
724 stratify the landscape into a hierarchy of smaller areas; in decreasing size order, these are known as the  
725 domain, division, province, and section of an ecoregion. Such a classification provides the framework of  
726 ecosystem structure and services that allow environmental managers to maintain habitats for multiple  
727 species while identifying critical habitat areas where anthropogenic activity will have the greatest impact  
728 on ecosystem health. Creech AFB is located within the Dry Domain, the Tropical/Subtropical Desert  
729 Division, American Semi-Desert and Desert Province, and the Mojave Desert Section (Bailey 2014).

### 730 **2.3.2 Vegetation**

#### 731 **2.3.2.1 Historical Vegetation Cover**

732 Historical vegetation studies have not been conducted on Creech AFB. Numerous ethnographic,  
733 ethnobotanical, and prehistorical/historical archaeological studies have been conducted on the NTTR (as  
734 detailed in the 2017 Nellis ICRMP), and it is likely that the historical vegetation cover at Creech AFB was  
735 like that of NTTR South.

736 Prior to continuous European settlement in the Las Vegas Valley, it is suggested that lower elevations and  
737 bajadas on Creech AFB and NTTR South were dominated by vegetation typically found in the creosote  
738 bush/white bursage (*Ambrosia dumosa*) and saltbush communities (USAF 2010). These vegetation  
739 communities persisted after European settlement; however, they have likely been impacted by groundwater  
740 extraction and the introduction of invasive species. At Creech AFB specifically, the removal of vegetation  
741 for airfield construction and associated building infrastructure began during World War II. The rest of the  
742 property has been largely cleared of vegetation for construction and to prevent providing habitat conducive  
743 to BASH hazards ([Section 7.12](#)).

744 Vegetation community information has been stored in the standardized geodatabase, known as GeoBase,  
745 since 2007. The 2022 NDOW Nevada Wildlife Action Plan (NWAP) classifies the current vegetation on  
746 Creech AFB as Mojave Warm Desert and Mixed Desert Shrub key habitat (NDOW 2022).

#### 747 **2.3.2.2 Current Vegetation Cover**

748 Creech AFB falls within the Mojave biogeographic province, as described by Brown (1982). A  
749 biogeographic province is a widespread region that is characterized as distinct from another such region,  
750 primarily based on predominant vegetation and wildlife habitat types. More specifically, Creech AFB is in  
751 the northeastern portion of the Mojave Desert, among the driest of North America's arid lands, where  
752 precipitation is often less than 4 inches per year (Rundel and Gibson 1996).

753 Most of Creech AFB has been developed for installation and airfield infrastructure or graded to remove  
754 vegetation to prevent BASH problems adjacent to the airfield. Creech AFB has not conducted a detailed  
755 field inventory since only sparse vegetation remains. Current vegetation cover has been thoroughly

756 investigated on the adjacent NTTR South and can partly be used as a proxy vegetation data source for  
757 Creech AFB. Current Creech AFB vegetation cover has also been part of coarser spatial scale assessments,  
758 such as the NWAP Key Habitat descriptions (Center for Environmental Management of Military Lands  
759 [CEMML] 2019a). The primary key habitats present at Creech AFB include (1) Mojave warm desert and  
760 mixed scrub, (2) desert playas and ephemeral pools, and (3) intermountain cold desert scrub (CEMML  
761 2019a, Figure 6 in [Appendix I](#)).

762 The NTTR South Vegetation Classification Report for 2016 reported surveys conducted using the  
763 International Vegetation Classification System (IVCS). This system of vegetation classification allows for  
764 consistent mapping and classification across the world and is commonly used in the US. It provides a  
765 hierarchical system to classify vegetation, starting from general ranks that recognize broad geographic and  
766 climatic characteristics down to highly refined floristics characteristics at the bottom ranks. The report  
767 documented 3 Vegetation Classes, 11 Alliances, and 18 Associations, which are the lowest and most  
768 detailed ranks in the hierarchy (Auxilio et al. 2017). According to the report, the Shrubland Class was the  
769 most commonly observed, comprising over 93% of land cover, predominantly warm desert scrub  
770 communities. According to Auxilio et al. (2017), these shrubland communities are dominated primarily by  
771 creosote bush and saltbush alliances (approximately 67% and 18%, respectively), which are common in the  
772 Mojave Desert and generally form in areas where the availability of water for plants is impacted by soils  
773 retaining or draining water, or they occur due to varied alkalinity or salinity levels. The remaining classes  
774 included dwarf-shrubland (1%), desert pavement (5%), and unclassifiable (1%). Although desert pavement  
775 is not yet a recognized vegetation classification within the IVCS, this community type is distinct enough in  
776 vegetation structure and cover to be recorded as an individual Class. Furthermore, these areas are considered  
777 sensitive and fragile, requiring a considerable length of time to form (Auxilio et al. 2017). Vast areas of the  
778 basins and bajadas in the Mojave Desert below approximately 3,940 feet in elevation support plant  
779 communities dominated by creosote bush and white bursage. Saltbush species, ephedra, brittlebush (*Encelia*  
780 *virginensis*), desert globemallow (*Sphaeralcea ambigua*), succulents (especially prickly pears [*Opuntia*  
781 spp.] and chollas [*Cylindropuntia* spp.]), and Mojave yucca (*Yucca shidigera*) also may occur in this  
782 community. Where soils are especially alkaline and clay rich, as on the margins of dry lakebeds (playas) at  
783 the lowest elevations, saltbush, including four-wing saltbush (*Atriplex canescens*), cattle spinach (*A.*  
784 *polycarpa*), and shadscale, dominate the vegetation. [Figure 2-4](#) and [Figure 2-5](#) show *Echinomastus*  
785 *johnsonii* and *Opuntia engelmannii*, 2 representative species of the habitat at Creech AFB, in bloom. Figure  
786 6 and Figure 11 in [Appendix I](#) provide maps that depict vegetation alliances and sensitive plant species,  
787 respectfully.

788



789

790 Figure 2-4. *Echinomastus johnsonii* blooming in the Mojave Desert. Nellis Air Force Base Photo Library.

791



792

793 Figure 2-5. *Opuntia engelmannii* blooming. Nellis Air Force Base photo library.

794

795 *Invasive Species*

796 One indirect, widespread, and persistent effect of Euro-American settlement in this area is the presence of  
797 introduced annual and perennial plants, which sometimes dominate local vegetation and are considered  
798 invasive species (Figure 13 in [Appendix I](#)). The most prominent annual invasive species are Russian thistle  
799 (*Salsola tragus*) and red brome (*Bromus rubens*). Russian thistle is present on Creech AFB and red brome

800 has become common on nearby NTTR South. Red brome is found in remote habitats that otherwise appear  
801 pristine and unaffected by Euro-American activities. Russian thistle and red brome are aggressive  
802 colonizers that may displace native populations of annuals on disturbed soils. If disturbance is not repeated,  
803 Russian thistle often does not persist; however, red brome and another invasive annual, cheatgrass (*Bromus*  
804 *tectorum*), can continue to be the dominant annuals in certain habitats, regardless of the disturbance regime.  
805 The pest management program for Creech AFB and surrounding areas of NTTR South includes control and  
806 management of invasive plants, more detailed information for which can be found in [Section 7.11](#).

### 807 **2.3.2.3 Future Vegetation Cover**

808 Desert vegetation community composition, coverage, and distribution may shift in response to changing  
809 environmental conditions. Creosote bush (*Larrea tridentata*) is a dominant member of most plant  
810 communities of Creech AFB. When combined with seasonal periods of low precipitation, elevated average  
811 temperatures ([Section 2.2.1](#)) could hinder seedling growth and establishment. Species of low, shrub-like  
812 trees that thrive in riparian areas (e.g., mesquite) could be sensitive to increased minimum temperatures.  
813 Additionally, above-average temperatures could enhance soil decomposition and reduce plant productivity  
814 over large areas. Loss of vegetative cover coupled with increases in precipitation intensity and reductions  
815 in soil aggregate stability, could dramatically increase potential erosion rates.

816 Any changes in environmental conditions on the base may impact the success of invasive annuals on the  
817 installation, including red brome. As described in [Section 2.3.2.2](#), red brome is desert-adapted and has  
818 become common on NTTR South. Attempts to fully eradicate red brome from the NTTR South have  
819 become impractical, increasing the risk of spread to Creech AFB. Concerns caused by red brome invasions  
820 include the creation of a grassfire cycle that can have long-term effects on the structure and species  
821 composition of native plant communities (Abella 2009, Engel and Abella 2011).

822 Future red brome invasion will depend in part on the amount, intensity, and timing of precipitation. Under  
823 especially hot and dry conditions, large portions of southern Nevada may become unsuitable for cheatgrass,  
824 which is better adapted to the relatively cooler climate of NTTR North. As cheatgrass retreats northward or  
825 upslope, red brome may fill the range that cheatgrass vacates. Other factors relating to land use, soils,  
826 competition, or topography also determine red brome success at the local scale (Bradley 2009).

827 The spread of invasive grasses could result in conversion to a grassland system. Alternatively, fewer  
828 invasive grasses and absence of fire could lead to a shrub-dominated ecosystem or ecosystem that is shrub-  
829 dominated and interspersed with grassy patches. Adaptive management will be essential to maintain the  
830 function of the installation's lands under dynamic environmental conditions and mission needs.

### 831 **2.3.2.4 Turf and Landscaped Areas**

832 Plant species within current landscaped areas represent a mixture of old and new landscaping practices.  
833 Creech AFB supports a variety of drought-tolerant deciduous and evergreen trees and shrubs, perennial  
834 species, and grasses within improved areas where supplemental irrigation is provided. Improved grounds  
835 include areas of turf grasses and ornamental landscaping that require regular maintenance, such as mowing,  
836 irrigation, and fertilizing. Over the last several years, however, the installation has shifted to planting native,  
837 xeric-adapted vegetation to avoid such maintenance and water use. As such, native, xeric-adapted species  
838 are present throughout the landscaped areas of the installation.

### 839 *2.3.3 Fish and Wildlife*

840 Creech AFB is a developed area with limited wildlife habitat that is used by an array of generalist species.  
841 The installation has very few water resources (Figure 5 in [Appendix I](#)), providing no significant habitat for

842 fish or water-associated wildlife. Habitat limitations also limit the abundance and diversity of wildlife found  
 843 on the installation. The southern ranges of the NTTR that surround the installation may provide habitat for  
 844 species that could move between the 2 installations, especially avian species.

845 Most of the biological resource knowledge for Creech AFB comes from surveys conducted for the NTTR,  
 846 typically extrapolated from information about NTTR South (Figure 7 in [Appendix I](#)). [Appendix G](#)  
 847 Appendix G provides a comprehensive list of all wildlife species recorded at Creech AFB and surrounding  
 848 ranges of NTTR South.

#### 849 *Native Birds*

850 Birds that prefer to live in the Mojave Desert creosote scrub plant communities found on Creech AFB and  
 851 much of NTTR South include the horned lark (*Eremophila alpestris*), Costa's hummingbird (*Calypte*  
 852 *costae*), loggerhead shrike (*Lanius ludovicianus*, Nevada Species of Greatest Conservation Need [SGCN]),  
 853 mourning dove (*Zenaidura macroura*), black-throated sparrow (*Amphispiza bilineata*), western burrowing  
 854 owl (*Athene cunicularia hypugae*, a BLM Sensitive species), greater roadrunner (*Geococcyx*  
 855 *californianus*), lesser nighthawk (*Chordeiles acutipennis*), and Gambel's quail (*Callipepla gambelii*)  
 856 (USAF 2012a, Nevada Natural Heritage Program 2022). Surveys have been conducted at Creech AFB since  
 857 2007 (Figures 7 and 8 in [Appendix I](#)) and is further discussed in [Section 7.1](#).

#### 858 *Mammals*

859 Mammal species on the installation generally consist of small rodents and bats. Terrestrial small mammals  
 860 are common at Creech AFB. This group performs important ecological functions, such as (1) providing  
 861 food sources for carnivores, raptors, snakes, and some lizards; (2) facilitating seed dispersal and  
 862 germination; (3) mixing and aerating soils; and (3) enhancing nutrient cycles. [Section 7.1](#) discusses 2021  
 863 survey results.

#### 864 *Amphibians and Reptiles*

865 While numerous reptiles are found at Creech AFB, no amphibians are expected to occur. In the Mojave  
 866 Desert, amphibians are relatively scarce and are generally only found in areas with water. Reptiles that are  
 867 expected to occur include side-blotched lizard (*Uta stansburiana*), desert horned lizard (*Phrynosoma*  
 868 *platyrhinos*), zebra-tailed lizard (*Callisaurus draconoides*) sidewinder (*Crotalus cerastes*), Mojave  
 869 rattlesnake (*Crotalus scutulatus*), coachwhip (*Masticophis flagellum*), Mojave shovel-nosed snake  
 870 (*Chionactis occipalis*).

#### 871 *2.3.4 Threatened and Endangered Species and Species of Concern*

872 Several pieces of legislation relevant to Creech AFB regulate special-status species and dictate the  
 873 responsibilities of federal landholders. The acts described below are the primary drivers for management  
 874 of threatened and endangered (T&E) species and sensitive species in this INRMP. Figure 9 in [Appendix I](#)  
 875 provides a map depicting sensitive wildlife species at Creech AFB.

#### 876 *Endangered Species Act*

877 The most prominent piece of legislation related to wildlife is the Endangered Species Act (ESA), enacted  
 878 in 1973. This act requires all federal agencies to implement protection programs for designated species or  
 879 critical habitat and to use their authorities to further the purposes of the act. Federal agencies, in consultation  
 880 with the USFWS and/or National Oceanic and Atmospheric Administration, must ensure that actions they  
 881 authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or  
 882 result in the destruction or adverse modification of designated critical habitat of such species. Further, the

883 act prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife. To comply  
884 with the ESA, the DAF is required under DAFMAN 32-7003 to inventory its lands for federally listed T&E  
885 species, and if present, provide an ecosystem-based approach for the protection and management of the  
886 species. Although not required, when practical, a similar approach should be used for listed federal  
887 candidate species and state-listed species (DAFMAN 32-7003).

#### 888 *Federal Candidate Species*

889 Candidate species are defined as those that have had a 12-month status review by USFWS finding that  
890 listing is “warranted but precluded” by species with higher listing priority. Candidate species do not receive  
891 legal protection under the ESA, but the installation carries out conservation and recovery efforts when  
892 practical and when those efforts do not conflict with its mission. The DAF is to provide candidate plants  
893 and animals protections like those afforded for threatened and endangered species (DAFMAN 32-7003  
894 3.38.1).

#### 895 *Bald and Golden Eagle Protection Act*

896 The Bald and Golden Eagle Protection Act (BGEPA) prohibits any person or agency, without a permit  
897 issued by the Secretary of the Interior, from “taking” bald eagles (*Haliaeetus leucocephalus*) or golden  
898 eagles (*Aquila chrysaetos*), including their parts, nests, or eggs. Further, the act defines “take” actions as  
899 “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” If these species are  
900 present on the installation, potential impacts of construction projects, training events, or other actions should  
901 be assessed. Consultation with the USFWS may be necessary to reduce or eliminate impacts on the species.

#### 902 *Department of Defense Partners in Flight Mission Sensitive Species*

903 The DoD has sought to actively manage its natural resources and support avian conservation through its  
904 collaboration with Partners in Flight (PIF). Specifically, DoD PIF provides the DoD with “expertise on the  
905 management and conservation of birds and their habitats to sustain and enhance the military mission” (PIF  
906 2014). DoD PIF has created a Mission-Sensitive Species list, which represents species that have the “highest  
907 potential to impact DoD missions if the species are listed under the ESA”.

#### 908 *Migratory Bird Treaty Act*

909 The Migratory Bird Treaty Act (MBTA) is intended to ensure the sustainability of all protected migratory  
910 bird species by prohibiting their take without prior authorization by the Department of the Interior. Further,  
911 EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires federal agencies to  
912 develop and implement a Memorandum of Understanding with the USFWS when their actions have, or are  
913 likely to have, a measurable negative effect on migratory bird populations.

#### 914 *USFWS Birds of Conservation Concern (BCC)*

915 The Fish and Wildlife Conservation Act mandates the USFWS to identify species and populations of all  
916 migratory nongame birds that require additional conservation action to prevent potential listing under the  
917 ESA (USFWS 2008). To comply with this mandate, the USFWS Birds of Conservation Concern 2021  
918 (USFWS 2021) is a report to identify bird species that represent the highest conservation priorities of the  
919 USFWS. Bird species are excluded from consideration for the BCC 2021 that only occur irregularly or  
920 tangentially in the US or are not protected under the MBTA or the ESA (USFWS 2020). The USFWS  
921 identified “Bird Conservation Regions” and species may be considered BCCs for a specific region, not  
922 necessarily throughout the species’ entire range. This designation does not grant any legal protection. The

923 aim of the USFWS is to propagate collective and proactive conservation actions amongst various  
924 stakeholders and across borders.

#### 925 *Nevada Protected Species*

926 DAFMAN 32-7003 Section 3.38.2 requires the DAF to protect and manage state-listed species when  
927 consistent with the mission. Certain fishes, birds, amphibians, and mammals are protected under the  
928 jurisdiction of Nevada per Nevada Administrative Code (N.A.C.) Chapter 503. Nevada has 4 levels of state  
929 protection for wildlife: state protected, sensitive, threatened, or endangered.

930 Nevada defines a state-protected species as one with a limited population, a distribution found only within  
931 the state, or significant ecological, scientific, educational, or other value, or as a species listed as T&E or  
932 as a candidate species by the USFWS. Nevada classifies a species as endangered when it faces a danger of  
933 extinction throughout all or a significant portion of its range. Similarly, Nevada determines a species or  
934 subspecies to be threatened when it is likely to become endangered in the future throughout all or a  
935 significant portion of its range. Nevada considers a species state-sensitive when its population or  
936 distribution has declined significantly, its population faces threats, or USFWS lists it as T&E or a candidate  
937 species.

938 The Nevada Revised Statutes (N.R.S.) and N.A.C. establish classifications for plants and wildlife regulated  
939 in the state. Under N.A.C. 527.090, native Nevada flora are fully protected if listed as critically endangered  
940 and threatened with extinction and may not be removed or destroyed except pursuant to a permit issued by  
941 the State Forester. This list is generated by the State Forester Firewarden pursuant to N.A.C. 527.010.

942 Nevada Division of Wildlife developed the 2022 NWAP, a comprehensive management guide that  
943 designates some species as SGCN. This designation does not offer any state or federal protection but rather  
944 is intended to inform management actions for species most in need. The NWAP also identifies Key Habitats,  
945 which are essential for the conservation of SGCN. The NWAP provides guidance for conservation actions  
946 to conserve key habitats that priority species depend on. Nellis AFB and the NTTR will protect and conserve  
947 these landscapes when not in conflict with the military mission. Figure 6 in [Appendix I](#) contains a map  
948 depicting Creech AFB's key habitats.

949 [Appendix G](#) provides a comprehensive list of all federally listed, federally sensitive (as designated by BLM  
950 or USFWS), and state-protected/sensitive species (as designated by NDOW) that have been documented  
951 on or potentially could occur on Creech AFB or surrounding ranges of NTTR South. All species on this list  
952 are considered when implementing this INRMP.

953 The desert tortoise and other species with a federal or state designation with a reasonable possibility of  
954 occurring on the installation are discussed in detail below.

#### 955 *Desert Tortoise*

956 Only 1 federally listed species occurs with any frequency in the vicinity of Creech AFB: the desert tortoise  
957 (Figure 12 in [Appendix I](#)). The Mojave population of the desert tortoise was listed as threatened under the  
958 ESA in 1990 (USFWS 1990). The desert tortoise is also protected by the state of Nevada (N.A.C. 503.080)  
959 because its populations are declining due to habitat loss and fragmentation, disease, and direct mortality by  
960 human activity. See [Section 7.4](#) for monitoring efforts and management guidelines.

961 The desert tortoise ranges from southwestern Utah and northwestern Arizona to southern Nevada, and  
962 southern California in the Mojave Desert. In central Arizona and southeastern California, the Mojave desert  
963 tortoise range ends and the Sonoran desert tortoise (*Gopherus morafkai*) range begins. In Nevada, the desert

964 tortoise is found in southern Lincoln and Nye Counties and throughout most of Clark County in areas where  
965 it has not been displaced by human development. The tortoise is primarily observed on the NTTR-South  
966 and has occasionally burrowed under the Creech AFB perimeter fence that is designed for tortoise  
967 exclusion. There is no breeding population on Creech AFB and its presence there is extremely infrequent  
968 because of the lack of high-quality habitat and the exclusion fence.

969 The desert tortoise is a terrestrial species found in arid and semi-arid deserts. It occupies a variety of  
970 habitats, from desert flats and slopes dominated by creosote scrub at lower elevations to the black brush  
971 and juniper woodland ecotone at intermediate elevations. The desert tortoise requires soils that are friable  
972 enough for it to dig burrows yet firm enough to prevent burrow collapse. It requires rocky habitats, since it  
973 prefers to burrow beneath rocks, and food sources are often present in washes and draws that funnel  
974 rainwater. The tortoise is considered a keystone species because its burrowing activities provide shelter for  
975 a wide variety of other wildlife in the Mojave Desert and promote nutrient cycling in desert soils.

976 The desert tortoise is herbivorous; it feeds on a wide variety of desert plants, including grasses, flowers,  
977 annuals, woody perennials, and cacti. Long-lived (up to 100 years) and slow-growing, females reach sexual  
978 maturity at 14 to 20 years. The species has a low reproductive rate, and populations can be sensitive to  
979 indirect human impacts. For example, ravens directly prey on hatchling desert tortoises, and people  
980 subsidizing resources used by ravens (e.g., water sources, nesting sites, and garbage and other food sources)  
981 in suburban-wildland interfaces or in rural desert settlements have led to increased populations of ravens,  
982 which often prey on immature desert tortoises.

983 The DAF has been in Section 7 consultation with the USFWS for several projects that concern the desert  
984 tortoise. Biological Assessments and Biological Opinions (BO) have been prepared for these projects  
985 through Nellis AFB and NTTR (USAF 2017b). Any desert tortoise management at Creech AFB should  
986 follow those assessments and BOs from Nellis AFB ([Section 7.4](#)). Figure 12 in [Appendix I](#) contains a map  
987 depicting evidence of desert tortoise on the NTTR.

#### 988 *Monarch Butterfly*

989 The monarch butterfly (*Danaus plexippus plexippus*) is proposed to be listed as threatened under the ESA  
990 (USFWS 2024). This species occurs in migratory populations across North America from southern Canada  
991 to overwintering sites in Mexico and California. The western population of the monarch butterfly migrates  
992 through and breeds in Nevada, then overwinters in coastal California. However, Creech AFB does not have  
993 suitable habitat to support breeding monarchs due to the scarce vegetation and lack of water resources.

#### 994 *Golden Eagle*

995 One of North America's largest raptors, the golden eagle, is protected under the BGEPA and MBTA, is  
996 designated a DoD PIF Mission Sensitive Species, and is classified as a Nevada Sensitive and SGCN. Creech  
997 AFB is too heavily developed to provide preferred foraging habitat for the golden eagle. It also lacks the  
998 cliff structures ideal for nesting. However, the NTTR encompasses a vast amount of golden eagle habitat  
999 for both nesting and foraging and supports a resident population of golden eagles ([Figure 2-6](#)). Individuals  
1000 on the NTTR occasionally fly over Creech AFB, but their sustained presence on the installation is very  
1001 unlikely.

1002



1003  
1004 Figure 2-6. Golden eagle on a nest with chicks, Nevada Test and Training Range. Nellis Air Force Base  
1005 Photo Library.  
1006

1007 *Western Burrowing Owl*

1008 The western burrowing owl is a small, ground-dwelling owl that inhabits arid landscapes, including some  
1009 urban and agricultural environments. It is protected by the MBTA and is classified as a USFWS BCC, DoD  
1010 PIF Mission Sensitive species, and a Nevada SGCN. This species has not been observed on Creech AFB;  
1011 however, it is known to occupy the southern portion of the NTTR. Numerous burrowing owls have been  
1012 encountered there during the Nevada Bird Count and stationary point-count surveys (CEMML 2022).

1013 *Other Raptors*

1014 In addition to the golden eagle, other sensitive raptor species protected by the MBTA have been documented  
1015 on or near ranges of NTTR South that surround Creech AFB. They include Swainson's hawk (*Buteo*  
1016 *swainsoni*), which is classified as a SGCN by NDOW, and the state-endangered peregrine falcon (*Falco*  
1017 *peregrinus*). Swainson's hawks have been observed nesting in Joshua tree (*Yucca brevifolia*) habitat on the  
1018 NTTR, and the peregrine falcon nests in cliffs of the NTTR (Figure 2-7). These raptors are unlikely to use  
1019 the installation for foraging or nesting; however, they could fly over Creech AFB.

1020



1021  
1022 Figure 2-7. Peregrine falcon, Nevada Test and Training Range. Nellis Air Force Base Photo Library.  
1023

1024 *Passerines and Near-passerines*

1025 LeConte's thrasher (*Toxostoma lecontei*) and Bendire's thrasher (*Toxostoma bendirei*) are protected by the  
1026 MBTA, are designated as DoD PIF Mission Sensitive species, identified by the USFWS BCC, classified as  
1027 Nevada SGCN, and have the potential to occur on the installation. The NTTR provides suitable habitat for  
1028 both species, and they have been previously documented on and near the NTTR (Nevada Natural Heritage  
1029 Program 2022). LeConte's thrasher is an uncommon resident of the Mojave Desert and inhabits sparsely  
1030 vegetated creosote scrub, including habitat found on NTTR South (USAF 2016b). Bendire's thrasher is a  
1031 rare resident of southern Nevada and prefers Mojave shrubland with scattered taller vegetation, such as  
1032 mesquite or Joshua trees, which occur on NTTR South (Great Basin Bird Observatory 2010).

1033 The loggerhead shrike is protected by the MBTA, is a DoD PIF Mission Sensitive species, and is classified  
1034 as Nevada Sensitive and an SGCN. It is a year-round resident frequently observed hunting from atop fence  
1035 posts and other perches on NTTR South (Figure 2-8). This species has been observed on Creech AFB  
1036 (CEMML 2022).

1037



1038  
1039 Figure 2-8. Loggerhead shrike. Nellis Air Force Base Photo Library.  
1040

1041 *Bats*

1042 Eleven species of bat are known to occur on the installation, 7 of which are designated as SGCN. No  
1043 federally protected species have been observed on the installation. The spotted bat (*Euderma maculatum*)  
1044 is the only bat listed as threatened under N.A.C. 503. It is a long-eared vesper bat with striking white spots  
1045 on its dark body. This bat prefers arid areas ranging from lowland deserts to ponderosa pine habitat at  
1046 around 9,000 feet in elevation. It primarily eats large moths. This species was not observed during the 2016  
1047 and 2017 surveys.

1048 Townsend's big-eared bat is Nevada Sensitive and an SGCN and was detected on Creech AFB 3 times in  
1049 2016 surveys. Like other big-eared bats, it prefers moths and other flying insects. Habitat preferences  
1050 include arid scrub, pine forests, and wooded canyons (Reid 2006). In Nevada, all known roost sites have  
1051 been in abandoned mines (NDOW 2022).

1052 Three tree bats designated as SGCN have been documented on Creech AFB, including the western red bat  
1053 (*Lasiurus blossevilli*), hoary bat (*Lasiurus cinereus*), and the silver-haired bat (*Lasionycteris noctivagans*).  
1054 The western red bat is also designated as Nevada Sensitive, and the hoary and silver-haired are Nevada  
1055 Protected. All 3 bats prefer forested habitats or riparian zones and roost in loose bark or leaves, or on the  
1056 ends of tree branches (Reid 2006). These species may be roosting off the installation but foraging on the  
1057 installation. The western red bat was detected on Creech AFB once during 2017 surveys. Hoary bats were  
1058 recorded 44 times on the installation, with 2 detections in 2016 and 42 detections in 2017. Finally, there  
1059 were 319 detections of silver-haired bat on Creech AFB during 2017 surveys (USAF 2017a).

1060 Western vesper bats are small- to medium-sized, plain-nosed bats that occur throughout the Western US.  
1061 Their tails are enclosed in a membrane, which is used as a scoop to capture flying insects (Reid 2006). Two  
1062 western vesper bats designated as Nevada Protected and SGCN have been observed on Creech AFB, the  
1063 long-eared myotis (*Myotis evotis*) and fringed myotis (*Myotis thysnodes*). The long-eared myotis was  
1064 detected on the installation in both 2016 and 2017 with 5 and 10 observations, respectively. The fringed  
1065 myotis was detected on the installation 3 times in 2017.

1066 Lastly, the Mexican free-tailed bat (*Tadarida brasiliensis*), which is considered Nevada Protected and an  
1067 SGCN, has been frequently observed using Creech AFB. This species was detected in both the 2016 and  
1068 2017 surveys with 696 and 574 observations, respectively. This is the most abundant bat species on the  
1069 installation.

1070 Figures 7 and 8 in [Appendix I](#) provide maps depicting bat surveys including habitat assessment, point count,  
1071 and Anabat surveys conducted on the NTTR and Creech AFB.

1072 *Herpetofauna*

1073 The desert tortoise is the only federally designated reptile found on Creech AFB. Many common and  
1074 widespread herpetofauna species are listed as SGCN by the NDOW. While SGCN status provides no state  
1075 legal protection, the species listed as SGCN are those the state wishes to monitor to determine whether  
1076 development, habitat alteration, environmental conditions, or commercial collection are causing declines  
1077 (NDOW 2022). [Table 2-2](#). Number of herpetofauna observations on Creech Air Force Base or NTTR South,  
1078 2005 to 2016 summarizes records of special status herpetofauna species observed on Creech AFB or the  
1079 nearby southern portion of the NTTR during surveys conducted from 2005 to 2016.

1080

Table 2-2. Number of herpetofauna observations on Creech Air Force Base or NTTR South, 2005 to 2016

| Common Name  | Scientific Name                  | Observations |
|--|----------------------------------|--------------|
| <b>Federal- and State-Protected Herpetofauna Species</b> |                                  |              |
| Desert tortoise  | <i>Gopherus agassizii</i>        | 1            |
| <b>Nevada Species of Conservation Priority (SGCN)</b>    |                                  |              |
| Chuckwalla   | <i>Sauromalus ater</i>           | 37           |
| Desert horned lizard                                     | <i>Phrynosoma platyrhinos</i>    | 7            |
| Desert iguana  | <i>Dipsosaurus dorsalis</i>      | 1            |
| Desert night lizard                                      | <i>Xantusia vigilis</i>          | 1            |
| Great Basin collared lizard                              | <i>Crotaphytus bicinctores</i>   | 40           |
| Long-nosed leopard lizard                                | <i>Gambelia wislizenii</i>       | 7            |
| Mojave sidewinder  | <i>Crotalus cerastes</i>         | 5            |
| Spotted leaf-nosed snake                                 | <i>Phyllorhynchus decurtatus</i> | 1            |
| Western red-tailed skink                                 | <i>Plestiodon gilberti</i>       | 0            |
| Western banded gecko                                     | <i>Coleonyx variegatus</i>       | 8            |
| Great Basin spadefoot toad                               | <i>Spea intermontana</i>         | 0            |

1081

1082 *Other Threatened and Endangered Species*

1083 USFWS Information for Planning and Consultation (IPaC) lists several species with the potential to occur  
 1084 at Creech AFB. The species include the southwestern willow flycatcher (*Empidonax traillii exitmus*),  
 1085 yellow-billed cuckoo (*Coccyzus americanus*), and Devils Hole pupfish (*Cyprinodon diabolis*).

1086 The southwestern willow flycatcher is a small (up to 6 inches tall) bird with conspicuous light-colored wing  
 1087 bars. It lacks the pale eye ring of many similar *Empidonax* spp. The throat is whitish, the breast is a pale  
 1088 olive coloration and continues to yellow on the abdomen. It is considered endangered wherever it is found.  
 1089 The species is not expected to occur at Creech AFB, has not been captured on surveys, and Creech AFB  
 1090 does not overlap any critical habitat recorded for the species.

1091 The yellow-billed cuckoo is a threatened species. It is a fairly large, slim bird with a mostly yellow bill that  
 1092 is thick and downcurved. This bird has a flat head and a very long tail. It is brown on top with a white  
 1093 underside from its head down through its tail. IPaC lists this species as potential to occur at Creech AFB,  
 1094 but it has never been recorded at Creech and is not expected to be unless significant recovery efforts take  
 1095 place. Creech AFB does not overlap any critical habitat for the species.

1096 The Devils Hole pupfish is an endangered fish species that is exclusively in Devils Hole, a geothermal  
 1097 limestone underwater cavern in Ash Meadows National Wildlife Refuge. Creech AFB is not near this area,  
 1098 and this species of fish is not expected to occur at Creech AFB due to the lack of water resources.  
 1099 Nonetheless, IPaC lists it as a potential species at Creech AFB.

1100 *2.3.5 Wetlands and Floodplains*

1101 Wetlands and floodplains are 2 types of water resources that are protected under regulations including the  
 1102 Clean Water Act (CWA) and several EOs ([Appendix A](#)). As a desert base, Creech AFB has very few water  
 1103 resources (Figure 5 in [Appendix I](#)).

## 1104 *Wetlands*

1105 Wetlands are defined by the US Army Corps of Engineers (USACE) as areas saturated permanently or  
1106 seasonally for sufficient durations to allow the establishment of hydrophytic vegetation. Under normal  
1107 circumstances, the constant inundation changes upland soils into hydric soils due to an anaerobic  
1108 environment that changes the chemical components. Only hydrophytic plants with sufficient adaptations  
1109 can persist over time in such soils. These 3 factors—hydrology, hydric soils, and hydrophytic vegetation—  
1110 are used to classify an area as a wetland (USACE 1987). Jurisdictional waters of the United States—which  
1111 includes jurisdictional wetlands, as defined by the USACE—are protected under the CWA, Section 404,  
1112 from the unauthorized discharge of dredge or fill material; this includes sedimentation inputs from soil-  
1113 disturbing activities adjacent to wetlands. In addition to these protections for jurisdictional wetlands, all  
1114 wetlands on DAF lands receive protections under EO 11990 (no net loss of wetlands) and DAFMAN 32-  
1115 7003. A “finding of no practicable alternative” must be issued for any DAF construction activities located  
1116 in wetlands with detailed minimization methods for wetland impacts IAW EO 11990 and DAFMAN 32-  
1117 7003.

1118 There are no known wetlands on the installation. The only potential wetland areas are ephemeral stream  
1119 channels, present throughout the base, that carry stormwater runoff. These hydrologic features should be  
1120 assessed to determine whether they support wetlands, via a baseline wetland inventory IAW DAFMAN 32-  
1121 7003. Jurisdictional wetland delineations—those protected under the CWA, as defined by the USACE—  
1122 should be included in the baseline wetland inventory.

## 1123 *Floodplains*

1124 Rainstorms can cause flooding, especially when combined with snowmelt in the spring. Localized  
1125 thunderstorms can produce high-intensity, short-duration, rainfall events that can result in flash flooding.  
1126 Water produced by these storm events temporarily collects in low-permeability playas and topographical  
1127 low areas. Some channel flow from snowmelt and precipitation events may also occur. Stormwater passes  
1128 through the base-level plains in defined channels with floodplains that are generally wide and flat. These  
1129 well-defined channels with adjacent floodplains are defined as valley collectors.

1130 Floodplains play an important role in natural resource management. Knowledge of the location of  
1131 floodplains is important in determining sites for targets, roads, and structures. These areas should be  
1132 avoided to minimize damage caused by flooding or high-velocity waters. Floodplains also provide  
1133 temporary food and habitat for birds and other transient wildlife populations, especially migratory birds.  
1134 This can create additional BASH ([Section 7.12](#)) concerns at Creech AFB during above-average  
1135 precipitation years.

## 1136 **2.4 Mission and Natural Resources**

### 1137 *2.4.1 Natural Resource Constraints to Mission and Mission Planning*

1138 Natural resource constraints to the mission include any natural feature causing restrictions to future mission  
1139 planning. Constraints at Creech AFB include any existing sensitive species and habitats.

1140 Mission constraints can be avoided by planning with updated information, considering potential issues in  
1141 advance, and allowing adequate planning time. Planning for mission changes requires knowledge of both  
1142 the natural systems on Creech AFB and the required manmade infrastructure. To facilitate effective  
1143 planning, the CNRP surveys natural resources to establish a baseline of the best available information for  
1144 project reviews. If potential projects and their locations are not mission essential, impacts to priority natural  
1145 resources are to be avoided or minimized.

1146 Examples of planning considerations are described below.

- 1147 • Landscaping at new construction areas and some existing facilities should use xeric native species
- 1148 where possible, especially where development interfaces with native habitat.
- 1149 • Sensitive species, such as the federally listed Mojave desert tortoise and the state-listed Las Vegas
- 1150 bearpoppy, must be considered during planning, site selection, and decision-making processes per
- 1151 the Sikes Act and DoD 4715.03, Section 3.1(c).
- 1152 • Proactive management to minimize BASH risks.
- 1153 • Integrating additional resource information, as it becomes available, with sensitive biological area
- 1154 maps will greatly enhance the decision-making process.
- 1155 • Implementing centralized access to available databases, especially through GIS, can significantly
- 1156 enhance efforts to maintain or promote ecosystem integrity.

1157 *2.4.2 Land Use*

1158 DAF lands are categorized under 3 grounds maintenance categories: improved land, semi-improved land,  
 1159 and unimproved land (DAFMAN 32-7003, 3.58.2). Of the total area managed by Creech AFB, over 90%  
 1160 is semi-improved and improved land.

- 1161 • **Improved lands**—This classification includes areas that have been developed for administration,  
 1162 housing, aircraft hangars, and other building projects. Vegetation on improved lands requires  
 1163 constant maintenance to ensure survival in the local arid climate. On Creech AFB, there are no  
 1164 areas of turf grass. Weeds and brush are controlled with herbicides, as required. Trees and shrubs  
 1165 are pruned at least annually. Insecticides are applied in and around buildings as needed. Appropriate  
 1166 chemicals or traps are used for rodent control if rodents become a nuisance or impede the military  
 1167 mission.
- 1168 • **Semi-improved lands**—Semi-improved lands on Creech AFB include areas located in proximity  
 1169 to runways, airfields, fence lines, parking ramps, and minimally developed spaces such as open  
 1170 storage areas. Semi-improved lands are not grass-seeded. Mowing controls weeds and brush, which  
 1171 is important for reducing fire hazard. Trees and shrubs are pruned when needed. Rodents are  
 1172 controlled near runways and open storage areas. Semi-improved lands are not aerated or scheduled  
 1173 for insect control.
- 1174 • **Unimproved lands**—Most of the unimproved land at Creech AFB is to the northwest of the  
 1175 perimeter fence. This land is not scheduled for mowing, irrigation, aeration, pruning, or insect  
 1176 control, nor is development currently planned, although development is likely in the future as the  
 1177 base’s mission and needs expand.

1178 Developed areas on the installation have varying levels of permeability, which influences how water  
 1179 percolates into the soil. Highly impervious areas experience increased run off and erosion, while more  
 1180 permeable areas allow greater infiltration. Figure 10 in [Appendix I](#) provides a map depicting the primary  
 1181 land cover on the installation including impervious areas.

1182 *2.4.3 Current Major Mission Impacts on Natural Resources*

1183 The actions taken to meet the goals and objectives of the military mission will have impacts on natural  
 1184 resources at a base level. The primary impacts of the military mission on natural resources are discussed  
 1185 below.

1186 *Noise*

1187 Aircraft noise may be heard most weekdays on Creech AFB. Aircraft noise is greatest during take-off and  
1188 landing and during low-altitude flight training. Extensive noise models and studies were conducted as part  
1189 of the AICUZ study to determine baseline noise levels at Creech AFB, and whether the noises emanating  
1190 from mission activities could have a significant impact on the environment. While noise levels emanating  
1191 from Creech AFB are above baseline levels of the Mojave Desert, they do not have a significant impact on  
1192 natural resources (USAF 2017e).

### 1193 *Hazardous and Toxic Materials and Installation Restoration Program Sites*

1194 Creech AFB personnel routinely use hazardous and toxic materials in their operations that are contained to  
1195 prevent their release into the environment. These materials include paints, solvents, thinners, adhesives,  
1196 aircraft fuel, diesel, gasoline, lubricants and oils, hydraulic fluids, cleaners, batteries, acids, refrigerants,  
1197 herbicides, insecticides, rodenticides, and compressed gases. There are underground storage tanks on  
1198 Creech AFB as well. DAFMAN 32-7002 *Environmental Compliance* details how the DAF minimizes the  
1199 potential impacts of hazardous and toxic materials on the environment. Creech AFB follows the guidance  
1200 of DAFMAN 32-7002 and best management practices (BMP) to prevent spills or discharge of hazardous  
1201 and toxic materials. The mission also produces non-hazardous solid waste that is collected and disposed of  
1202 properly, causing little or no impact to natural resources.

1203 The Installation Restoration Program (IRP) implements remedial actions for mitigating the effects of  
1204 hazardous and toxic materials IAW DAFI 32-7020, *The Environmental Restoration Program*. The IRP sites  
1205 are described in the Management Action Plan (USAF 1996) for Creech AFB. The types of sites addressed  
1206 by the IRP include ordnance trenches, disposal pits, landfills, surface spills, storage terminals, fire training  
1207 sites, waste ponds, and storm drains.

1208 Since 1982, 13 IRP sites have been identified at Creech AFB; 10 require no further action and 3 have long-  
1209 term monitoring requirements (USAF 2013b; URS 2020a, b, c). The 3 active sites are all former landfills  
1210 (site LF001, LF002, and LF010). LF001 and LF002 have long term monitoring requirements every 5 years  
1211 and land use controls associated with them (URS 2020a, b). LF010 has long-term monitoring requirements  
1212 every 5 years (URS 2020c).

### 1213 *Infrastructure and Ground Disturbance*

1214 Mission activities involving infrastructure and ground disturbance may result in impacts on water resources,  
1215 vegetation, and wildlife at Creech AFB. Mission activities associated with the mission may impact  
1216 ephemeral streams that flow throughout Creech AFB. These streams are periodically inundated by storm  
1217 waters. None of the streams on Creech AFB are connected to navigable waters of the US, making them  
1218 non-jurisdictional waters of the US. Activities that may impact water resources include road construction,  
1219 pipeline and utility installation, and construction of buildings or other facilities. Similar mission activities  
1220 may impact floodplains, but those impacts can be minimized if proper procedures are used. The military  
1221 mission is not expected to impact groundwater.

1222 Activities causing potential impacts to vegetation include ground training, airfield blading, and the use and  
1223 maintenance of roads and utility lines. Vegetation is bladed away from the areas surrounding the runways  
1224 to help deter birds and other wildlife that would then pose BASH risks ([Section 7.12](#)). This vegetation loss  
1225 reduces soil stability and can lead to soil erosion. These bladed areas are treated with chemical solutions to  
1226 prevent excessive soil erosion. The mission may cause additional vegetation loss as mission activities  
1227 continue overtime or expand. Monitoring and management efforts may help circumvent this potential  
1228 vegetation loss.

1229 2.4.4 *Potential Future Mission Impacts on Natural Resources*

1230 Given that aircraft use will remain constant or increase in the future, it is unlikely that aircraft noise will be  
1231 reduced on Creech AFB. The 432 Support Squadron Civil Engineering (SPTS/CE) makes every effort to  
1232 limit new construction that is not essential to the mission and to close unused infrastructure wherever  
1233 possible. Any new construction will follow the EIAP to reduce impacts to natural resources.

1234 Current policies regarding pollution, and the active involvement of the Environmental Management  
1235 Directorate and other DAF organizations in these issues, will reduce waste volume levels in the future.  
1236 Efforts to remediate contaminated areas are extensive and ongoing. New technological measures, such as  
1237 use of pads and booms that absorb petroleum, are employed to control the future spread of accidentally  
1238 leaked or spilled petroleum products and solvents.

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1239 **3.0 ENVIRONMENTAL MANAGEMENT SYSTEM**

1240 The DAF environmental program adheres to the Environmental Management System (EMS) framework  
1241 and its “Plan, Do, Check, Act” cycle for ensuring mission success. DoDI 4715.17, *Environmental*  
1242 *Management Systems*; DAFI 32-7001, *Environmental Management*; and International Organization for  
1243 Standardization (ISO) 14001 standard, *Environmental Management Systems—Requirements with guidance*  
1244 *for use*, provide guidance on how environmental programs should be established, implemented, and  
1245 maintained to operate under the EMS framework.

1246 The natural resources program employs EMS-based processes to achieve compliance with all legal  
1247 obligations and current policy drivers, effectively manage associated risks, and instill a culture of continual  
1248 improvement. The INRMP serves as an administrative operational control that defines compliance-related  
1249 activities and processes.

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1250 **4.0 GENERAL ROLES AND RESPONSIBILITIES**

1251 General roles and responsibilities that are necessary to implement and support the natural resources program  
 1252 are listed in the table below. Specific natural resources management-related roles and responsibilities are  
 1253 described in appropriate sections of this plan.

1254

Table 4-1. General roles and responsibilities

| Office/Organization/Job Title*   | Installation Role/Responsibility Description  |
|--|---|
| 432 Support Squadron Civil Engineering Installation Management Environmental (SPTS/CEIE) | <ul style="list-style-type: none"> <li>• Overall responsibility for development and implementation of Integrated Natural Resources Management Plan (INRMP), Component Plans and related Environmental Assessment (EA).</li> <li>• Updates and revises the INRMP and Component Management Plans.</li> <li>• Integrates the INRMP with Base Comprehensive Plan, Bird Aircraft Strike Hazard (BASH) Plan, Integrated Cultural Resources Management Plan (ICRMP), and Integrated Pest Management Plan (IPMP).</li> <li>• Develops and implements measurement and monitoring procedures.</li> <li>• Coordinates consultation with other agencies and stakeholders.</li> <li>• Ensures that Creech Air Force Base (AFB) adheres to state and federal regulations pertaining to natural resources.</li> <li>• Coordinates natural resource management with Creech AFB Environmental Impact Analysis Process (EIAP) Conservation Subcommittee, Creech AFB Environmental Safety and Occupational Health Leadership Council (ESOHLC), 432d Wing Commander, Headquarters Air Combat Command (ACC) Environmental Analysis Branch, US Fish and Wildlife Service (USFWS), Nevada Division of Wildlife (NDOW), and the 432d Security Forces Squadron.</li> </ul> |
| Creech AFB Public Affairs  | <ul style="list-style-type: none"> <li>• Reviews Environmental Assessment (EA) associated with the INRMP.</li> <li>• Conducts required National Environmental Policy Act (NEPA) public notifications and public meetings.</li> <li>• Provides information about the INRMP to news media, elected officials, environmental groups, and interested members of the public.</li> </ul>  |
| Creech AFB (EIAP) Conservation Subcommittee  | <ul style="list-style-type: none"> <li>• Reviews proposed projects/management actions for EIAP potential.</li> <li>• Reviews EA associated with the INRMP.</li> </ul>   |

Table 4-1. General roles and responsibilities

| Office/Organization/Job Title* | Installation Role/Responsibility Description  |
|--------------------------------|---|
| Creech AFB (ESOHLC)            | <ul style="list-style-type: none"> <li>• Reviews INRMP and subsequent additions and updates to Component Plans; is initial approval authority.</li> </ul>   |
| 432d Wing Commander            | <ul style="list-style-type: none"> <li>• Final approval authority for the INRMP.</li> </ul>   |
| Air Combat Command (ACC/A3A)   | <ul style="list-style-type: none"> <li>• Single focal point for all issues dealing with airfield management, air traffic control, terminal instrument procedure, and the establishment, maintenance, modification, and disestablishment of airspace and ranges for air-to-air and air-to-ground operations in the continental US.</li> <li>• Includes the environmental, legal, public relations, and operational aspects of range and airspace management, plus development of policy, planning, programming, requirement, and guidance.</li> <li>• Reviews and concurs with all range-related documents.</li> </ul> |
| USFWS                          | <ul style="list-style-type: none"> <li>• Reviews and concurs with Component Management Plans and actions relating to Desert National Wildlife Refuge (DNWR) lands within Creech AFB.</li> <li>• Provides data and management input regarding desert bighorn sheep, migratory birds, and species of concern to DNWR mission.</li> <li>• Provides consultation with respect to federally listed threatened or endangered species.</li> <li>• Provides natural resources law enforcement.</li> <li>• Manages desert bighorn sheep.</li> </ul>  |
| NDOW                           | <ul style="list-style-type: none"> <li>• Provide data and management input regarding wildlife management.</li> <li>• Assist Creech AFB with conserving state-listed species of concern.</li> <li>• Control of predatory animals.</li> <li>• Conserve and manage desert bighorn sheep.</li> </ul>  |
| 432d Security Forces Squadron  | <ul style="list-style-type: none"> <li>• Law enforcement; security on Creech AFB.</li> </ul>  |

\*Listing is not in order of hierarchical responsibility

1255  
 1256 At Creech AFB, 432 SPTS/CEIE is ultimately responsible for natural resource management and works to  
 1257 ensure that natural resources within the base’s boundaries are managed properly. Communication with state  
 1258 and federal agencies is ongoing throughout the year to discuss specific questions and coordinate activities  
 1259 such as surveys.

1260 Creech AFB, NDOW, and USFWS share the responsibility for the management of natural resources on  
 1261 Creech AFB, IAW public law (P.L.) 106–65, the Sikes Act, the National Wildlife Refuge Act, the ESA, the  
 1262 MBTA, and the BGEPA. Review and approval authority for the INRMP Component Management Plans  
 1263 and proposed actions rests with the 432 SPTS/CEIE. Any federal actions impacting the environment are  
 1264 subject to NEPA and may require consultation with federal, state, and local regulatory agencies, as well as  
 1265 the general public. Federal agencies, state agencies and other organizations must be consulted when plans  
 1266 potentially impact lands or resources jointly managed by the DAF and those agencies or organizations.

1267 *United States Fish and Wildlife Service Responsibilities*

1268 The 432 SPTS/CEIE is responsible for advising military mission operators on provisions of the ESA and  
 1269 developing plans to minimize ESA effects on the mission.

1270 The Military Lands Withdrawal Act (MLWA) of 1999 (P.L. 106–65) defines Department of Interior  
 1271 responsibilities as follows.

1272 “[Department of Interior]—Notwithstanding the Desert National Wildlife Refuge withdrawal and  
 1273 reservation made by Executive Order No. 7373, dated May 20, 1936, as amended by Public Land Order  
 1274 Number 4079, dated August 26, 1966, and Public Land Order Number 7070, dated August 4, 1994  
 1275 [extended for an additional 20-year period on August 4, 2014 by Public Land Order 7828], the lands  
 1276 depicted as impact areas on the map referred to in paragraph (4) are, upon completion of the transfers  
 1277 authorized in paragraph (5)(F)(ii), transferred to the primary jurisdiction of the Secretary of the Air Force,  
 1278 who shall manage the lands in accordance with the memorandum of understanding referred to in paragraph  
 1279 (5)(E). The Secretary of the Interior shall retain secondary jurisdiction over the lands for wildlife  
 1280 conservation purposes”.

1281 The Memorandum of Understanding between the USAF and USFWS defines the responsibilities of the  
 1282 USFWS on withdrawn lands in DNWR, as follows.

1283 “The Service is the federal agency primarily responsible for the welfare and management of the land,  
 1284 wildlife habitat and other natural resources, and for protection of cultural and archeological resources, and  
 1285 for research thereon in the refuge. The service is also the federal agency with specific responsibilities for  
 1286 protection of T&E species and management of desert bighorn sheep, desert tortoises and migratory birds.”  
 1287 (USAF and USFWS 1997).

1288 Thus, responsibilities of the USFWS with respect to the NTTR are as follows.

- 1289 • Manage natural, cultural, and archeological resources on the DNWR.
- 1290 • Conserve wildlife resources and preservation of the desert bighorn sheep within the DNWR.
- 1291 • Protect federally listed T&E species and their habitats according to the ESA.
- 1292 • Manage the desert bighorn sheep hunt in cooperation with NTTR and NDOW.
- 1293 • Under the provisions of the Sikes Act, provide expertise on issues related to endangered species,  
 1294 invasive species, migratory birds, law enforcement, wetlands, and environmental contaminants.

1295 These responsibilities apply to the 2,106.18 acres of withdrawn land along the southern border of Creech  
 1296 AFB (Figure 1 in [Appendix I](#)).

1297 *Nevada Department of Wildlife Responsibilities*

1298 NDOW also has responsibilities for management of various natural resources within Creech AFB. These  
 1299 responsibilities include the following.

- 1300 • Control of predatory animals
- 1301 • Management of wildlife
- 1302 • Preservation of the desert bighorn sheep

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1303 **5.0 TRAINING**

1304 DAF installation NRMs/Points of Contact (POCs) and other natural resources support personnel require  
 1305 specific education, training, and work experience to adequately perform their jobs. Section 107 of the Sikes  
 1306 Act requires that professionally trained personnel perform the tasks necessary to update and carry out  
 1307 certain actions required within this INRMP. Specific training and certification may be necessary to maintain  
 1308 a level of competence in relevant areas as installation needs change, or to fulfill a permitting requirement.

- 1309 • NRMs at Category I installations must take the course “DoD Natural Resources Compliance,”  
 1310 endorsed by the DoD Interservice Environmental Education Review Board and offered for all DoD  
 1311 Components by the Naval Civil Engineer Corps Officers School (CECOS). See  
 1312 <http://www.netc.navy.mil/centers/csfe/cecos/> for CECOS course schedules and registration  
 1313 information. Other applicable environmental management courses are offered by the Air Force  
 1314 Institute of Technology (<http://www.afit.edu>), the National Conservation Training Center managed  
 1315 by the USFWS (<http://www.training.fws.gov>), and the Bureau of Land Management Training  
 1316 Center (<https://www.blm.gov/learn/national-training-center>).
- 1317 • Natural resource management personnel shall be encouraged to attain professional registration,  
 1318 certification, or licensing for their related fields, and may be allowed to attend appropriate national,  
 1319 regional, and state conferences and training courses.
- 1320 • All individuals who will be enforcing fish, wildlife, and natural resources laws on DAF lands must  
 1321 receive specialized, professional training on the enforcement of fish, wildlife, and natural resources  
 1322 in compliance with the Sikes Act. This training may be obtained by successfully completing the  
 1323 Land Management Police Training course at the Federal Law Enforcement Training Center  
 1324 (<http://www.fletc.gov/>).
- 1325 • Individuals participating in the capture and handling of sick, injured, or nuisance wildlife should  
 1326 receive appropriate training, to include training that is mandatory to attain any required permits.
- 1327 • Personnel supporting the BASH program should receive flight line drivers training, training in  
 1328 identification of bird species occurring on airfields, and specialized training in the use of firearms  
 1329 and pyrotechnics as appropriate for their expected level of involvement.
- 1330 • The DoD-supported publication “Conserving Biodiversity on Military Lands—A Handbook for  
 1331 Natural Resources Managers” (<https://www.denix.osd.mil/biodiversity/>) provides guidance, case  
 1332 studies, and other information regarding the management of natural resources on DoD installations.

1333 Natural resources management training is provided to ensure that base personnel, contractors, and visitors  
 1334 are aware of their role in the program and the importance of their participation to its success. Training  
 1335 records are maintained in agreement with the Recordkeeping and Reporting section of this plan (Section  
 1336 6.0). Listed below are key natural resources management-related training requirements and programs.

- 1337 • Natural Resources Program Managers working on Creech AFB take the course “DoD Natural  
 1338 Resources Compliance,” as this program provides policy, guidance, and oversight for management  
 1339 of natural resources.
- 1340 • All biologists conducting desert tortoise surveys must receive training in field survey protocol  
 1341 implementation, as outlined in the desert tortoise Field Manual provided by the USFWS (USFWS  
 1342 2009). Only biologists authorized by the USFWS are to conduct desert tortoise field work.
- 1343 • All persons on base, including visitors, contractors, and personnel should receive an information  
 1344 pamphlet on desert tortoises with what to do and who to contact if the species is encountered. This  
 1345 information pamphlet may be found at the visitor centers.

1346 **6.0 RECORDKEEPING AND REPORTING**

1347 **6.1 Recordkeeping**

1348 The installation maintains required records IAW Air Force Instruction (AFI 33-322), *Records Management*  
1349 *and Information Governance Program*, and disposes of records IAW the Air Force Records Information  
1350 Management System (AFRIMS) records disposition schedule (RDS). Numerous types of records must be  
1351 maintained to support implementation of the natural resources program. Specific records are identified in  
1352 applicable sections of this plan, in the Natural Resources Management Playbook, and in referenced  
1353 documents.

1354 Creech AFB maintains electronic records of all natural resource surveys, federal agency consultations, and  
1355 project review reports. When these records support natural resource management on a landscape scale, and  
1356 are not in conflict with the military mission, they are uploaded to the Creech AFB installation page on  
1357 eDASH. Additionally, all spatial data records are standardized into the Spatial Data Standards for Facilities,  
1358 Infrastructure, and Environment format and stored in the GIS known as GeoBase.

1359 **6.2 Reporting**

1360 The installation NRM is responsible for responding to natural resources-related data calls and reporting  
1361 requirements. The NRM and supporting Air Force Civil Engineer Center Natural Resources Media  
1362 Manager and Subject Matter Specialist (SMS) should refer to the Environmental Reporting Playbook for  
1363 guidance on execution of data gathering, quality control/quality assurance, and report development.

1364 Creech AFB compiles an annual report of the INRMP, detailing projects completed, and how those projects  
1365 support the wider goals and objectives of the natural resources program. The annual report also includes  
1366 any upcoming challenges that the installation commander should be aware of and whether the goals and  
1367 objectives can be completed by following the current INRMP ([Section 9.0](#)). Additionally, reporting is  
1368 handled on an as-needed basis when requested for project reviews as part of the wider EIAP.

## 1369 **7.0 NATURAL RESOURCES PROGRAM MANAGEMENT**

1370 This section describes the current status of the installation's natural resources management program and  
1371 program areas of interest. Current management practices, including common day-to-day management  
1372 practices and ongoing special initiatives, are described for each applicable program area used to manage  
1373 existing resources. Program elements in this outline that do not exist on the installation are identified as not  
1374 applicable and include a justification, as necessary.

1375 The primary objective of DAF natural resources programs is to sustain, restore, and modernize natural  
1376 infrastructure to ensure operational capability and no net loss in the capability of DAF lands to support the  
1377 military mission (DAFMAN 32-7003). Proper management of fish and wildlife onsite balances  
1378 environmental compliance and ecosystem viability with the military mission.

1379 Current natural resources program management at Creech AFB uses an ecosystem-based management  
1380 strategy, consistent with DoDI 4715.03 and DAFMAN 32-7003 Section 3.10. Ecosystem management  
1381 requires quality data sets for understanding individual components of the ecosystem and how they interact  
1382 with and affect each other. Indicator species within specific plant communities can be selected and  
1383 periodically monitored to represent snapshots of the overall health of the ecosystem. Existing data from  
1384 previous and ongoing studies will be augmented with data from surveys designed to provide relevant  
1385 information in a cost-effective manner. Members of the 432 SPTS/CEIE staff collect and compile  
1386 ecosystem management information from diverse sources in a broad variety of disciplines to help achieve  
1387 this goal. These sources include scientific literature; legal documents; government reports from military  
1388 sources, federal and state land agencies; and conservation organizations. Moreover, conservation activities  
1389 on Creech AFB require personnel to be versed in many different disciplines, including wildlife  
1390 management, botany, landscape ecology, and community ecology. Personnel also should be versed in the  
1391 various laws and regulations affecting activities on the bases and ranges. As more elements of the Creech  
1392 AFB ecosystem are described and cataloged, ecosystem management decisions can be made more easily  
1393 by managers for the daily operations of Creech AFB and for proper siting of future military development  
1394 in the area.

1395 To achieve the fundamental premise of ecosystem management, other monitoring efforts will be needed.  
1396 Monitoring may include (1) periodically surveying rare or sensitive plant populations; indicator plant or  
1397 animal species, such as plant species that co-occurs with a target species; and species known to occur on  
1398 desert pavement, as a means of monitoring for disturbance; (2) documenting changes in vegetation  
1399 communities once initial survey work is completed; and (3) conducting wetland delineations to confirm the  
1400 presence of jurisdictional wetlands on Creech AFB. Monitoring allows managers to evaluate the health of  
1401 an ecosystem before, during, and after management activities. Hence, monitoring will be a key tool for  
1402 ensuring that ecosystem management actions are environmentally sound and developed and implemented  
1403 with the ultimate goal of biodiversity conservation within the constraints of the Creech AFB mission.

### 1404 ***7.1 Fish and Wildlife Management***

#### 1405 *Applicability Statement*

1406 This section applies to all DAF installations that maintain an INRMP. The installation is required to  
1407 implement this element.

#### 1408 *Program Overview/Current Management Practices*

1409 Due to the small size of Creech AFB, the perimeter fence that excludes wildlife from most of the  
1410 installation, and a lack of natural habitats, the installation does not require significant fish and wildlife

1411 management. This is compounded by the lack of water resources, which results in an absence of fish species,  
1412 amphibians, and waterfowl. Most fish and wildlife management on the installation is focused on reducing  
1413 BASH risks ([Section 7.12](#)) from small mammals and avian species or reducing impacts to sensitive species.

1414 Fish and wildlife management plans on the installation are outlined in the Goals, Objectives, and Projects  
1415 found in [Section 8.0](#). Future planned management includes migratory bird monitoring, bat species  
1416 monitoring using acoustic devices, vegetation surveys to create vegetation maps, and invasive species  
1417 surveys. These surveys and monitoring will ensure that the CNRP management focus is accurate and  
1418 includes up-to-date data.

1419 Species data collected through surveys and monitoring, such as occurrence and abundance data, will be  
1420 submitted to state, Federal, and other installation-approved databases. Large-scale and comprehensive  
1421 databases, such as the Nevada Division of Natural Heritage Program, the Avian Knowledge Network  
1422 (AKN) and North American Bat Monitoring Program (NABat), are critical for managing species that have  
1423 a broad spatial extent.

1424 Other data collected, such as species demographic processes; including birth, death, immigration, and  
1425 emigration; explain patterns in distribution and abundance. This can help managers understand seasonal  
1426 BASH risks ([Section 7.12](#)) and drive monitoring efforts and adaptive management at the installation. This  
1427 data collected may be added to the approved databases as appropriate.

1428 These databases are a valuable resource for identifying, accessing, and combining data sets for developing  
1429 analytical techniques that can better inform conservation. The goals of these databases are to use broad and  
1430 diverse data resources to make accurate projections of species occurrences and factors affecting occurrence  
1431 to inform management decisions (Iloff et al. 2009). The submission of this data by Creech AFB will play a  
1432 valuable role in accomplishing these goals and for effective fish and wildlife management on the  
1433 installation.

#### 1434 *Avian Surveys*

1435 The Nellis Natural Resources Program initiated surveys to inventory and monitor birds in 2007, and these  
1436 efforts have expanded over the years to include a large variety of projects designed to assess  
1437 presence/absence, distribution, and productivity of migratory birds and raptors at Creech AFB and across  
1438 NTTR South (USAF 2011, 2012a, 2013a, 2014, 2015, 2016b, 2017c; Figures 7, 8 and 9 in [Appendix I](#)).

1439 Surveyors use an array of methods, including Nevada Bird Count Surveys based on the protocol developed  
1440 by the Great Basin Bird Observatory; hour-long, stationary point counts; helicopter surveys in cliff and  
1441 Joshua tree habitat for nesting raptors; power pole surveys for raptors by vehicle; placement of remote  
1442 wildlife cameras at water sources and other wildlife attractants; and Christmas Bird Counts following the  
1443 National Audubon Society protocol; and focused surveys and nest monitoring specifically for sensitive bird  
1444 species (USAF 2011, 2012a, 2013a, 2014, 2015, 2016b, 2017c).

1445 Migratory and neotropical bird surveys were conducted on Creech AFB in 2018 and 2019. In 2019, 31  
1446 individuals of 8 species were detected on the installation, and 68 individuals of 14 species were detected in  
1447 2018 (USAF 2019a, 2020). Neither survey detected an avian species with a special status designation.  
1448 Avian abundance and diversity are low at the installation due to poor-quality habitat and a lack of bird  
1449 attractants (USAF 2018b).

1450 USFWS recommends evaluating and implementing night-friendly lighting as appropriate and not in conflict  
1451 with Creech AFB's mission. Night-friendly lighting supports migrating birds and nocturnal species and

1452 reduces disruptions to species' circadian rhythms. Lighting should follow guidance published by on  
1453 darksky.org, when applicable.

#### 1454 *Mammal Surveys*

1455 A small mammal survey was conducted on Creech AFB in 2021 and 5 rodent species were detected (Figures  
1456 7 and 8 in [Appendix I](#)). None of the small mammal species captured in the survey had a special status  
1457 designation by the state or USFWS (USAF 2021).

#### 1458 *Herpetofauna Surveys*

1459 Dedicated herpetofauna surveys, combined with incidental observations during other biological surveys,  
1460 have begun to provide a picture of the distribution of herpetofauna at Creech AFB. The data show that  
1461 several diurnal lizard species are both widespread and abundant on the installation. This may be due, in  
1462 part, to sampling bias, as most surveys have occurred diurnally. Nocturnal surveys were added in 2016 to  
1463 detect additional species that were not present during diurnal surveys. Previous Nellis Natural Resources  
1464 Program Annual Reports and Nellis AFB INRMPs may contain more information regarding historic  
1465 herpetofauna surveys for Creech AFB.

1466 The most recent survey detected 16 species of reptiles on Creech AFB and the nearby NTTR south (Figures  
1467 7, 8, and 9 in [Appendix I](#)). Of these species, 1 was federally protected ([Section 7.4](#)), 11 are Nevada SGCN  
1468 ([Section 7.4](#)), and 5 have no special status. No invasive herpetofauna have been detected on the installation.

1469 As a group, herpetofauna are often the most difficult terrestrial vertebrates to inventory and monitor  
1470 (NDOW 2012). Despite the success of recent surveys, several species, including some protected and SGCN,  
1471 have the potential to occur in the survey areas but have not yet been documented. Multiple secretive and  
1472 fossorial snakes and amphibians that spend most of their life underground or under shelter have not been  
1473 documented on Creech AFB but may be in future surveys. Additional survey efforts during suitable  
1474 environmental conditions (cloudy, rainy, or overcast weather) or using long-term monitoring methods  
1475 (coverboards or pitfall traps), may enable detection of these species in future field seasons.

### 1476 **7.2 Outdoor Recreation and Public Access to Natural Resources**

#### 1477 *Applicability Statement*

1478 This section applies to all DAF installations that maintain an INRMP. The installation is required to  
1479 implement this element.

#### 1480 *Program Overview/Current Management Practices*

1481 The objective of an outdoor recreation program is to provide opportunities for the public and military  
1482 personnel to use and observe natural resources. On Creech AFB, security and safety considerations, as well  
1483 as lack of habitat for game or fish species, preclude such opportunities.

### 1484 **7.3 Conservation Law Enforcement**

#### 1485 *Applicability Statement*

1486 This section applies to all DAF installations that maintain an INRMP. The installation is required to  
1487 implement this element.

#### 1488 *Program Overview/Current Management Practices*

1489 The 432 SFS is the sole entity tasked with law enforcement responsibility on Creech AFB and is tasked  
 1490 with enforcing conservation law on Creech AFB. If conservation law violations occur on the installation,  
 1491 NDOW or the USFWS will be notified.

1492 The state of Nevada has jurisdiction over resident fish and wildlife throughout the state, including at Creech  
 1493 AFB. As such, it establishes rules, regulations, and season dates governing the taking of fish and wildlife,  
 1494 and the NDOW enforces laws governing the annual bighorn sheep hunt on the NTTR.

1495 The USFWS has jurisdiction over migratory birds as well as species listed as T&E under the ESA. A  
 1496 USFWS Conservation Law Enforcement Officer may investigate violations of relevant conservation law  
 1497 on Creech AFB if necessary.

1498 **7.4 Management of Threatened and Endangered Species, Species of Concern, and Habitats**

1499 *Applicability Statement*

1500 This section applies to DAF installations that have T&E species on DAF property. This section **IS**  
 1501 applicable to this installation.

1502 *Program Overview/Current Management Practices*

1503 T&E species management at Creech AFB is designed to ensure compliance with related laws and to  
 1504 maintain and improve species at risk. Proper management balances legal compliance and continued military  
 1505 use for no net loss of land for mission activities. The CNRP will obtain all relevant permits or authorizations  
 1506 to conduct surveying and wildlife management lawfully.

1507 Future management includes targeted surveys and monitoring for T&E, and sensitive plant and animal  
 1508 species. Other management focuses include educational outreach about sensitive species and ecological  
 1509 communities and reduction of possible impacts to sensitive species from base operations. The installation  
 1510 ensures that sensitive species, such as T&E and Nevada SGCN, are surveyed prior to any construction  
 1511 activities or anticipated impacts. These surveys help ensure possible impacts to sensitive wildlife are  
 1512 reduced as much as possible while maintaining mission capability. Further, the distribution of updated  
 1513 booklets to DAF personnel and the installation community that detail how to identify sensitive taxa are  
 1514 planned. Multiple sensitive species are to be included in the booklet, including information on identifying  
 1515 the western burrowing owl and avoiding Mojave desert tortoise habitat.

1516 *Acoustic Bat Surveys*

1517 In 2016 and 2017, acoustic monitors were deployed on the installation to detect bat species (Figures 7 and  
 1518 8 in [Appendix I](#)). Eleven bat species were detected, with the silver-haired bat, canyon bat (*Parastrellus*  
 1519 *hesperus*), and Mexican free-tailed bat (*Tadarida brasiliensis*) being the most abundant (USAF 2017a,  
 1520 2018a). None of the detected bat species are ESA-listed, but 7 of the 11 species are SGCN. These bat  
 1521 species may be roosting elsewhere and foraging on the installation. Further surveys are needed to verify  
 1522 potential roosting locations and presence.

1523 *Desert Tortoise*

1524 Since 2011, the Nellis Natural Resources Program has conducted population and relative abundance  
 1525 surveys on the South Range in desert tortoise habitat (Figure 12 in [Appendix I](#)). These studies determine  
 1526 desert tortoise density on the South Range in proximity to Creech AFB, where desert tortoises may move  
 1527 onto Creech AFB if the tortoise fence is not regularly maintained (USAF 2011).

1528 Current desert tortoise management on Creech AFB is based on compliance with existing BOs and  
 1529 associated Terms and Conditions. The programmatic BO (08ENVS00-2018-F-0028) *Programmatic*  
 1530 *Biological Opinion for Activities and Expansion of the Nevada Test and Training Range* published in 2018  
 1531 applies to Creech AFB, as it was published before Creech AFB split from Nellis AFB and the NTTR.

1532 Ongoing projects have been funded by Creech AFB to monitor, manage, and conserve the desert tortoise.  
 1533 These projects are supported by the Nellis AFB 2015 Desert Tortoise Management Guidelines, which  
 1534 delineates tortoise habitat to expedite processing of consultation with the USFWS and assist in limiting the  
 1535 impact of the military mission. These projects support the development of a Tortoise Management Plan and  
 1536 provide funds to (1) prepare Biological Assessments for compliance with the USFWS regulations on Creech  
 1537 AFB, and (2) to monitor desert tortoise populations in areas impacted by military activities or where various  
 1538 soil disturbances from military projects are proposed.

1539 The 2018 PBO for Nellis AFB coincides with Creech AFB. Applicable sections in this INRMP are  
 1540 concordant with that document. Creech AFB has been surveyed, fenced, and almost entirely cleared of  
 1541 vegetation. The portion of the fence between the South Range and vehicle traffic occurring on Creech AFB  
 1542 serves to prevent tortoise mortalities from occurring at Creech AFB. The 2018 Nellis AFB BO may serve  
 1543 as a guideline for Creech AFB if there is a need to complete actions that may impact desert tortoise beyond  
 1544 the existing fenceline.

#### 1545 *Monarch Butterfly*

1546 Although there is no known habitat for monarchs on Creech AFB, this species has a wide range and has the  
 1547 potential to migrate through or breed on the base. If deemed necessary, recommendations for enhancing  
 1548 monarch habitat and avoiding mission impacts can be found in the DoD Pollinator Conservation Reference  
 1549 Guide (Armed Forces Pest Management Board 2018). In addition, the DoD Conservation Strategy (NRI  
 1550 2024) and resulting USFWS conference opinion will provide programmatic guidance for managing this  
 1551 species on applicable DoD installations to avoid potential future conflicts if it is listed under the ESA.

#### 1552 *Other Threatened and Endangered Species*

1553 No other T&E species or SGCN have been captured in previous surveys or are expected to occur on the  
 1554 installation. If in the future these species are captured in surveys, CNRP should notify USFWS for further  
 1555 action and instruction.

### 1556 **7.5 Water Resource Protection**

#### 1557 *Applicability Statement*

1558 This section applies to DAF installations that have water resources. This section **IS** applicable to this  
 1559 installation.

#### 1560 *Program Overview/Current Management Practices*

1561 Precautions are taken to ensure that surface water runoff during summer storms and groundwater  
 1562 originating from aquifers are protected from DAF activities. The natural resource GeoBase is updated with  
 1563 any new information on the location of recharge zones and stormwater runoff areas. Mission actions  
 1564 involving functioning ordnance or potentially hazardous materials must not occur within 200 feet of any  
 1565 production well, monitoring well, or natural spring, unless they are mission critical.

1566 Creech AFB maintains a Stormwater Pollution Prevention Plan (SWPPP) that details potential pollution  
 1567 sources on the installation and BMPs for preventing these pollutants from entering the surrounding

1568 environment during stormwater runoff. The SWPPP was updated (USAF 2024) and 432 WG (more  
1569 specifically the Creech AFB Environmental Program Manager) is responsible for ensuring its  
1570 implementation. Creech AFB has 4 stormwater inlets located on the southern end of the installation. From  
1571 there, stormwater drains to 5 outlets on the northern part of the installation. Following storm events,  
1572 stormwater is sampled from Outfall 001 to ensure successful implementation of the SWPPP. All stormwater  
1573 drains into the desert playa on the northeast of the installation and there is no hydrologic connection to any  
1574 regulated waters (USAF 2024).

1575 An assessment of Creech AFB was conducted to address the potential for and impact of an aboveground  
1576 storage-tank release on drinking water intakes and sensitive fish and wildlife habitats. Creech AFB required  
1577 this assessment for compliance with the 01 July 1994 Final Rule, which amended 40 Code of Federal  
1578 Regulations Parts 9 and 112 of the Oil Pollution Act of 1990. Upon review of possible affected sensitive  
1579 fish and wildlife areas, drinking water intakes, planning calculations, and current spill contingency plans, a  
1580 Facility Response Plan was deemed unnecessary. A Certification of Substantial Harm Criteria will be  
1581 completed and maintained with each of the facility Environmental Coordinators and with 432 SPTS/CEIE.  
1582 This certification is reviewed annually with the Base Facility Response Plan. Creech AFB also maintains a  
1583 Spill Control and Countermeasure Plan, signed by Base Civil Engineer in 2023.

1584 Industrial activities associated with aircraft maintenance and operations are potential pollutant sources on  
1585 Creech AFB. Jet fuel, oils, lubricants, solvents, batteries, tire rubber, and paint chips are some examples of  
1586 industrial pollutants present on the installation. Specific BMPs have been established for each area that has  
1587 potential pollutants, including the aircraft fueling areas, wash racks, vehicle maintenance buildings, and  
1588 pesticide shop. BMPs consist of conducting maintenance operations indoors or on concrete pads with  
1589 suitable spill kits. Wash racks are covered, closed systems to ensure wastewater is collected. Hazardous  
1590 materials are stored indoors in appropriate containers and elevated off the ground on pallets to prevent  
1591 stormwater contact and to identify leaks. Creech AFB maintains a Spill Control and Countermeasure Plan  
1592 that details the procedures to implement in response to any release of oil and other petroleum products into  
1593 the environment. Creech AFB does not have a wastewater treatment plant; all wastewater is pumped to the  
1594 municipal wastewater treatment plant in Indian Springs. Full BMPs for each of the industrial areas on  
1595 Creech AFB are detailed in the SWPPP (USAF 2024).

1596 Creech AFB personnel who may come in contact with hazardous wastes are given specific training for  
1597 avoiding, handling, and disposing of such materials. An Initial Accumulation Point course is provided for  
1598 managers, consistent with the federal Resource Conservation and Recovery Act. Introductory courses for  
1599 technicians that focus on materials used on the flight line and refresher courses for more senior personnel  
1600 are provided, as well. These courses direct personnel to limit handling of hazardous wastes, to gather the  
1601 wastes in proper storage, and to assemble quantities larger than 55 gallons at designated accumulation  
1602 points. Creech AFB signed the Hazardous Waste Management Plan on 15 August 2023.

1603 An investigation of surface soils after target bombing was conducted to determine whether practice-  
1604 bombing activities contaminate surficial soil on the NTTR (USAF 1996). The results indicated that some  
1605 contamination occurred at target sites, but the concentration was relatively low, causing little or no risk to  
1606 people and the environment. Precipitation would tend to transport and disperse these soil contaminants  
1607 under normal circumstances; however, most target areas are located in basins with no connections to surface  
1608 waters outside of the basin, and any contamination moved by surface waters would remain in playa lakes  
1609 and valley bottoms. At these locations, most contaminants would be immobilized by the high level of clays  
1610 found in the playa lakes (USAF 1999). As such, Creech AFB conducts a de-fluidization process for vehicle  
1611 targets going to the range. Hazardous waste is removed and recycled if possible.

1612 **7.6 Wetland Protection**

1613 *Applicability Statement*

1614 This section applies to DAF installations that have existing wetlands on DAF property. This section **IS**  
 1615 **NOT** applicable to this installation.

1616 *Program Overview/Current Management Practices*

1617 There are no known wetlands located on Creech AFB; however, wetlands delineations have not been  
 1618 completed. Therefore, current management and protection is solely based on periodic reevaluation to  
 1619 determine presence on the installation. Section 8.0 has an initial wetland delineation project for Creech  
 1620 AFB IAW the CWA.

1621 **7.7 Grounds Maintenance**

1622 *Applicability Statement*

1623 This section applies to DAF installations that perform ground maintenance activities that could impact  
 1624 natural resources. This section **IS** applicable to this installation.

1625 *Program Overview/Current Management Practices*

1626 Overall maintenance of the landscaped areas at Creech AFB is directed by the Grounds Maintenance Plan  
 1627 originally developed for Nellis AFB and Creech AFB, an updated version of which (for Creech AFB alone)  
 1628 is not yet available. This ornamental landscaping requires regular maintenance, such as trimming, irrigation,  
 1629 and fertilizing.

1630 Over the last several years, the installation has shifted to planting native, xeric-adapted vegetation to avoid  
 1631 such maintenance and water use. Creech AFB's location in the arid Southwest means that water  
 1632 conservation is a high priority. Creech AFB now plants only species found on the Water Smart Landscapes  
 1633 Program Plant List provided by the Southern Nevada Water Authority (Southern Nevada Water Authority  
 1634 2026). Additional information regarding landscape maintenance is available from the Southern Nevada  
 1635 Water Authority, including comprehensive watering information, such as local watering restrictions and  
 1636 irrigation-method guidance. This information can be obtained on their website, <https://snwa.com> (Southern  
 1637 Nevada Water Authority 2026). To better enable grounds maintenance and urban forestry efforts, Creech  
 1638 AFB will conduct an urban forestry survey.

1639 Additionally, projects listed in the base Capital Improvements Program EA (USAF 2013b) include  
 1640 upgrades to the water system, use of water-saving devices, and xeriscaping or landscaping with drought-  
 1641 tolerant native species (USAF 2013b).

1642 **7.8 Forest Management**

1643 *Applicability Statement*

1644 This section applies to DAF installations that maintain forested land on DAF property. This section **IS NOT**  
 1645 applicable to this installation.

1646 *Program Overview/Current Management Practices*

1647 No viable or commercially harvested forests exist on Creech AFB.

1648 **7.9 Wildland Fire Management**

1649 *Applicability Statement*

1650 This section applies to DAF installations with unimproved lands that present a wildfire hazard and/or  
1651 installations that utilize prescribed burns as a land management tool. This section **IS** applicable to this  
1652 installation.

1653 *Program Overview/Current Management Practices*

1654 Creech AFB is categorized as a Tier 3 risk for wildfire, and as such does not require a Wildland Fire  
1655 Management Plan. BLM wildfire will conduct a semi-annual inspection to make sure the installation  
1656 maintains Tier 3 status.

1657 The 432d fire department is responsible for fire response on the installation. There is little to no vegetation  
1658 continuity due to management practices on the installation, so it is unlikely that a wildland fire would  
1659 encroach onto Creech AFB. However, natural ignitions (i.e., lightning) and military testing and training—  
1660 including bombing, aerial flares, ground forces training, and target maintenance—pose risks for igniting  
1661 wildfires in the NTTR, which is adjacent to, and used by, Creech AFB. To reduce fire risks, these activities  
1662 are conducted on or over playas, where the potential for wildfire is low.

1663 Responsibility for the withdrawn lands is jointly shared by the BLM, USFWS, and the Air Force Warfare  
1664 Center. The MLWA of 1999 (P.L. 106–65) delineates the responsibilities of each federal agency for control  
1665 and management of brush and range fires on withdrawn lands. The law mandates that the DAF will take  
1666 necessary precautions to prevent and suppress brush and range fires occurring due to military activities  
1667 within and outside the withdrawn lands. The DAF may seek BLM assistance to suppress a fire and will  
1668 compensate the BLM for its actions. Both the BLM and USFWS have responsibility for nonmilitary-caused  
1669 fires.

1670 When a wildfire is reported, an incident commander will be assigned by the responsible agency through the  
1671 execution of a written delegation of authority. The incident commander is responsible for implementing the  
1672 agency's strategic direction for management of the incident. During larger wildfire incidents, a written  
1673 delegation of authority is given to the incident commander. The agency that issues the written delegation is  
1674 the agency that is responsible for the wildfire. The written delegation includes objectives, priorities,  
1675 expectations, environmental constraints, public information directions, safety considerations, and other  
1676 considerations or guidelines, as needed (USAF and BLM 2010).

1677 **7.10 Agricultural Outleasing**

1678 *Applicability Statement*

1679 This section applies to DAF installations that lease eligible DAF land for agricultural purposes. This section  
1680 **IS NOT** applicable to this installation.

1681 *Program Overview/Current Management Practices*

1682 No agricultural outleasing programs exist on Creech AFB.

1683 **7.11 Integrated Pest Management Program**

1684 *Applicability Statement*

1685 This section applies to DAF installations that perform pest management activities in support of natural  
 1686 resources management (e.g., invasive species, forest pests). This section **IS** applicable to this installation.

1687 *Program Overview/Current Management Practices*

1688 The IPMP and INRMP are required to be mutually supportive and not in conflict (DAFMAN 32-7003 3.12).  
 1689 The INRMP supports the IPMP by planning and implementing invasive species control efforts. Whereas  
 1690 the IPMP supports the INRMP by providing legal, logistical, and procedural foundations for managing  
 1691 invasive species. Thus, continued coordination between the pest management and natural resources  
 1692 program is essential.

1693 Invasive species management is a goal for both the INRMP and the IPMP on DAF lands. Both plans are  
 1694 subject to provisions of the National Invasive Species Council Annual Work Plan (National Invasive  
 1695 Species Council 2022) and the Federal Noxious Weed Act (7 U.S.C. 2814), N.R.S. chapter 555 (N.R.S.  
 1696 555) for the Control of Insects, Pests, and Noxious Weeds (N.R.S. 555.005 to 555.201).

1697 Management of nonnative invasive species is essential for effective natural resources management.  
 1698 Nonnative invasive species are defined as any species that is not indigenous to a given ecosystem, and  
 1699 whose introduction causes or is likely to cause economic or environmental harm or harm to human health  
 1700 (EO 13112). Nonnative invasive species can impact the function of an ecological system by diminishing  
 1701 the abundance of native species; altering nutrient cycling; and changing soil dynamics, water dynamics,  
 1702 and fire regimes. Invasive plant infestation can impact both plant and animal communities (Olson 1999).  
 1703 Experts estimate that 42% of the species listed under the ESA are at risk primarily from nonnative invasive  
 1704 species and their associated effects (Pimentel et al. 2005).

1705 The Creech AFB Pest Management Shop manages invasive plant and animal species. The CNRP works  
 1706 with Pest Management Shop, and regulators to establish goals and to implement projects to help fulfill these  
 1707 goals. These efforts also coincide with the goals of the base IPMP, and the approaches set forth by the  
 1708 National Invasive Species Management Plan. The goals that have been established are listed in [Section 8.0](#)  
 1709 of this plan.

1710 Pest species found around facilities include mosquitoes, ticks, fleas, bees, wasps, scorpions, spiders,  
 1711 venomous snakes, lice, mites, chiggers, ants, cockroaches, flies, termites, rodents, and powder post beetles.  
 1712 Pest Management personnel at Creech AFB are responsible for controlling pests in and around facilities.

1713 The CNRP supports the Creech IPMP through continued collaboration with government agencies and  
 1714 incorporation of new methods for the fulfillment of the INRMP goals. Working with regulators will help  
 1715 to ensure coordination of management and exchange of knowledge to better understand treatments of  
 1716 invasive species within the Mojave Desert landscapes. BMPs will continue to be researched and developed  
 1717 to find the most cost-effective measures to fulfill the goals of this plan. The continuation of an Invasive  
 1718 Species Management Program is essential for the continued success of the military mission and natural  
 1719 resources management.

1720 The Pest Management Section and Security Forces are the contacts for issues related to feral and  
 1721 domesticated animals. Clark County Animal Control may also be contacted. Feeding and harboring feral  
 1722 animals in DAF installations is prohibited.

1723 *Noxious Weeds*

1724 Creech AFB conducted an invasive species survey in 2025 (Figure 13 in [Appendix I](#)). Preliminary results  
 1725 show a few state-listed weeds, such as tamarisk (also called saltcedar). Other invasive species that are not

1726 federally or state-listed but have been detected on Creech AFB include cheatgrass, red brome, saltlover  
 1727 (*Halogeton glomeratus*), and Russian thistle. Each species should be assessed to determine its extent on  
 1728 Creech AFB and whether it can be effectively controlled on the installation. For well-established species,  
 1729 eradication may be impossible; instead, management should focus on preventing further spread.

1730 Unwanted invasives are controlled through proper methods and management. A contractor performs weed  
 1731 control in improved areas, excluding CES common areas. An inventory of pesticides previously used on  
 1732 Creech AFB is listed in prior Nellis AFB IPMPs. A quarterly report of all pesticides used is forwarded to  
 1733 the Headquarters ACC.

1734 *Nuisance Animals*

1735 On Creech AFB, certain animals can be considered a nuisance ([Table 7-1](#)). Nuisance species are not  
 1736 considered invasive but do have the ability to increase in number to the point where they can become a  
 1737 management problem.

1738

Table 7-1. Potential nuisance animals on Creech Air Force Base.

| Common Name                | Scientific Name                 | Species Status              |
|----------------------------|---------------------------------|-----------------------------|
| Brown-headed cowbird       | <i>Molothrus ater</i>           | Native, parasitic species   |
| Canada goose               | <i>Branta canadensis</i>        | Native, nuisance species    |
| Cliff swallow              | <i>Petrochelidon pyrrhonota</i> | Native, nuisance species    |
| Common raven               | <i>Corvus corax</i>             | Native, nuisance species    |
| European starling          | <i>Sturnus vulgaris</i>         | Nonnative, nuisance species |
| House sparrow              | <i>Passer domesticus</i>        | Nonnative, nuisance species |
| Horned lark                | <i>Eremophila alpestris</i>     | Native, nuisance species    |
| Coyote                     | <i>Canis latrans</i>            | Native species              |
| Mediterranean house gecko  | <i>Hemidactylus turcicus</i>    | Nonnative species           |
| Rough-tailed bowfoot gecko | <i>Cytropodian scabrum</i>      | Nonnative species           |

1739

1740 **7.12 Bird/Wildlife Aircraft Strike Hazard (BASH)**

1741 *Applicability Statement*

1742 This section applies to DAF installations that maintain a BASH program to prevent and reduce wildlife-  
 1743 related hazards to aircraft operations. This section **IS** applicable to this installation.

1744 *Program Overview/Current Management Practices*

1745 To avoid potential aircraft collisions with birds and wildlife, Creech AFB implements a BASH plan,  
 1746 effective 24 August 2022. The plan provides guidance for BASH reduction associated with Creech AFB  
 1747 flight operations. Wildlife, particularly migratory birds and raptors, can present serious strike hazards to  
 1748 aircraft as their daily and seasonal movements can take them within flight paths. Animals such as deer and  
 1749 coyotes sometimes cross runways and can pose strike risks for landing aircraft.

1750 The INRMP and BASH plan must be mutually supportive and not in conflict (DAFMAN 32-7003 3.64.1).  
 1751 Both plans aim to reduce the number of collisions between birds or wildlife and aircraft while maintaining  
 1752 mission capability (DAFMAN 32-7003 3.12). The CNRP works in cooperation with 432d Wing Flight  
 1753 Safety to conduct avian point-count surveys around the flight line and apply for state and federal

1754 depredation permits. Bird surveys are conducted to quantify seasonal trends in bird density and abundance  
 1755 in areas within and adjacent to the flight path. The CNRP also conducts small mammal trapping around the  
 1756 flight lines at Creech AFB to quantify the prey base for animals such as raptors and coyotes that could pose  
 1757 BASH issues.

1758 Creech AFB has established a Bird Hazard Working Group to discuss emerging BASH issues and review  
 1759 the BASH program. The group consists of 432d Wing Flight Safety, 432 SPTS/CEIE, and other internal  
 1760 stakeholders. This working group meets semi-annually, or when requested by the 432d Wing Deputy  
 1761 Commander.

1762 Creech AFB implements 3 levels of BASH risk, known as Bird Watch Conditions. Bird Watch Condition  
 1763 Low allows normal airfield operations; Bird Watch Condition Moderate limits the number of touch-and-go  
 1764 exercises and requires pilots to increase their attention on bird activity during the final approach; Bird  
 1765 Watch Condition Severe restricts formation takeoffs and only allows single, full-stop landings.

1766 Habitat around the airfield is managed to discourage small mammal use of the area. Vegetation is removed  
 1767 through blading and soils are stabilized with chemical solutions to eliminate suitable habitat for prey sources  
 1768 of BASH predators. Creech AFB maintains an internal DAF waiver of AFI 93-202 grass height standards;  
 1769 this waiver allows total vegetation removal as a best practice for wildlife mitigation in desert environments.  
 1770 Drainage channels exist to avoid water ponding and vegetation is regularly removed from the channels to  
 1771 prevent bird occupancy.

1772 In support of the BASH program, the USFWS issues an annual Depredation at Airports Permit for  
 1773 Migratory Birds to Creech AFB. Additionally, Creech AFB holds an annual Depredation of Migratory Birds  
 1774 permit from NDOW. These permits are reviewed by the issuing agencies on an annual basis and must be  
 1775 applied for each year. These permits allow for lawful take of designated wildlife to reduce safety risks to  
 1776 personnel and damage to aircraft. Both permits allow Creech AFB to take a maximum of 300 birds and 25  
 1777 nests. The permits further restrict take of certain species to a maximum number of 30 common ravens, 25  
 1778 California gulls, 10 Brewer’s sparrows, 2 American avocets, and 1 western gull. A maximum of 2 northern  
 1779 harriers may be trapped and relocated. These numbers can only be exceeded in emergency situations. The  
 1780 Migratory Bird Permit Office must be notified within 48 hours of all emergency take.

1781 **7.13 Coastal Zone and Marine Resources Management**

1782 *Applicability Statement*

1783 This section applies to DAF installations that are located along coasts and/or within coastal management  
 1784 zones. This section **IS NOT** applicable to this installation.

1785 *Program Overview/Current Management Practices*

1786 There are no coastal or marine areas on Creech AFB.

1787 **7.14 Cultural Resources Protection**

1788 *Applicability Statement*

1789 This section applies to DAF installations that have cultural resources that may be impacted by natural  
 1790 resource management activities. This section **IS** applicable to this installation.

1791 *Program Overview/Current Management Practices*

1792 Creech AFB’s ICRMP, signed on 7 April 2026, describes the cultural resources on the installation and how  
 1793 they are managed. Certain natural resource management activities may expose or impact cultural resources,  
 1794 such as small mammal trapping and other surveys that require ground disturbance. As such, communication  
 1795 and coordination between the cultural resources and natural resources personnel are essential to ensure  
 1796 mutually beneficial management and to avoid conflict (DAFMAN 32-7003 3.12). For all ground-disturbing  
 1797 survey protocols, the Natural Resources Program will first consult with the Creech AFB cultural resource  
 1798 program manager.

### 1799 **7.15 Public Outreach**

#### 1800 *Applicability Statement*

1801 This section applies to all DAF installations that maintain an INRMP. The installation is required to  
 1802 implement this element.

#### 1803 *Program Overview/Current Management Practices*

1804 The CNRP holds public outreach events and works with the Creech AFB Public Affairs office to publish  
 1805 posters and pamphlets for public outreach and personnel training, including a printed field guide for the  
 1806 area’s reptiles and amphibians. The CNRP also provides education on desert tortoises, including guidance  
 1807 on what to do and who to contact if the species is encountered on the installation. This information pamphlet  
 1808 may be found at the visitor centers.

### 1809 **7.16 Natural Hazards**

#### 1810 *Applicability Statement*

1811 This section applies to DAF installations that have identified natural hazards, risks, vulnerabilities, and  
 1812 adaptation strategies using authoritative region-specific climate science, climate projections, and existing  
 1813 tools. This section **IS** applicable to this installation.

#### 1814 *Program Overview/Current Management Practices*

1815 Natural hazards threaten an installation’s infrastructure, security, and mission readiness by impacting the  
 1816 availability and integrity of natural resources on the landscape. In turn, these impacts require natural  
 1817 resources management to employ an ecosystem-based, adaptive management approach to maintain a  
 1818 resilient landscape and ensure sustainment of the military mission when facing such hazards (DAFMAN  
 1819 32-7003, Section 3.10.3). Creech AFB is expected to face natural hazards such as drought, extreme heat  
 1820 and winds, and other extreme weather events.

#### 1821 *Drought*

1822 Although the region surrounding Creech AFB is arid, prolonged drought can deplete already declining  
 1823 groundwater resources and cause decline in ecological productivity (Saito et al. 2025). Drought may also  
 1824 elevate wildfire risk in nearby areas, possibly impacting the flight mission due to decreased visibility from  
 1825 smoke. Similarly, increased dust generated from drought conditions may damage mission infrastructure.  
 1826 Use of native, desert-adapted vegetation for landscaping requires little to no irrigation water, lowering the  
 1827 burden on installation water resources and increasing resilience to drought (Sovocool 2005). Native  
 1828 vegetation may also stabilize desiccated soils and entrap dust (Vásquez-Méndez 2011).

#### 1829 *Extreme Heat and Wind*

1830 Extreme temperatures and heatwaves are common at Creech AFB due to its location at the northern edge  
 1831 of the Mojave Desert. In 2013, Nellis AFB experienced a record setting heatwave that cause notable effects  
 1832 on mission execution. In extreme heat, small aircraft with heavy loads require longer runways to become  
 1833 airborne (Kleinholz 2013). Similarly, stronger winds and crosswinds often result from extreme heat,  
 1834 increasing takeoff difficulty.

1835 Strong wind events have been observed at Creech AFB and nearby communities, with maximum observed  
 1836 gusts up to 70 miles per hour during several severe storms in the last decade. Due to both the rarity of storms  
 1837 and the often rapid nature of storm formation in the region, extreme wind conditions can seem to develop  
 1838 suddenly. When these events occur, damage to structures, materiel, utility lines, and risks to personnel can  
 1839 occur. Visibility and dust clouds may also form, particularly following periods of drought (Lessani et al.  
 1840 2022).

1841 Extreme temperature also causes heat related illnesses of airmen and mandatory rest periods to recover  
 1842 from heat stress (Kleinholz 2013). Extreme temperatures also place a burden on cooling and heating  
 1843 infrastructure on base and increase running costs. Native desert-adapted vegetation including shrubs and  
 1844 trees provide shade in essential locations such as sidewalks.

1845 *Other Extreme Weather Events*

1846 The area surrounding Creech AFB is subject to erratic and extreme weather events including thunderstorms  
 1847 and downbursts that cause strong winds, hail, heavy rainfall, and localized flash flooding. These events  
 1848 present risks to infrastructure and may delay mission execution. Native vegetation and undisturbed soils  
 1849 may help absorb heavy rainfall and decrease wind velocity on base (Thompson et al. 2010, Meng et al.  
 1850 2018, Lessani et al. 2022).

1851 **7.17 Geographic Information Systems**

1852 *Applicability Statement*

1853 This section applies to all DAF installations that maintain an INRMP, since all geospatial information must  
 1854 be maintained within the DAF GeoBase system. The installation is required to implement this element.

1855 *Program Overview/Current Management Practices*

1856 Geographic Information Systems (GIS) are an integral part of natural resources management. The CNRP  
 1857 uses GIS for the management of spatial data. GIS is used to generate maps for planning field survey efforts  
 1858 and visualizing geospatial data. Furthermore, GIS is used to analyze natural resources datasets and develop  
 1859 products such as outreach posters and technical reports. Natural resources datasets include potential habitat  
 1860 layers for sensitive species, species observations records from surveys, vegetation community maps, and  
 1861 layers showing the coverage of ground and aerial surveys.

1862 *Geographic Information Systems Data Standards*

1863 Maintaining quality control of GIS resources is essential. Creech AFB is working towards the DAF-wide  
 1864 effort to standardize GIS data and ensure that GIS resources are in compliance with DAF GeoBase  
 1865 programmatic guidelines. GeoBase is the Air Force Installation Geospatial Information and Services  
 1866 program for GIS that was established to support management of installation infrastructure and  
 1867 environmental resources and maintain compliance with AFI 32-10112. GeoBase is based on the most recent  
 1868 Spatial Data Standards for Facilities, Infrastructure, and Environment version.

1869 **8.0 MANAGEMENT GOALS AND OBJECTIVES**

1870 The installation establishes long-term, expansive goals and supporting objectives to manage and protect  
 1871 natural resources while supporting the military mission. Goals express a vision for a desired condition for  
 1872 the installation’s natural resources and are the primary focal points for INRMP implementation. Objectives  
 1873 indicate a management initiative or strategy for specific long or medium range outcomes and are supported  
 1874 by projects. Projects are specific actions that can be accomplished within a single year. In cases where off-  
 1875 installation land uses may jeopardize DAF missions, this section may list specific goals and objectives  
 1876 aimed at eliminating, reducing, or mitigating the effects of encroachment on military missions. These  
 1877 natural resources management goals for the future have been formulated by the preparers of the INRMP  
 1878 from an assessment of the natural resources, current condition of those resources, mission requirements,  
 1879 and management issues previously identified. Below are the integrated goals for the entire natural resources  
 1880 program.

1881 The installation goals and objectives are displayed in the ‘Installation Supplement’ section below in a  
 1882 format that facilitates an integrated approach to natural resource management. By using this approach,  
 1883 measurable objectives can be used to assess the attainment of goals. Individual work tasks support INRMP  
 1884 objectives. The projects are key elements of the annual work plans and are programmed into the  
 1885 conservation budget, as applicable.

1886 ***Installation Supplement***

1887 **GOAL 1 ENSURE LONG-TERM WILDLIFE AND ECOSYSTEM VIABILITY ON**  
 1888 **CREECH AFB**

1889 OBJECTIVE 1.1 Ensure Long-Term Viability of Natural Resources in Support of the Military  
 1890 Mission

1891 PROJECT 1.1.1 Conduct targeted surveys and monitoring for threatened, endangered,  
 1892 and sensitive plant and animal species listed by federal, state, and local  
 1893 enforcement agencies and regulations.

1894 PROJECT 1.1.2 Conduct wildlife and vegetation surveys according to recognized  
 1895 national standards and appropriate detection techniques and  
 1896 methodologies to monitor and document diversity, population metrics,  
 1897 and viability.

1898 PROJECT 1.1.3 Conduct vegetation classification and ground-truthing surveys to develop  
 1899 a vegetation map and urban forestry survey of Creech AFB.

1900 PROJECT 1.1.4 Evaluate Creech AFB landscaping for opportunities to reduce urban heat  
 1901 island effect, establish stands of native vegetation, and improve  
 1902 aesthetics as temperatures and the number of days above 90 °F increase.

1903 PROJECT 1.1.5 Inventory invasive plant species populations on Creech AFB, establish  
 1904 priorities for control efforts, and begin control work. Monitor annually  
 1905 for early detection and eradication of new species.

1906 PROJECT 1.1.6 Conduct 2 half days of avian point-count surveys on Creech AFB for  
 1907 migratory birds, using 10 stationary point counts, particularly in areas  
 1908 surrounding the flight lines in support of the BASH program.

1909 PROJECT 1.1.7 Survey and monitor for bat species on the installation using NABat  
 1910 acoustic monitors while following the North American Bat Monitoring  
 1911 Program protocol.

1912 PROJECT 1.1.8 Survey for plant and animal candidate species that may be listed at the  
 1913 state or federal level once every 10 years. If a known species on Creech  
 1914 AFB becomes a candidate species, it will be surveyed before the 10-year

- 1915 mark and monitoring protocols will be developed.
- 1916 PROJECT 1.1.9 If Las Vegas bearpoppy is detected on Creech AFB, then survey for
- 1917 Mojave poppy bee, a potential candidate species, within 1 year of
- 1918 detection and determine the need for annual surveys.
- 1919 PROJECT 1.1.10 Conduct a baseline wetland delineation on Creech AFB and, in
- 1920 consultation with the US Army Corps of Engineers, determine whether
- 1921 any are jurisdictional waters of the US.
- 1922 OBJECTIVE 1.2 Continue to monitor for Threatened and Endangered (T&E) species on Creech
- 1923 Air Force Base
- 1924 PROJECT 1.2.1 Continue to survey and monitor for Mojave desert tortoise populations
- 1925 using the existing methods approved by the USFWS and existing BOs.
- 1926 PROJECT 1.2.2 If the species is observed using the installation, develop and implement
- 1927 conservation measures to protect and promote the species while
- 1928 maintaining mission success.
- 1929 OBJECTIVE 1.3 Mitigate Impacts to Habitats and Wildlife Caused by Military Activities
- 1930 PROJECT 1.3.1 Conduct USFWS-approved survey protocol for sensitive and protected
- 1931 species (particularly Mojave desert tortoise and nesting birds) before any
- 1932 construction activities or anticipated impacts to an area. Establish
- 1933 appropriate buffer zones in accordance with federal, state, and local
- 1934 regulations around sensitive and protected species and habitat in or near
- 1935 construction zones to ensure compliance with environmental regulations.
- 1936 PROJECT 1.3.2 Ensure that various commands are inspecting their exterior boundary
- 1937 desert tortoise fence integrity in accordance with the BO.
- 1938 OBJECTIVE 1.4 Restore Degraded Ecologically Sensitive Areas.
- 1939 PROJECT 1.4.1 Conduct cleanup and remediation of areas that are critical to protected
- 1940 species habitat, wildlife corridors, and water-quality issues. Conduct
- 1941 restoration on a case-by-case basis after events, such as crash incidents.
- 1942 **GOAL 2 MAINTAIN COMPLIANCE WITH FEDERAL, STATE, LOCAL, AND**
- 1943 **MILITARY REGULATIONS**
- 1944 OBJECTIVE 2.1 Maintain Interdepartmental and Interagency Cooperation (Planning, Meeting,
- 1945 Data Sharing) to Ensure Protocols are Followed and to Avoid Work
- 1946 Redundancy.
- 1947 PROJECT 2.1.1 Collaborate with 432d Wing Flight Safety to share avian point-count
- 1948 data and species identifications of bird fatalities following BASH
- 1949 incidents, to determine which species and locations pose the greatest
- 1950 BASH risks and to inform management decisions.
- 1951 PROJECT 2.1.2 Consult the BLM invasive species specialist before initiating any
- 1952 invasive species control projects on Creech AFB. Coordinate with the
- 1953 USFWS before initiating any invasive species-control projects in Mojave
- 1954 desert tortoise habitat. Records of herbicide type, target species, and
- 1955 treatment effectiveness will be maintained by Pest Management and
- 1956 tracked.
- 1957 PROJECT 2.1.3 Develop and maintain collaborative relationships with federal and state
- 1958 agencies, as well as non-governmental organizations, such as Partners in
- 1959 Flight and Great Basin Bird Observatory, to standardize avian surveying
- 1960 and monitoring protocols, contribute to the greater knowledge of bird
- 1961 species occurring on the installation, and to increase the capacity for
- 1962 effective habitat management and good stewardship of these bird species

- 1963 across their ranges. Contribute species survey and occurrence data to  
 1964 federal and other installation-approved scientific databases, including the  
 1965 Avian Knowledge Network (AKN) and NABat.  
 1966 PROJECT 2.1.4 Conduct an initial wetlands delineation survey IAW the Clean Water Act  
 1967 and DOD guidance
- GOAL 3 SUSTAIN MILITARY MISSION WHILE IMPLEMENTING ECOSYSTEM  
 MANAGEMENT**
- 1970 OBJECTIVE 3.1 Avoid Impacts to Threatened, Endangered, and Sensitive Species and  
 1971 Communities if detected on Creech AFB and Protect the Habitats of Threatened,  
 1972 Endangered, and Sensitive Species and Communities.
- 1973 PROJECT 3.1.1 Maintain comprehensive species lists depicting and describing species  
 1974 locations, population status, native status, regulatory status, rarity, and  
 1975 historical documentation to assist land managers in identification of  
 1976 species occurring on Creech AFB and to assist the DAF in identification  
 1977 of sensitive and protected species, habitats, and communities and  
 1978 directives for conforming to environmental regulations governing those  
 1979 resources.
- 1980 OBJECTIVE 3.2 Conduct Educational Outreach for Community Awareness of Sensitive Species  
 1981 and Ecological Communities.
- 1982 PROJECT 3.2.1 Continue to update and distribute brochures and booklets to educate  
 1983 DAF personnel and contractors on how to identify sensitive and  
 1984 protected species and communities occurring on Creech AFB or nearby  
 1985 installations, and what actions to take, if any, when those taxa and  
 1986 communities are observed. Continue to conduct desert tortoise awareness  
 1987 training in accordance with BOs by authorized desert tortoise biologists.
- 1988 PROJECT 3.2.2 Design and install 1 sign to promote awareness about Mojave desert  
 1989 tortoise habitat.
- 1990 OBJECTIVE 3.3 Protect life, property, and resources from wildland fire.
- 1991 PROJECT 3.3.1 Use hazardous fuels reduction around critical infrastructure and in  
 1992 strategic locations to reduce the potential impact of wildland fire and  
 1993 control roadside fuels by treating invasive grasses.
- 1994 PROJECT 3.3.2 Coordinate Wildland Fire and Invasive Species initiatives to reduce  
 1995 large-scale infestations of annual grasses to decrease wildfire risks where  
 1996 needed on Creech AFB.
- GOAL 4 UPDATE THE NATURAL RESOURCES MANAGEMENT DATABASE**
- 1998 OBJECTIVE 4.1 Enhance Data Utility and Quality.
- 1999 PROJECT 4.1.1 Gather and compile existing data from internal Creech AFB departments  
 2000 into environmental GIS layers and maps for biological and non-  
 2001 biological resources including species populations, vegetation  
 2002 communities, soils, water, climate variables, topography, landscape,  
 2003 geology, and water resources occurring across the installation.
- 2004 OBJECTIVE 4.2 Maintain Standardized Protocols for Data Collection, Quality Assurance and  
 2005 Quality Control of Data Entry, and Database Management Across Natural  
 2006 Resources Projects.
- 2007 PROJECT 4.2.1 Maintain all spatial databases in compliance with DAF GeoBase  
 2008 Program (under AFI 32-10112) to ensure proper metadata recordkeeping  
 2009 and standardization of geographic coordinate systems and projections.
- 2010 PROJECT 4.2.2 Coordinate and collaborate with federal and state agencies, as well as

2011 non-governmental organizations, where appropriate and possible to  
2012 ensure that standardized protocols for data collection and analysis are  
2013 current with the best available science.

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2014 **9.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS**

2015 **9.1 *Natural Resources Management Staffing and Implementation***

2016 The overall function of the INRMP is to implement ecosystem management at Creech AFB in support of  
 2017 the military mission, by setting goals for attaining desired land conditions. According to DAFMAN 32-  
 2018 7003, the DAF principles for ecosystem management include the following:

- 2019 • Maintenance or restoration of native ecosystem types across their natural range where practical and  
 2020 consistent with the military mission.
- 2021 • Maintenance or restoration of ecological processes, such as fire and other disturbance regimes,  
 2022 where practical and consistent with the military mission.
- 2023 • Maintenance and restoration of the hydrological processes in streams, floodplains, and wetlands  
 2024 when feasible.
- 2025 • Use of regional approaches to implement ecosystem management on the installation by  
 2026 collaboration with other DoD components, as well as other state, federal, and local agencies, and  
 2027 adjoining property owners.
- 2028 • Allowance for outdoor recreation, agricultural production, harvesting of forest products, and other  
 2029 practical utilization of the land and its resources if such use does not inflict long-term ecosystem  
 2030 damage or negatively impact the DAF mission. Because of security issues and mission goals at  
 2031 Creech AFB, public use of land is highly restricted.

2032 DAF environmental compliance review is initiated with the submittal of Air Force Form 813, the Request  
 2033 for Environmental Impact Analysis. Project proponents generally submit a Description of Proposed Action  
 2034 and Alternatives in support of their submittal, enabling decision-makers to have sufficient information on  
 2035 which to base their review and conclusions. Form 813 is completed by 432d SPTS/CEIE, which uses the  
 2036 conclusions to determine the documentation necessary, if any, to fully comply with NEPA. The INRMP  
 2037 provides information on existing conditions and potential impacts to use in support of completing Form  
 2038 813.

2039 *Natural Resources Management Staffing*

2040 Creech AFB has the following positions devoted either full-time or part-time to natural resources  
 2041 management.

- 2042 • Natural Resources Program Manager—Devoted full-time to the management of natural resources  
 2043 on Creech AFB. The Natural Resource Program Manager coordinates all activities at all locations  
 2044 (1) to ensure that natural resources are conserved without significantly impacting the goals and  
 2045 objectives of the military mission; (2) to coordinate mission activities with appropriate federal and  
 2046 state regulatory agencies when required; and (3) to ensure that Creech AFB fully complies with the  
 2047 goals, objectives, and management guidelines in the INRMP.
- 2048 • NEPA Manager—Devoted part-time to natural resources management. Coordinates all activities  
 2049 potentially impacting the environment and requiring preparation of EAs or EISs. Coordinates these  
 2050 activities with the NRM, as necessary.

2051 Most of the responsibility for resource management falls on the Natural Resources Program Manager, who  
 2052 spends most of their time addressing DAF activities potentially impacting natural resources and  
 2053 coordinating the activities of contractors and regulatory agencies involving natural resources management.  
 2054 Most of the surveys, reports, and monitoring conducted at Creech AFB are accomplished through contracts  
 2055 with independent consultants.

2056 **9.2 *Monitoring INRMP Implementation***

2057 For INRMP goals and objectives to be effectively implemented, guidelines provided in the INRMP should  
 2058 be considered early in the planning and budget processes for proposed projects and mission changes on the  
 2059 installation. GIS database and modeling tools recommended as part of the INRMP should be used to assist  
 2060 managers in the decision-making process.

2061 The INRMP describes management of a living, dynamic system, and therefore will require occasional  
 2062 modification to reflect changes in the system. At the same time, the military mission changes with the needs  
 2063 of national defense, and the INRMP must be sufficiently flexible to accommodate those changes. Because  
 2064 the INRMP is based on guidance documents that may be periodically modified or replaced, and because  
 2065 natural resources undergo constant cycling and change, periodic review and modification of the INRMP is  
 2066 required by DAFMAN 32-7003. According to those regulations, installations, in cooperation with the  
 2067 USFWS and NDOW, must update the INRMP at least once every 5 years. Updates may also be required in  
 2068 shorter periods of time where changes in the military mission and changes in environmental compliance  
 2069 requirements significantly affect the ability of the installation to implement the INRMP. An annual review  
 2070 of the INRMP should be conducted by Creech AFB in coordination with the USFWS and NDOW to verify  
 2071 the following:

- 2072 • All “must fund” projects and activities have been budgeted for and implementation is on schedule;
- 2073 • Sufficient numbers of professionally trained natural resources management and law enforcement  
 2074 personnel are available and assigned responsibility to perform tasks associated with the preparation  
 2075 and implementation of the INRMP per the Sikes Act, Section 107;
- 2076 • Projects and activities for the upcoming year have been identified and included in the INRMP;
- 2077 • All required coordination with the USFWS and NDOW has occurred; and
- 2078 • Any significant changes to the installation’s mission requirements or natural resources have been  
 2079 identified.

2080 The primary ecosystem management goal of scientific data collection and ecosystem monitoring is to  
 2081 develop a working understanding of the structure, composition, and health of regional and installation  
 2082 ecosystems. Data will be collected and evaluated to support the conservation and rehabilitation of natural  
 2083 resources consistent with the use of the installation and its mission.

2084 Data will continue to be input into the Creech AFB GeoBase. This allows military and environmental  
 2085 personnel to analyze, visualize, and query the data. As more data are collected and as the military mission  
 2086 changes or expands, the 432 SPTS/CEIE will continue to refine and develop GIS databases and models to  
 2087 use as tools to make sound management decisions.

2088 A spreadsheet will be developed to track the completion of projects proposed by the INRMP for the 5 years  
 2089 following INRMP approval. The CNRP annually prepares a report describing accomplishments of that  
 2090 year’s projects. The annual report should also include a discussion of problems and issues encountered in  
 2091 the implementation of the INRMP, as well as methods to improve implementation of the INRMP. As  
 2092 previously discussed, the INRMP update will be approved by ACC and provided to the USFWS, BLM, and  
 2093 NDOW. Methods to improve implementation of the INRMP to meet its goals and objectives should be  
 2094 discussed with these agencies.

2095 **9.3 *Annual INRMP Review and Update Requirements***

2096 The INRMP requires annual review, IAW DoDI 4715.03 and DAFMAN 32-7003, to ensure the  
 2097 achievement of mission goals, verify the implementation of projects, and establish any necessary new

2098 management requirements. This process involves installation natural resources personnel and external  
2099 agencies working in coordination to review the INRMP. If the installation mission or any of its natural  
2100 resources management issues change significantly after the creation of the original INRMP, a major  
2101 revision to the INRMP is required. The need to accomplish a major revision is normally determined during  
2102 the annual review with USFWS and NDOW. The CNRP documents the findings of the annual review in an  
2103 Annual INRMP Review Summary and obtains signatures from the coordinating agencies on review  
2104 findings. By signing the Annual INRMP Review Summary, the collaborating agency representatives assert  
2105 concurrence with the findings. If any agency declines to participate in an on-site annual review, the NRM  
2106 submits the INRMP for review along with the Annual INRMP Review Summary document to the agency  
2107 via official correspondence and requests return correspondence with comments and concurrence.

2108 The USFWS, NDOW, and the CNRP conduct an Annual INRMP Review Meeting. This meeting takes  
2109 place in person with remote options available for all respective representatives for each agency. During this  
2110 meeting, the NRM updates the external stakeholders with the end of the year execution report and  
2111 coordinates future work plans and any necessary changes to management methods. All parties review the  
2112 INRMP and begin preliminary collaborative work on updating the INRMP (new policies, procedures,  
2113 impacts, mitigations, etc.) as applicable.

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2114 **10.0 ANNUAL WORK PLANS**

2115 The INRMP Annual Work Plans are included in this section. These projects are listed by fiscal year,  
 2116 including the current year and 4 succeeding years. For each project and activity, a specific timeframe for  
 2117 implementation is provided (as applicable), as well as the appropriate funding source and priority for  
 2118 implementation. The work plans provide all the necessary information for building a budget within the DAF  
 2119 framework. Priorities are defined as follows:

- 2120 • **High**—The INRMP signatories assert that if the project is not funded, the INRMP is not being  
 2121 implemented and the DAF is non-compliant with the Sikes Act. Alternately, a project is high-  
 2122 priority if it is specifically tied to an INRMP goal and objective and is part of a “Benefit of the  
 2123 Species” determination necessary for ESA Section 4(a)(3)(B)(i) critical habitat exemption.
- 2124 • **Medium**—Project supports a specific INRMP goal and objective and is deemed by INRMP  
 2125 signatories to be important for preventing non-compliance with a specific requirement within a  
 2126 natural resources law or by EO 13112, *Invasive Species*, as amended by EO 13751, *Safeguarding*  
 2127 *the Nation from the Impacts of Invasive Species*. However, the INRMP signatories would not  
 2128 contend that the INRMP is not being implemented if not accomplished within the programmed year  
 2129 due to other priorities.
- 2130 • **Low**—Project supports a specific INRMP goal and objective, enhances conservation resources or  
 2131 the integrity of the installation mission, and/or supports long-term compliance with specific  
 2132 requirements within natural resources law; but it is not directly tied to specific compliance within  
 2133 the proposed year of execution.

2134  
 2135 Definitions of Air Force Common Output Level Standards (AFCOLS) priority levels follow. They follow  
 2136 a pattern of ranking score, risk to AF mission, and regulatory authority.

- 2137 • AFCOLS 4; 24-21; Catastrophic; Federal laws & Final Governing Standards & Interagency  
 2138 Agreements
- 2139 • AFCOLS 3; 20-16; Critical; Executive Orders & Department of Defense Instruction Documents
- 2140 • AFCOLS 2; 15-10; Moderate; Air Force Instruction Documents
- 2141 • AFCOLS 1; 9-5; Negligible; no authority or drivers

Table 10-1. Annual Work Plan.

| Resource Category             | Goal | Objective | Occurrence  | FY               | OPR | Funding Source    | Priority Level           | PB28 Code*         | Standard Title* | Project Number | Description   |
|-------------------------------|------|-----------|---|------------------|-----|-------------------|--------------------------|--------------------|-----------------|----------------|---|
| T&E <sup>a</sup>              | 1    | 1.1       | Annually  | All              | ++6 | MIPR <sup>b</sup> | AFCOLS <sup>c</sup><br>4 | T&E                | Mgt Species     | 1.1.1          | Conduct targeted surveys and monitoring for threatened, endangered, and sensitive plant and animal species listed by federal, state, and local enforcement agencies and regulations.                            |
| Fish and Wildlife, Vegetation | 1    | 1.1       | Every 3 years   | 2027, 2030       | —   | MIPR              | AFCOLS<br>3              | INRMP <sup>d</sup> | Mgt Species     | 1.1.2          | Conduct wildlife and vegetation surveys according to recognized national standards and appropriate detection techniques and methodologies to monitor and document diversity, population metrics, and viability. |
| Vegetation                    | 1    | 1.1       | Once  | 2026             | —   | MIPR              | AFCOLS<br>3              | INRMP              | Mgt Habitat     | 1.1.3          | Conduct vegetation classification and ground-truthing surveys to develop a vegetation map and urban forestry survey of Creech Air Force Base (AFB).   |
| Grounds Maintenance           | 1    | 1.1       | Biannual for 3 monitoring cycles, then every 5 years. | 2026, 2028, 2030 | —   | OBAD              | AFCOLS<br>3              | INRMP              | Mgt Habitat     | 1.1.4          | Evaluate Creech AFB landscaping for opportunities to reduce urban heat island effect, establish stands of native vegetation, and improve aesthetics as temperatures   |

Table 10-1. Annual Work Plan.

| Resource Category | Goal | Objective | Occurrence     | FY   | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title*      | Project Number | Description   |
|-------------------|------|-----------|----------------|------|-----|----------------|----------------|------------|----------------------|----------------|---|
|                   |      |           |                |      |     |                |                |            |                      |                | and the number of days above 90 °F increase.  |
| Vegetation        | 1    | 1.1       | Annual         | All  | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Invasive Species | 1.1.5          | Inventory invasive plant species populations on Creech AFB, establish priorities for control efforts, and begin control work. Monitor annually for early detection and eradication of new species.                    |
| Fish and Wildlife | 1    | 1.1       | Annual         | All  | —   | 78MQ           | Medium         | 619        | —                    | 1.1.6          | Conduct 2 half days of avian point-count surveys on Creech AFB for migratory birds, using 15 stationary point counts, particularly in areas surrounding the flight lines in support of the BASH <sup>e</sup> program. |
| Fish and Wildlife | 1    | 1.1       | Annual         | All  | —   | MIPR –         | AFCOLS 3       | INRMP      | Mgt Species          | 1.1.7          | Survey and monitor for bat species on the installation using North American Bat (NABat) acoustic monitors while following the NABat Monitoring Program protocol.  |
| T&E               | 1    | 1.1       | Every 10 years | 2026 | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Species          | 1.1.8          | Survey for plant and animal candidate species that may be listed at the state or federal level once every 10 years. If a  |

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Table 10-1. Annual Work Plan.

| Resource Category | Goal | Objective | Occurrence    | FY   | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title* | Project Number | Description  |
|-------------------|------|-----------|---------------|------|-----|----------------|----------------|------------|-----------------|----------------|--|
|                   |      |           |               |      |     |                |                |            |                 |                | known species on Creech AFB becomes a candidate species, it will be surveyed before the 10-year mark and monitoring protocols will be developed.   |
| T&E               | 1    | 1.1       | As needed     | All  | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Species     | 1.1.9          | If Las Vegas bearpoppy is detected on Creech AFB, then survey for Mojave poppy bee, a potential candidate species, within 1 year of detection and determine the need for annual surveys. |
| Wetlands          | 1    | 1.1       | Once          | 2027 | —   | MIPR           | —              | INRMP      | Mgt Habitat     | 1.1.10         | Conduct a baseline wetland delineation on Creech AFB and, in consultation with the US Army Corps of Engineers, determine whether any are jurisdictional waters of the US                 |
| T&E               | 1    | 1.2       | Every 5 years | 2026 | —   | MIPR           | AFCOLS 4       | T&E        | Mgt Species     | 1.2.1          | Continue to monitor for Threatened and Endangered (T&E) species on Creech Air Force Base.  |
| T&E               | 1    | 1.2       | Annual        | All  | —   | MIPR           | AFCOLS 4       | T&E        | Mgt Species     | 1.2.2          | If the species is observed using the installation, develop and implement conservation measures to protect and promote the  |

Table 10-1. Annual Work Plan.

| Resource Category | Goal | Objective | Occurrence  | FY  | OPR | Funding Source    | Priority Level         | PB28 Code*        | Standard Title* | Project Number | Description  |
|-------------------|------|-----------|---|-----|-----|-------------------|------------------------|-------------------|-----------------|----------------|--|
|                   |      |           |   |     |     |                   |                        |                   |                 |                | species while maintaining mission success.   |
| T&E               | 1    | 1.3       | Prior to activity in previously undisturbed or unfenced in areas. | All | —   | Project Dependent | By development program | Project dependent | —               | 1.3.1          | Conduct USFWS-approved survey protocol for sensitive and protected species (particularly Mojave desert tortoise and nesting birds) before any construction activities or anticipated impacts to an area. Establish appropriate buffer zones in accordance with (IAW) federal, state, and local regulations around sensitive and protected species and habitat in or near construction zones to ensure compliance with environmental regulations. |
| T&E               | 1    | 1.3       | Annually  | All | —   | MIPR              | AFCOLS 4               | T&E               | Mgt Species     | 1.3.2          | Ensure that various commands are inspecting their exterior boundary desert tortoise fence integrity IAW the BOs.   |
| All               | 1    | 1.4       | As needed   | —   | —   | MIPR              | Medium                 | INRMP             | —               | 1.4.1          | Conduct cleanup and remediation of areas that are critical to protected species habitat, wildlife corridors, and water-quality issues. Conduct restoration on a case-by-   |

Table 10-1. Annual Work Plan.

| Resource Category      | Goal | Objective | Occurrence                 | FY  | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title*      | Project Number | Description   |
|------------------------|------|-----------|----------------------------|-----|-----|----------------|----------------|------------|----------------------|----------------|---|
|                        |      |           |                            |     |     |                |                |            |                      |                | case basis after events, such as wildland fires, crash incidents, and discontinued active use of sites.   |
| BASH                   | 2    | 2.1       | Every bird strike; ongoing | All | —   | OBAD78 MQ      | Low            | 619        |                      | 2.1.1          | Collaborate with 432d Wing Flight Safety to share avian point-count data and species identifications of bird fatalities following BASH incidents, to provide information regarding which species and locations pose the greatest BASH risks and to inform management decisions.   |
| Fish and Wildlife, T&E | 2    | 2.1       | As needed                  | All | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Invasive Species | 2.1.2          | Consult the BLM invasive species specialist before initiating any invasive species control projects on Creech AFB. Coordinate with the USFWS before initiating any invasive species-control projects in Mojave desert tortoise habitat. Records of herbicide type, target species, and treatment effectiveness will be maintained by Pest Management and tracked. |

Table 10-1. Annual Work Plan.

| Resource Category      | Goal | Objective | Occurrence | FY  | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title*                                | Project Number | Description   |
|------------------------|------|-----------|------------|-----|-----|----------------|----------------|------------|--|----------------|---|
| Fish and Wildlife, T&E | 2    | 2.1       | Annually   | All | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Species                                    | 2.1.3          | Develop and maintain collaborative relationships with federal and state agencies, as well as non-governmental organizations, such as Partners in Flight and Great Basin Bird Observatory, to standardize avian surveying and monitoring protocols, contribute to the greater knowledge of bird species occurring on the installation, and to increase the capacity for effective habitat management and good stewardship of these bird species across their ranges. Contribute species survey and occurrence data to federal and other installation-approved scientific databases, including the Avian Knowledge Network (AKN) and NABat. |
| WTLD                   | 2    | 2.1       | As needed  | —   | —   | —              | —              | WTLD       | Interagency/Intraagency, Government, Sikes Act | 2.1.4          | Conduct an initial wetlands delineation survey In Accordance With the Clean Water Act and Department of Defense guidance  |

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Table 10-1. Annual Work Plan.

| Resource Category                  | Goal | Objective | Occurrence    | FY  | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title* | Project Number | Description  |
|------------------------------------|------|-----------|---------------|-----|-----|----------------|----------------|------------|-----------------|----------------|--|
| Fish and Wildlife, T&E, Vegetation | 3    | 3.1       | Annual update | All | —   | MIPR           | AFCOLS 3       | INMRP      | Mgt Species     | 3.1.1          | Maintain comprehensive species lists depicting and describing species locations, population status, native status, regulatory status, rarity, and historical documentation to assist land managers in identification of species occurring on Creech AFB and to assist the USAF in identification of sensitive and protected species, habitats, and communities and directives for conforming to environmental regulations governing those resources. |
| Public Outreach                    | 3    | 3.2       | Annually      | All | —   | OBAD           | AFCOLS 1       | INRMP      | Outreach?       | 3.2.1          | Continue to update and distribute brochures and booklets to educate USAF personnel and contractors on how to identify sensitive and protected species and communities occurring on Creech AFB or nearby installations, and what actions to take, if any, when those taxa and communities are observed. Continue to conduct desert tortoise   |

Table 10-1. Annual Work Plan.

| Resource Category | Goal | Objective | Occurrence | FY   | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title* | Project Number | Description   |
|-------------------|------|-----------|------------|------|-----|----------------|----------------|------------|-----------------|----------------|---|
|                   |      |           |            |      |     |                |                |            |                 |                | awareness training IAW BOs by authorized desert tortoise biologists.  |
| Public Outreach   | 3    | 3.2       | Once       | 2024 | —   | MIPR           | AFCOLS 4       | T&E        | Mgt Species     | 3.2.2          | Design and install 1 sign to promote awareness about Mojave desert tortoise habitat.  |
| GIS               | 4    | 4.1       | Annual     | All  | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Habitat     | 4.1.1          | Gather and compile existing data from internal Creech AFB departments into environmental GIS layers and maps for biological and non-biological resources including species populations, vegetation communities, soils, water, climate variables, topography, landscape, geology, and water resources occurring across the installation. |
| GIS               | 4    | 4.2       | Annual     | All  | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Habitat     | 4.2.1          | Maintain all spatial databases in compliance with USAF GeoBase Program (under AFI 32-10112) to ensure proper metadata recordkeeping and standardization of geographic coordinate systems and projections.   |
| All               | 4    | 4.2       | Annual     | All  | —   | MIPR           | AFCOLS 3       | INRMP      | Mgt Species     | 4.2.2          | Coordinate and collaborate with federal   |

Table 10-1. Annual Work Plan.

| Resource Category | Goal | Objective | Occurrence | FY | OPR | Funding Source | Priority Level | PB28 Code* | Standard Title* | Project Number | Description   |
|-------------------|------|-----------|------------|----|-----|----------------|----------------|------------|-----------------|----------------|---|
|                   |      |           |            |    |     |                |                |            |                 |                | and state agencies, as well as non-governmental organizations, where appropriate and possible to ensure that standardized protocols for data collection and analysis are current with the best available science. |

<sup>a</sup> T&E = Threatened and Endangered

<sup>b</sup> MIPR = Military Interdepartmental Purchase Requests

<sup>c</sup> AFCOLS = Air Force Command Output Level Standards

<sup>d</sup> INRMP = Integrated Natural Resources Management Plan

<sup>e</sup> BASH = Bird Air Strike Hazard

<sup>f</sup> NABat = North American Bat

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Table 10-2. Natural Resources standard titles by PB28 code (excluding CZT/CZC titles)

| INRP   | MMA   | T&E                    | MNRA                                 | WTLD  |
|--|---|------------------------|--------------------------------------|---|
| P&F, CN  | Mgt, Species                                      | Mgt, Habitat           | Compliance<br>Public<br>Notification | Mgt, Wetlands/Floodplains                         |
| Interagency/Intraagency,<br>Government, Sikes Act          | Interagency/Intraagency,<br>Government, Sikes Act | Mgt, Species           | Plan Update,<br>Other                | Monitor Wetlands                                  |
| Interagency/Intraagency,<br>Government, Sikes Act,<br>CLEO | Outsourced Environmental<br>Services, CN          | Mgt, Invasive Species  | Recordkeeping,<br>Other              | Interagency/Intraagency,<br>Government, Sikes Act |
| Outsourced Environmental<br>Services, CN                   | Supplies, CN                                      | Mgt, Nuisance Wildlife | Outreach                             | Outsourced Environmental<br>Services, CN          |

Table 10-2. Natural Resources standard titles by PB28 code (excluding CZT/CZC titles)

| <b>INRP</b>                      | <b>MMA</b>          | <b>T&amp;E</b>                                       | <b>MNRA</b> | <b>WTLD</b> |
|----------------------------------|---------------------|--|-------------|-------------|
| Supplies, CN                     | Supplies, CN, CLEO  | Interagency/Intraagency, Government, Sikes Act       | —           | —           |
| Supplies, CN, CLEO               | Vehicle Leasing, CN | Interagency/Intraagency, Government, Sikes Act, CLEO | —           | —           |
| Equipment Purchase/ Maintain, CN | —                   | Outsourced Environmental Services, CN                | —           | —           |
| Vehicle Leasing, CN              | —                   | Supplies, CN   | —           | —           |
| Vehicle Fuel & Maintenance, CN   | —                   | Supplies, CN, CLEO                                   | —           | —           |
| Mgt, Wildland Fire               | —                   | Equipment Purchase/ Maintain, CN                     | —           | —           |
| Plan Update, INRMP               | —                   | Vehicle Leasing, CN                                  | —           | —           |
| Plan Update, Other               | —                   | Vehicle Fuel & Maintenance, CN                       | —           | —           |
| Mgt, Habitat                     | —                   | Plan Update, Other                                   | —           | —           |
| Mgt, Species                     | —                   | Environmental Services, CN                           | —           | —           |
| Mgt, Invasive Species            | —                   | —  | —           | —           |
| Mgt, Nuisance Wildlife           | —                   | —  | —           | —           |
| Recordkeeping, Other             | —                   | —  | —           | —           |
| Environmental Services, CN       | —                   | —  | —           | —           |

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2144 **11.0 REFERENCES**

2145 *Standard References (Applicable to all DAF installations)*

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- 2147 • [Sikes Act](#)
- 2148 • [eDASH Natural Resources Program Page](#)
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- 2150 • [DoDI 4715.03, Natural Resources Management](#)
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2345 **12.0 ACRONYMS**

2346 *Standard Acronyms (Applicable to all DAF installations)*

- 2347 • [eDASH Acronym Library](#)
- 2348 • [Natural Resources Management Playbook—Acronym Section](#)
- 2349 • [US EPA Terms & Acronyms](#)
- 2350 • [US Fish and Wildlife Service Abbreviations & Acronyms](#)

2351 ***Installation Supplement***

|      |        |   |
|------|--------|---|
| 2352 | ACC    | Air Combat Command                                    |
| 2353 | AFB    | Air Force Base  |
| 2354 | AFCOLS | Air Force Common Output Level Standards               |
| 2355 | AFAF   | Air Force Auxiliary Field                             |
| 2356 | AFI    | Air Force Instruction                                 |
| 2357 | AICUZ  | Air Installation Compatible Use Zone                  |
| 2358 | BASH   | Bird Aircraft Strike Hazard                           |
| 2359 | BCC    | Birds of Conservation Concern                         |
| 2360 | BGEPA  | Bald and Golden Eagle Protection Act                  |
| 2361 | BLM    | Bureau of Land Management                             |
| 2362 | BMP    | Best Management Practice                              |
| 2363 | BO     | Biological Opinion                                    |
| 2364 | CEMML  | Center for Environmental Management of Military Lands |
| 2365 | CNRP   | Creech Natural Resources Program                      |
| 2366 | CWA    | Clean Water Act                                       |
| 2367 | DAF    | Department of the Air Force                           |
| 2368 | DAFI   | Department of Air Force Instruction                   |
| 2369 | DNWR   | Desert National Wildlife Range                        |
| 2370 | DoD    | Department of Defense                                 |
| 2371 | DoDI   | Department of Defense Instruction                     |
| 2372 | DoDM   | Department of Defense Manual                          |
| 2373 | EA     | Environmental Assessment                              |
| 2374 | EIAP   | Environmental Impact Analysis Process                 |
| 2375 | EIS    | Environmental Impact Statement                        |
| 2376 | EMP    | Environmental Management Plan                         |
| 2377 | EO     | Executive Order                                       |
| 2378 | ESA    | Endangered Species Act of 1973                        |
| 2379 | GIS    | Geographic Information System                         |
| 2380 | IAW    | In Accordance With                                    |
| 2381 | ICRMP  | Integrated Cultural Resources Management Plan         |
| 2382 | INRMP  | Integrated Natural Resources Management Plan          |
| 2383 | IPaC   | Information for Planning and Consultation             |
| 2384 | IPMP   | Integrated Pest Management Plan                       |
| 2385 | IRP    | Installation Restoration Program                      |
| 2386 | IVCS   | International Vegetation Classification System        |
| 2387 | MBTA   | Migratory Bird Treaty Act of 1918                     |
| 2388 | MLWA   | Military Lands Withdrawal Act of 1999                 |
| 2389 | MSL    | Mean Sea Level  |
| 2390 | N.A.C. | Nevada Administrative Code                            |
| 2391 | NAFB   | Nellis Air Force Base                                 |

|      |        |   |
|------|--------|---|
| 2392 | NDOW   | Nevada Department of Wildlife                   |
| 2393 | NEPA   | National Environmental Policy Act               |
| 2394 | NOAA   | National Oceanic and Atmospheric Administration |
| 2395 | NM     | National Monument                               |
| 2396 | NRM    | Natural Resources Manager                       |
| 2397 | N.R.S. | Nevada Revised Statutes                         |
| 2398 | NTTR   | Nevada Test and Training Range                  |
| 2399 | NWAP   | Nevada Wildlife Action Plan                     |
| 2400 | NWR    | National Wildlife Refuge                        |
| 2401 | PIF    | Partners in Flight                              |
| 2402 | P.L.   | Public Law                                      |
| 2403 | POC    | Point of Contact                                |
| 2404 | RPA    | Remotely Piloted Aircraft                       |
| 2405 | SGCN   | Species of Greatest Conservation Need           |
| 2406 | SWPPP  | Stormwater Pollution Prevention Plan            |
| 2407 | USACE  | United States Army Corps of Engineers           |
| 2408 | USAF   | United States Air Force                         |
| 2409 | U.S.C. | United States Code                              |
| 2410 | USFWS  | United States Fish and Wildlife Service         |
| 2411 | WSA    | Wilderness Study Area                           |
| 2412 |        |   |

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2413 **13.0 DEFINITIONS**

2414 *Standard Definitions (Applicable to all DAF installations)*

- 2415 • [Natural Resources Management Playbook—Definitions Section](#)

2416 *Installation Supplement*

2417 *Add unique state, local, and installation-specific definitions.*

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2418 **14.0 APPENDICES**

2419 *Appendix A—Annotated Summary of Key Legislation Related to Design and Implementation of the*  
 2420 *INRMP*

2421

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| Legislation   | Description   |
|---|---|
| <b>Federal Public Laws and Executive Orders</b>   |   |
| National Defense Authorization Act of 1989, Public Law (P.L.) 101–189; Volunteer Partnership Cost-Share Program | Amends 2 acts and establishes volunteer and partnership programs for natural and cultural resources management on DoD lands.  |
| Defense Appropriations Act of 1991, P.L. 101–511; Legacy Resource Management Program                            | Establishes the Legacy Resource Management Program for natural and cultural resources. Program emphasis is on inventory and stewardship responsibilities of biological, geophysical, cultural, and historic resources on DoD lands, including restoration of degraded or altered habitats.  |
| Executive Order (EO) 11514, <i>Protection and Enhancement of Environmental Quality</i>                          | Federal agencies shall initiate measures needed to direct their policies, plans, and programs to meet national environmental goals. They shall monitor, evaluate, and control agency activities to protect and enhance the quality of the environment.  |
| EO 11593, <i>Protection and Enhancement of the Cultural Environment</i>   | All federal agencies are required to locate, identify, and record all cultural resources. Cultural resources include sites of archaeological, historical, or architectural significance.  |
| EO 11988, <i>Floodplain Management</i>  | Provides direction regarding actions of federal agencies in floodplains, and requires permits from state, territory, and federal review agencies for any construction within a 100-year floodplain and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for acquiring, managing, and disposing of federal lands and facilities. |
| EO 11989, <i>Off-Road Vehicles on Public Lands</i>  | Installations permitting off-road vehicles to designate and mark specific areas/trails to minimize damage and conflicts, publish information including maps, and monitor the effects of their use. Installations may close areas if adverse effects on natural, cultural, or historic resources are observed.   |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| <b>Legislation</b>  | <b>Description</b>   |
|---|--|
| EO 11990, <i>Protection of Wetlands</i>   | Requires federal agencies to avoid undertaking or providing assistance for new construction in wetlands unless there is no practicable alternative and all practicable measures to minimize harm to wetlands have been implemented and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. |
| EO 12088, <i>Federal Compliance with Pollution Control Standards</i>                | This EO delegates responsibility to the head of each executive agency for ensuring all necessary actions are taken for the prevention, control, and abatement of environmental pollution. This order gives the US Environmental Protection Agency (US EPA) authority to conduct reviews and inspections to monitor federal facility compliance with pollution control standards.   |
| EO 13112, <i>Invasive Species</i>   | This EO prevents the introduction of invasive species and provides for their control to minimize the economic, ecological, and human health impacts that invasive species cause.   |
| EO 13186, <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i>    | The US Fish and Wildlife Service (USFWS) has the responsibility to administer, oversee, and enforce the conservation provisions of the Migratory Bird Treaty Act, which includes responsibility for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulations development and enforcement.  |
| <b>United States Code</b>   |  |
| Animal Damage Control Act (7 United States Code [U.S.C.] § 426–426b, 47 Stat. 1468) | Provides authority to the Secretary of Agriculture for investigation and control of mammalian predators, rodents, and birds. DoD installations may enter into cooperative agreements to conduct animal control projects.   |
| Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. § 668–668c)     | This law provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the act.   |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| Legislation  | Description   |
|--|---|
| Clean Air Act (42 U.S.C. § 7401–7671q, 14 July 1955, as amended)   | This act, as amended, is known as the Clean Air Act of 1970. The amendments made in 1970 established the core of the clean air program. The primary objective is to establish federal standards for air pollutants. It is designed to improve air quality in areas of the country that do not meet federal standards and to prevent significant deterioration in areas where air quality exceeds those standards.   |
| Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Superfund) (26 U.S.C. § 4611–4682, P.L. 96–510, 94 Stat. 2797), as amended | Authorizes and administers a program to assess damage, respond to releases of hazardous substances, fund cleanup, establish cleanup standards, assign liability, and other efforts to address environmental contaminants. Installation Restoration Program guides cleanups at DoD installations.  |
| Endangered Species Act (ESA) of 1973, as amended (P.L. 93–205, 16 U.S.C. § 1531 et seq.)   | Protects threatened, endangered, and candidate species of fish, wildlife, and plants and their designated critical habitats. Under this law, no federal action is allowed to jeopardize the continued existence of an endangered or threatened species. The ESA requires consultation with the USFWS and National Oceanic and Atmospheric Administration (NOAA) Fisheries (National Marine Fisheries Service) and the preparation of a biological evaluation or a biological assessment may be required when such species are present in an area affected by government activities. |
| Federal Aid in Wildlife Restoration Act of 1937 (16 U.S.C. § 669–669i; 50 Stat. 917) (Pittman-Robertson Act)   | Provides federal aid to states and territories for management and restoration of wildlife. Fund derives from sports tax on arms and ammunition. Projects include acquisition of wildlife habitat, wildlife research surveys, development of access facilities, and hunter education.  |
| Federal Environmental Pesticide Act of 1972  | Requires installations to ensure pesticides are used only in accordance with their label registrations and restricted-use pesticides are applied only by certified applicators.   |
| Federal Land Use Policy and Management Act (43 U.S.C. § 1701–1782)   | Requires management of public lands to protect the quality of scientific, scenic, historical, ecological, environmental, and archaeological resources and values; as well as to preserve and protect certain lands in their natural condition for fish and wildlife habitat. This act also requires consideration of commodity production such as timbering.  |
| Federal Noxious Weed Act of 1974 (7 U.S.C. § 2801–2814)  | The act provides for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health.  |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| Legislation  | Description   |
|--|---|
| Federal Water Pollution Control Act (Clean Water Act [CWA]) (33 U.S.C. §1251–1387)                   | The CWA is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the nation’s waters. Primary authority for implementation and enforcement rests with the US EPA.  |
| Fish and Wildlife Conservation Act (16 U.S.C. § 2901–2911; 94 Stat. 1322, P.L. 96–366)               | Encourages installations to use their authority to conserve and promote conservation of nongame fish and wildlife in their habitats.  |
| Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)   | Directs installations to consult with the USFWS or state or territorial agencies to ascertain means to protect fish and wildlife resources related to actions resulting in the control or structural modification of any natural stream or body of water. Includes provisions for mitigation and reporting.   |
| Lacey Act of 1900 (16 U.S.C. § 701, 702, 32 Stat. 187, 32 Stat. 285)                                 | Prohibits the importation of wild animals or birds or parts thereof, taken, possessed, or exported in violation of the laws of the country or territory of origin. Provides enforcement and penalties for violation of wildlife-related acts or regulations.  |
| Leases: Non-excess Property of Military Departments (10 U.S.C. § 2667), as amended                   | Authorizes DoD to lease to commercial enterprises federal land not currently needed for public use. Covers agricultural outleasing program.   |
| Migratory Bird Treaty Act (16 U.S.C. § 703–712)  | The act implements various treaties for the protection of migratory birds. Under the act, taking, killing, or possessing migratory birds is unlawful without a valid permit.  |
| National Environmental Policy Act of 1969 (NEPA), as amended (P.L. 91–190, 42 U.S.C. § 4321 et seq.) | Requires federal agencies to utilize a systematic approach when assessing environmental impacts of government activities. Establishes the use of environmental impact statements. NEPA proposes an interdisciplinary approach in a decision-making process designed to identify unacceptable or unnecessary impacts on the environment.   |
| National Historic Preservation Act (16 U.S.C. § 470 et seq.)   | Requires federal agencies to take account of the effect of any federally assisted undertaking or licensing on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). Provides for the nomination, identification (through listing on the NRHP), and protection of historical and cultural properties of significance. |
| National Trails Systems Act (16 U.S.C. § 1241–1249)  | Provides for the establishment of recreation and scenic trails.   |
| National Wildlife Refuge Acts  | Provides for establishment of National Wildlife Refuges through purchase, land transfer, donation, cooperative agreements, and other means.   |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| <b>Legislation</b>   | <b>Description</b>   |
|--|--|
| National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-ee)                                | Provides guidelines and instructions for the administration of Wildlife Refuges and other conservation areas.  |
| Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001–13; 104 Stat. 3042), as amended | Established requirements for the treatment of Native American human remains and sacred or cultural objects found on federal lands. Includes requirements on inventory and notification.  |
| Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.)   | Makes it unlawful for the Department of the Air Force (DAF) to conduct any work or activity in navigable waters of the United States without a federal permit. Installations should coordinate with the US Army Corps of Engineers (USACE) to obtain permits for the discharge of refuse affecting navigable waters under the National Pollutant Discharge Elimination System (NPDES) and should coordinate with the USFWS to review effects on fish and wildlife of work and activities to be undertaken as permitted by the USACE. |
| Sale of certain interests in land (10 U.S.C. § 2665)   | Authorizes sale of forest products and reimbursement of the costs of management of forest resources.   |
| Soil and Water Conservation Act (16 U.S.C. § 2001, P.L. 95–193)  | Installations shall coordinate with the Secretary of Agriculture to appraise, on a continual basis, soil/water-related resources. Installations will develop and update a program for furthering the conservation, protection, and enhancement of these resources consistent with other federal and local programs.  |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| Legislation  | Description   |
|--|---|
| Sikes Act (16 U.S.C. § 670a-1, 74 Stat. 1052), as amended            | <p>Provides for the cooperation of DoD, the Department of the Interior (USFWS), and the state fish and game department in planning, developing, and maintaining fish and wildlife resources on a military installation. Requires development of an INRMP and public access to natural resources and allows collection of nominal hunting and fishing fees.</p> <p>NOTE: Department of Air Force Manual (DAFMAN) 32-7003, Section 3.11, <i>INRMP Implementation</i>: As defined in DoD Instruction (DoDI) 4715.03, use professionally trained natural resources management personnel with a degree in the natural sciences to develop and implement the installation INRMP. Per Section 3.11.1, <i>Outsourcing Natural Resources Management</i>, as stipulated in the Sikes Act, 16 U.S.C. § 670 et seq., the Office of Management and Budget Circular No. A-76, <i>Performance of Commercial Activities</i>, 04 August 1983 (Revised 29 May 2003), does not apply to the development, implementation, and enforcement of INRMPs. Activities that require the exercise of discretion in making decisions regarding the management and disposition of government owned natural resources are inherently governmental. When it is not practicable to utilize DoD personnel to perform inherently governmental natural resources management duties, obtain these services from federal agencies having responsibilities for the conservation and management of natural resources.</p> |
| <b>DoD Policies, Directives, and Instructions</b>                    |   |
| DoDI 4150.07, <i>DoD Pest Management Program</i> , dated 29 May 2008 | Implements policy, assigns responsibilities, and prescribes procedures for the DoD Integrated Pest Management Program.  |
| DoDI 4715.1, <i>Environmental Security</i>                           | Establishes policy for protecting, preserving, and (when required) restoring and enhancing the quality of the environment. This instruction also ensures environmental factors are integrated into DoD decision-making processes that could impact the environment and are given appropriate consideration along with other relevant factors.   |
| DoDI 4715.03, <i>Natural Resources Management</i>                    | Implements policy, assigns responsibility, and prescribes procedures under DoDI 4715.1 for the integrated management of natural and cultural resources on property under DoD control.   |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| Legislation   | Description   |
|---|---|
| Office of the Secretary of Defense (OSD) Policy Memorandum, 17 May 2005— <i>Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands</i> | Provides supplemental guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD. The guidance covers lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. INRMPs must address the resource management on all lands for which the subject installation has real property accountability, including leased lands. Installation commanders may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP. |
| OSD Policy Memorandum, 01 November 2004— <i>Implementation of Sikes Act Improvement Act Amendments: Supplemental Guidance Concerning INRMP Reviews</i>                            | Emphasizes implementing and improving the overall INRMP coordination process. Provides policy on scope of INRMP review and public comment on INRMP review.  |
| OSD Policy Memorandum, 10 October 2002— <i>Implementation of Sikes Act Improvement Act: Updated Guidance</i>  | Provides guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD and replaces the 21 September 1998 guidance, <i>Implementation of the Sikes Act Improvement</i> amendments. Emphasizes implementing and improving the overall INRMP coordination process and focuses on coordinating with stakeholders, reporting requirements and metrics, budgeting for INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and facilitating the INRMP review process.   |
| 90 Federal Register 27857, <i>Department of Defense Implementation of the National Environmental Policy Act</i>   | This document provides information, guidance, and requirements to DoD agencies to implement NEPA.   |
| <b>DAF Instructions and Directives</b>  |   |
| Air Force Instruction (AFI) 32-7061, <i>Environmental Impact Analysis Process (EIAP)</i>  | Provides guidance and responsibilities in the EIAP for implementing INRMPs. Implementation of an INRMP constitutes a major federal action and therefore is subject to evaluation through an Environmental Assessment or an Environmental Impact Statement.  |
| Department of Air Force Instruction (DAFI) 32-1015, <i>Integrated Installation Planning</i>   | This publication establishes a comprehensive and integrated planning framework for development/redevelopment of Air Force installations.  |

Table 14-1. Annotated summary of key legislation related to design and implementation of the Integrated Natural Resources Management Plan (INRMP)

| Legislation  | Description   |
|--|---|
| Air Force Policy Directive (AFPD) 32-70, <i>Environmental Considerations in Air Force Programs and Activities</i>                          | Outlines the DAF mission to achieve and maintain environmental quality on all DAF lands by cleaning up environmental damage resulting from past activities, meeting all environmental standards applicable to present operations, planning its future activities to minimize environmental impacts, managing responsibly the irreplaceable natural and cultural resources it holds in public trust and eliminating pollution from its activities wherever possible. AFPD 32-70 also establishes policies to carry out these objectives. |
| DAFMAN 32-7002, <i>Environmental Compliance</i>  | Implements AFPD 32-70, <i>Environmental Considerations in Air Force Programs and Activities</i> ; DoDI 4715.03, <i>Natural Resources Management</i> ; and DoDI 7310.5, <i>Accounting for Sale of Forest Products</i> . It explains how to manage natural resources on DAF property in compliance with federal, state, territorial, and local standards.   |
| DAFMAN 32-7003, <i>Environmental Conservation</i>  | This manual implements AFPD 32-70 and DoDI 4710.1, <i>Archaeological and Historic Resources Management</i> . It explains how to manage cultural resources on DAF property in compliance with federal, state, territorial, and local standards.  |
| DAFI 32-10112, <i>Installation Geospatial Information and Services (IGI&amp;S)</i>   | This instruction implements DoDI 8130.01, <i>Installation Geospatial Information and Services (IGI&amp;S)</i> , by identifying the requirements to implement and maintain an Air Force Installation Geospatial Information and Services program and AFPD 32-10, <i>Installations and Facilities</i> .   |
| Policy Memo for Implementation of Sikes Act Improvement Amendments, HeadQ US Air Force Environmental Office (USAF/ILEV) on 29 January 1999 | Outlines the DAF interpretation and explanation of the Sikes Act and Improvement Act of 1997.   |

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2423 ***Appendix B—Wildland Fire Management Plan***

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2425 ***Appendix C—Bird/Wildlife Aircraft Strike Hazard (BASH) Plan***

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2427 ***Appendix D—Golf Environmental Management (GEM) Plan***

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2429 ***Appendix E—Integrated Cultural Resources Management Plan (ICRMP)***

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2431 *Appendix F—Integrated Pest Management Plan (IPMP)*

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2435 *Appendix G—Fauna of Creech Air Force Base*

Table 14-2. Fauna of Creech Air Force Base

| Common name            | Scientific name                            | Federal Status <sup>a</sup> | State Status <sup>b</sup> | Presence on Creech AFB <sup>c</sup> | Source <sup>d</sup>    |
|------------------------|--|-----------------------------|---------------------------|-------------------------------------|------------------------|
| <b>Birds</b>           |  |                             |                           |                                     |                        |
| Black-throated sparrow | <i>Amphispiza bilineata</i>                | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Mallard                | <i>Anas platyrhynchos</i>                  | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Great egret            | <i>Ardea alba</i>                          | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Verdin                 | <i>Auriparus flaviceps</i>                 | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Canada goose           | <i>Branta canadensis</i>                   | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Bufflehead             | <i>Bucephala albeola</i>                   | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Red-tailed hawk        | <i>Buteo jamaicensis</i>                   | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Gambel's quail         | <i>Callipepla gambelii</i>                 | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Hummingbird sp.        | <i>Calypte</i> sp., <i>Trochilidae</i> sp. | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Turkey vulture         | <i>Cathartes aura</i>                      | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Killdeer               | <i>Charadrius vociferus</i>                | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Lark sparrow           | <i>Chondestes grammacus</i>                | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Northern flicker       | <i>Colaptes auratus</i>                    | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Rock pigeon            | <i>Columba livia</i>                       | —                           | —                         | Confirmed                           | USAF 2018 <sup>a</sup> |
| Western wood-pewee     | <i>Contopus sordidulus</i>                 | —                           | —                         | Confirmed                           | USAF 2018 <sup>a</sup> |
| Common raven           | <i>Corvus corax</i>                        | —                           | —                         | Confirmed                           | USAF 2018 <sup>a</sup> |
| Snowy egret            | <i>Egretta thula</i>                       | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Horned lark            | <i>Eremophila alpestris</i>                | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| Brewer's blackbird     | <i>Euphagus cyanocephalus</i>              | —                           | —                         | Confirmed                           | USAF 2018 <sup>a</sup> |
| American kestrel       | <i>Falco sparverius</i>                    | —                           | —                         | Potential                           | USAF 2016 <sup>d</sup> |
| American coot          | <i>Fulica americana</i>                    | —                           | —                         | Potential                           | USAF 2016 <sup>c</sup> |

Table 14-2. Fauna of Creech Air Force Base

| Common name              | Scientific name                | Federal Status <sup>a</sup> | State Status <sup>b</sup> | Presence on Creech AFB <sup>c</sup> | Source <sup>d</sup> |
|--------------------------|--------------------------------|-----------------------------|---------------------------|-------------------------------------|---------------------|
| Greater roadrunner       | <i>Geococcyx californianus</i> | —                           | —                         | Potential                           | USAF 2016c          |
| House finch              | <i>Haemorhous mexicanus</i>    | —                           | —                         | Confirmed                           | USAF 2018a          |
| Dark-eyed junco          | <i>Junco hyemalis</i>          | —                           | —                         | Potential                           | USAF 2016c          |
| Loggerhead shrike        | <i>Lanius ludovicianus</i>     | BLM-S                       | SGCN, SB                  | Confirmed                           | USAF 2017d          |
| Song sparrow             | <i>Melospiza melodia</i>       | —                           | —                         | Potential                           | USAF 2016c          |
| Abert's towhee           | <i>Melozona aberti</i>         | —                           | —                         | Potential                           | USAF 2016c          |
| Northern mockingbird     | <i>Mimus polyglottos</i>       | —                           | —                         | Potential                           | USAF 2016c          |
| Sage thrasher            | <i>Oreotes montanus</i>        | BLM-S                       | SGCN, SB                  | Potential                           | USAF 2016c          |
| Ruddy duck               | <i>Oxyura jamaicensis</i>      | —                           | —                         | Potential                           | USAF 2016c          |
| Osprey                   | <i>Pandion haliaetus</i>       | —                           | —                         | Potential                           | USAF 2016c          |
| House sparrow            | <i>Passer domesticus</i>       | —                           | —                         | Confirmed                           | USAF 2018a          |
| Phainopepla              | <i>Phainopepla nitens</i>      | BLM-S                       | SGCN                      | Confirmed                           | USAF 2016c          |
| Blue-gray gnatcatcher    | <i>Polioptila caerulea</i>     | —                           | —                         | Potential                           | USAF 2016c          |
| Black-tailed gnatcatcher | <i>Polioptila melanura</i>     | —                           | —                         | Potential                           | USAF 2016c          |
| Great-tailed grackle     | <i>Quiscalus mexicanus</i>     | —                           | —                         | Confirmed                           | USAF 2018a          |
| Rock wren                | <i>Salpinctes obsoletus</i>    | —                           | —                         | Potential                           | USAF 2016c          |
| Say's phoebe             | <i>Sayornis saya</i>           | —                           | —                         | Confirmed                           | USAF 2018a          |
| Yellow-rumped warbler    | <i>Setophaga coronata</i>      | —                           | —                         | Potential                           | USAF 2016c          |
| Yellow warbler           | <i>Setophaga petechia</i>      | —                           | —                         | Confirmed                           | USAF 2018a          |
| Mountain bluebird        | <i>Sialia currucoides</i>      | —                           | State Emblem              | Potential                           | USAF 2016c          |
| Red-naped sapsucker      | <i>Sphyrapicus nuchalis</i>    | —                           | —                         | Confirmed                           | USAF 2018a          |
| Eurasian collared dove   | <i>Streptopelia decaocto</i>   | —                           | —                         | Confirmed                           | USAF 2018a          |
| Western meadowlark       | <i>Sturnella neglecta</i>      | —                           | —                         | Potential                           | USAF 2016c          |
| European starling        | <i>Sturnus vulgaris</i>        | —                           | —                         | Potential                           | USAF 2016c          |

Table 14-2. Fauna of Creech Air Force Base

| Common name                | Scientific name                    | Federal Status <sup>a</sup> | State Status <sup>b</sup> | Presence on Creech AFB <sup>c</sup> | Source <sup>d</sup> |
|----------------------------|------------------------------------|-----------------------------|---------------------------|-------------------------------------|---------------------|
| Violet-green swallow       | <i>Tachycineta thalassina</i>      | —                           | —                         | Potential                           | USAF 2016c          |
| Western kingbird           | <i>Tyrannus verticalis</i>         | —                           | —                         | Confirmed                           | USAF 2018a          |
| Mourning dove              | <i>Zenaida macroura</i>            | —                           | —                         | Confirmed                           | USAF 2018a          |
| White-crowned sparrow      | <i>Zonotrichia leucophrys</i>      | —                           | —                         | Confirmed                           | USAF 2018a          |
| <b>Reptiles</b>            |                                    |                             |                           |                                     |                     |
| Great Basin whiptail       | <i>Aspidoscelis tigris tigris</i>  | —                           | —                         | Confirmed                           | USAF 2016d          |
| Zebra-tailed lizard        | <i>Callisaurus draconoides</i>     | —                           | —                         | Confirmed                           | USAF 2016d          |
| Mojave shovel-nosed snake  | <i>Chionactis occipitalis</i>      | BLM-S                       | SGCN                      | Potential                           | USAF 2018c          |
| Western banded gecko       | <i>Coleonyx variegatus</i>         | —                           | SGCN                      | Confirmed                           | USAF 2017d          |
| Coachwhip                  | <i>Masticophis flagellum</i>       | —                           | —                         | Potential                           | USAF 2018c          |
| Sidewinder                 | <i>Crotalus cerastes</i>           | BLM-S                       | SGCN                      | Potential                           | USAF 2018c          |
| Panamint rattlesnake       | <i>Crotalus stephensi</i>          | —                           | —                         | Potential                           | USAF 2018c          |
| Great Basin collard lizard | <i>Crotaphytus bicinctores</i>     | BLM-S                       | SGCN                      | Confirmed                           | USAF 2016d          |
| Regal ring-necked snake    | <i>Diadophis punctatus regalis</i> | —                           | —                         | Probable                            | USAF 2017d          |
| Desert iguana              | <i>Dipsosaurus dorsalis</i>        | BLM-S                       | SGCN                      | Potential                           | USAF 2018c          |
| Long-nosed leopard lizard  | <i>Gambelia wislizenii</i>         | BLM-S                       | SGCN                      | Confirmed                           | USAF 2016d          |
| Mojave desert tortoise     | <i>Gopherus agassizii</i>          | FT, BLM-S                   | SGCN, TR, State emblem    | Confirmed                           | USAF 2016d          |
| Gila monster               | <i>Heloderma suspectum</i>         | BLM-S                       | SGCN, PR                  | Potential                           | USAF 2019b          |
| California kingsnake       | <i>Lampropeltis californiae</i>    | —                           | —                         | Potential                           | USAF 2018c          |
| Desert horned lizard       | <i>Phrynosoma platyrhinos</i>      | BLM-S                       | SGCN                      | Confirmed                           | USAF 2016d          |
| Spotted leaf-nosed snake   | <i>Phyllorhynchus decurtatus</i>   | —                           | SGCN                      | Potential                           | USAF 2019b          |
| Western threadsnake        | <i>Rena humilis</i>                | —                           | SGCN                      | Probable                            | USAF 2017d          |
| Long-nosed snake           | <i>Rhinocheilus lecontei</i>       | —                           | —                         | Potential                           | USAF 2018c          |

Table 14-2. Fauna of Creech Air Force Base

| Common name                           | Scientific name                  | Federal Status <sup>a</sup> | State Status <sup>b</sup> | Presence on Creech AFB <sup>c</sup> | Source <sup>d</sup> |
|---------------------------------------|----------------------------------|-----------------------------|---------------------------|-------------------------------------|---------------------|
| Western patch-nosed snake             | <i>Salvadora hexalepis</i>       | —                           | —                         | Potential                           | USAF 2018c          |
| Chuckwalla                            | <i>Sauromalus ater</i>           | BLM-S                       | SGCN                      | Confirmed                           | USAF 2016d          |
| Yellow-backed spiny lizard            | <i>Sceloporus uniformis</i>      | —                           | —                         | Confirmed                           | USAF 2016d          |
| Western ground snake                  | <i>Sonora semiannulata</i>       | —                           | —                         | Probable                            | USAF 2017d          |
| Smith's black-headed snake            | <i>Tantilla hobartsmithi</i>     | —                           | SGCN                      | Probable                            | USAF 2017d          |
| Sonoran lyre snake                    | <i>Trimorphodon lambda</i>       | —                           | SGCN                      | Probable                            | USAF 2017d          |
| Side-blotched lizard                  | <i>Uta stansburiana</i>          | —                           | —                         | Confirmed                           | USAF 2016d          |
| Desert night lizard                   | <i>Xantusia vigilis</i>          | —                           | SGCN                      | Potential                           | USAF 2018c          |
| <b>Amphibians</b>                     |                                  |                             |                           |                                     |                     |
| Red-spotted toad                      | <i>Anaxyrus punctatus</i>        | —                           | —                         | Probable                            | USAF 2017d          |
| <b>Mammals</b>                        |                                  |                             |                           |                                     |                     |
| White-tailed antelope ground squirrel | <i>Ammospermophilus leucurus</i> | —                           | —                         | Potential                           | USAF 2016e          |
| Pallid bat                            | <i>Antrozous pallidus</i>        | BLM-S                       | PM                        | Confirmed                           | USAF 2016a          |
| Desert pocket mouse                   | <i>Chaetodipus penicillatus</i>  | —                           | SGCN                      | Potential                           | USAF 2016e          |
| Long-tailed pocket mouse              | <i>Chaetodipus formosus</i>      | —                           | —                         | Potential                           | USAF 2016e          |
| Townsend's big-eared bat              | <i>Corynorhinus townsendii</i>   | BLM-S                       | SGCN, SM                  | Confirmed                           | USAF 2016a          |
| Desert kangaroo rat                   | <i>Dipodomys deserti</i>         | —                           | SGCN                      | Potential                           | USAF 2016e          |
| Merriam's kangaroo rat                | <i>Dipodomys merriami</i>        | —                           | —                         | Potential                           | USAF 2016e          |
| Chisel-toothed kangaroo rat           | <i>Dipodomys microps</i>         | —                           | —                         | Potential                           | USAF 2016e          |
| Ord's kangaroo rat                    | <i>Dipodomys ordii</i>           | —                           | —                         | Potential                           | USAF 2016e          |
| Kangaroo rat                          | <i>Dipodomys</i> spp.            | —                           | —                         | Potential                           | USAF 2019c          |

Table 14-2. Fauna of Creech Air Force Base

| Common name                  | Scientific name                              | Federal Status <sup>a</sup> | State Status <sup>b</sup> | Presence on Creech AFB <sup>c</sup> | Source <sup>d</sup> |
|------------------------------|--|-----------------------------|---------------------------|-------------------------------------|---------------------|
| Big brown bat                | <i>Eptesicus fuscus</i>                      | BLM-S                       | PM                        | Confirmed                           | USAF 2017d          |
| Spotted bat                  | <i>Euderma maculatum</i>                     | BLM-S                       | SGCN, TM                  | Potential                           | USAF 2016a          |
| Western mastiff bat          | <i>Eumops perotis californicus</i>           | BLM-S                       | SM                        | Potential                           | USAF 2016a          |
| Allen’s big-eared bat        | <i>Idionycteris phyllotis</i>                | BLM-S                       | SGCN, PM                  | Potential                           | USAF 2016e          |
| Silver-haired bat            | <i>Lasionycteris noctivagans</i>             | BLM-S                       | SGCN                      | Confirmed                           | USAF 2017d          |
| Western red bat              | <i>Lasiurus blossevillii</i>                 | BLM-S                       | SGCN, SM                  | Confirmed                           | USAF 2017d          |
| Hoary bat                    | <i>Lasiurus cinereus</i>                     | BLM-S                       | SGCN                      | Confirmed                           | USAF 2016a          |
| California leaf-nosed bat    | <i>Macrotus californicus</i>                 | BLM-S                       | SGCN, SM                  | Potential                           | USAF 2016a          |
| Dark kangaroo mouse          | <i>Microdipodops megacephalus</i>            | BLM-S                       | SGCN, PM                  | Potential                           | USAF 2019d          |
| Desert valley kangaroo mouse | <i>Microdipodops megacephalus albiventer</i> | BLM-S                       | SGCN, PM                  | Potential                           | USAF 2016e          |
| Pale kangaroo mouse          | <i>Microdipodops pallidus</i>                | BLM-S                       | SGCN, PM                  | Potential                           | USAF 2016e          |
| House mouse                  | <i>Mus musculus</i>                          | —                           | —                         | Potential                           | USAF 2016e          |
| California bat               | <i>Myotis californicus</i>                   | BLM-S                       | —                         | Confirmed                           | USAF 2017d          |
| California myotis            | <i>Myotis californicus</i>                   | BLM-S                       | —                         | Potential                           | USAF 2016a          |
| Western small-footed myotis  | <i>Myotis ciliolabrum</i>                    | BLM-S                       | SGCN                      | Potential                           | USAF 2016a          |
| Long-eared myotis            | <i>Myotis evotis</i>                         | BLM-S                       | SGCN                      | Confirmed                           | USAF 2017d          |
| Little brown myotis          | <i>Myotis lucifugus</i>                      | BLM-S                       | SGCN                      | Potential                           | USAF 2016a          |
| Cave myotis                  | <i>Myotis velifer</i>                        | BLM-S                       | SGCN                      | Potential                           | USAF 2016a          |
| Yuma myotis                  | <i>Myotis yumanensis</i>                     | BLM-S                       | PM                        | Potential                           | USAF 2016a          |
| Fringed myotis               | <i>Myotis thysanodes</i>                     | BLM-S                       | SGCN, PM                  | Confirmed                           | USAF 2017d          |
| Desert woodrat               | <i>Neotoma lepida</i>                        | —                           | —                         | Potential                           | USAF 2016e          |
| Big free-tailed bat          | <i>Nyctinomops macrotis</i>                  | BLM-S                       | SGCN                      | Potential                           | USAF 2016a          |

Table 14-2. Fauna of Creech Air Force Base

| Common name                  | Scientific name                      | Federal Status <sup>a</sup> | State Status <sup>b</sup> | Presence on Creech AFB <sup>c</sup> | Source <sup>d</sup> |
|------------------------------|--------------------------------------|-----------------------------|---------------------------|-------------------------------------|---------------------|
| Northern grasshopper mouse   | <i>Onychomys leucogaster</i>         | —                           | —                         | Potential                           | USAF 2016e          |
| Canyon bat                   | <i>Parastrellus hesperus</i>         | BLM-S                       |                           | Confirmed                           | USAF 2016a          |
| Little pocket mouse          | <i>Perognathus longimembris</i>      | —                           | —                         | Potential                           | USAF 2016e          |
| Great Basin pocket mouse     | <i>Perognathus parvus</i>            | —                           | —                         | Potential                           | USAF 2019d          |
| Great Basin pocket mouse     | <i>Perognathus parvus</i>            | —                           | —                         | Potential                           | USAF 2016e          |
| Canyon mouse                 | <i>Peromyscus crinitus</i>           | —                           | —                         | Potential                           | USAF 2016e          |
| Deer mouse                   | <i>Peromyscus maniculatus</i>        | —                           | —                         | Potential                           | USAF 2016e          |
| Pinyon deer mouse            | <i>Peromyscus truei</i>              | —                           | —                         | Potential                           | USAF 2019d          |
| Rock squirrel                | <i>Spermophilus variegatus</i>       | —                           | —                         | Potential                           | USAF 2016e          |
| Mexican free-tailed bat      | <i>Tadarida brasiliensis</i>         | BLM-S                       | SGCN, PM                  | Confirmed                           | USAF 2016a          |
| Cliff chipmunk               | <i>Tamias dorsalis</i>               | —                           | —                         | Potential                           | USAF 2016e          |
| Valley pocket gopher         | <i>Thomomys bottae</i>               | BLM-S                       | SGCN                      | Potential                           | USAF 2016e          |
| Round-tailed ground squirrel | <i>Xerospermophilus tereticaudus</i> | —                           | —                         | Potential                           | USAF 2016e          |

<sup>a</sup> BLM-S = Bureau of Land Management sensitive species; FT = federally threatened; — = no status.

<sup>b</sup> SGCN = species of conservation priority; SB = sensitive bird; PR = protected reptile; TR = threatened reptile; PM = protected mammal; SM = sensitive mammal; TM = threatened mammal — = no status.

<sup>c</sup> Confirmed = confirmed presence on Creech AFB; Potential = observations from studies conducted on Creech Air Force Base, but species lists were combined with adjacent study sites, including NTTR South; Probable = species confirmed within 10 miles of Creech AFB.

<sup>d</sup> Sources are provided in the References section of the Integrated Natural Resources Management Plan.

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2438 *Appendix H—Complete Floristics List for Creech Air Force Base*

Table 14-3. Floristics list for South Nevada Test and Training Range—Species with potential to be present in the undeveloped portions of Creech Air Force Base, compiled from the Nevada Natural Heritage Program geodatabase

| USDA Plants Acronym | Scientific Name                               | Common Name           | Location    | Family          | Native Status | Sensitive |
|---------------------|---|-----------------------|-------------|-----------------|---------------|-----------|
| ACHY                | <i>Achnatherum hymenoides</i>                 | Indian ricegrass      | South Range | Poaceae         | Native        | N         |
| ACPA13              | <i>Achnatherum parishii</i>                   | Parish's needlegrass  | South Range | Poaceae         | Native        | N         |
| ACSH                | <i>Acamptopappus shockleyi</i>                | Shockley's goldenhead | South Range | Asteraceae      | Native        | N         |
| ACSP12              | <i>Achnatherum speciosum</i>                  | Desert needlegrass    | South Range | Poaceae         | Native        | N         |
| ADCO2               | <i>Adenophyllum cooperi</i>                   | Cooper's dogweed      | South Range | Asteraceae      | Native        | N         |
| AGUT                | <i>Agave utahensis</i>                        | Utah agave            | South Range | Agavaceae       | Native        | N         |
| AGUTE               | <i>Agave utahensis</i> var. <i>eborispina</i> | Ivory-spined agave    | South Range | Agavaceae       | Native        | Y         |
| ALIN                | <i>Allionia incarnata</i>                     | Trailing windmills    | South Range | Nyctaginaceae   | Native        | N         |
| ALLIU               | <i>Allium</i> sp.                             | Onion                 | South Range | Liliaceae       | Native        | N         |
| ALRI3               | <i>Aliciella ripleyi</i>                      | Ripley's gilia        | South Range | Polemoniaceae   | Native        | Y         |
| AMAC2               | <i>Ambrosia acanthicarpa</i>                  | Flatspine bur ragweed | South Range | Asteraceae      | Native        | N         |
| AMDU2               | <i>Ambrosia dumosa</i>                        | Burrobush             | South Range | Asteraceae      | Native        | N         |
| AMFR2               | <i>Amphipappus fremontii</i>                  | Fremont's chaffbush   | South Range | Asteraceae      | Native        | N         |
| AMSP                | <i>Amaranthus spinosus</i>                    | Spiny amaranth        | South Range | Amaranthaceae   | Native        | N         |
| AMTE3               | <i>Amsinckia tessellata</i>                   | Bristly fiddleneck    | South Range | Boraginaceae    | Native        | N         |
| AMTO2               | <i>Amsonia tomentosa</i>                      | Woolly bluestar       | South Range | Apocynaceae     | Native        | N         |
| ARAR8               | <i>Artemisia arbuscula</i>                    | Little sagebrush      | South Range | Asteraceae      | Native        | N         |
| ARBI3               | <i>Artemisia bigelovii</i>                    | Bigelow sage          | South Range | Asteraceae      | Native        | N         |
| ARCA4               | <i>Arctomecon californica</i>                 | Las Vegas bearpoppy   | South Range | Papaveraceae    | Native        | Y         |
| ARKI                | <i>Arenaria kingii</i>                        | King's sandwort       | South Range | Caryophyllaceae | Native        | N         |
| ARLU                | <i>Artemisia ludoviciana</i>                  | White sagebrush       | South Range | Asteraceae      | Native        | N         |
| ARMA3               | <i>Arenaria macradenia</i>                    | Mojave sandwort       | South Range | Caryophyllaceae | Native        | N         |

Table 14-3. Floristics list for South Nevada Test and Training Range—Species with potential to be present in the undeveloped portions of Creech Air Force Base, compiled from the Nevada Natural Heritage Program geodatabase

| USDA Plants Acronym | Scientific Name                                   | Common Name                | Location    | Family         | Native Status | Sensitive |
|---------------------|---|----------------------------|-------------|----------------|---------------|-----------|
| ARME2               | <i>Arctomecon merriamii</i>                       | Desert bearpoppy           | South Range | Papaveraceae   | Native        | Y         |
| ARMU                | <i>Argemone munita</i>                            | Flatbud pricklypoppy       | South Range | Papaveraceae   | Native        | N         |
| ARNO4               | <i>Artemisia nova</i>                             | Black sagebrush            | South Range | Asteraceae     | Native        | N         |
| ARPU9               | <i>Aristida purpurea</i>                          | Purple threeawn            | South Range | Poaceae        | Native        | N         |
| ARSH                | <i>Arabis shockleyi</i>                           | Shockley's rockcress       | South Range | Brassicaceae   | Native        | Y         |
| ARTR2               | <i>Artemisia tridentata</i>                       | Big sagebrush              | South Range | Asteraceae     | Native        | N         |
| ASAC5               | <i>Astragalus ackermanii</i>                      | Ackerman's milkvetch       | South Range | Fabaceae       | Native        | Y         |
| ASAMM2              | <i>Astragalus amphioxys</i> var.                  | Crescent milkvetch         | South Range | Fabaceae       | Native        | Y         |
| ASFU3               | <i>Astragalus funereus</i>                        | Funeral mountain milkvetch | South Range | Fabaceae       | Native        | Y         |
| ASMO5               | <i>Astragalus mohavensis</i>                      | Mojave milkvetch           | South Range | Fabaceae       | Native        | N         |
| ASMOH               | <i>Astragalus mohavensis</i> var. <i>hemigyus</i> | Mojave milkvetch           | South Range | Fabaceae       | Native        | Y         |
| ASNY2               | <i>Astragalus nyensis</i>                         | Nye milkvetch              | South Range | Fabaceae       | Native        | Y         |
| ATCA2               | <i>Atriplex canescens</i>                         | Fourwing saltbush          | South Range | Chenopodiaceae | Native        | N         |
| ATCO                | <i>Atriplex confertifolia</i>                     | Shadscale saltbush         | South Range | Chenopodiaceae | Native        | N         |
| ATHY                | <i>Atriplex hymenelytra</i>                       | Desertholly                | South Range | Chenopodiaceae | Native        | N         |
| ATPL                | <i>Atrichoseris platyphylla</i>                   | Parachute plant            | South Range | Asteraceae     | Native        | N         |
| ATPO                | <i>Atriplex polycarpa</i>                         | Cattle saltbush            | South Range | Chenopodiaceae | Native        | N         |
| ATSP                | <i>Atriplex spinifera</i>                         | Spinescale saltbush        | South Range | Chenopodiaceae | Native        | N         |
| BAAM4               | <i>Bassia americana</i>                           | Green molly                | South Range | Chenopodiaceae | Native        | N         |
| BAMU                | <i>Baileya multiradiata</i>                       | Desert marigold            | South Range | Asteraceae     | Native        | N         |
| BAPL3               | <i>Baileya pleniradiata</i>                       | Woolly desert marigold     | South Range | Asteraceae     | Native        | N         |
| BASA2               | <i>Baccharis sarothroides</i>                     | Desertbroom                | South Range | Asteraceae     | Native        | N         |
| BASA4               | <i>Baccharis salicifolia</i>                      | Mulefat                    | South Range | Asteraceae     | Native        | N         |

Table 14-3. Floristics list for South Nevada Test and Training Range—Species with potential to be present in the undeveloped portions of Creech Air Force Base, compiled from the Nevada Natural Heritage Program geodatabase

| USDA Plants Acronym | Scientific Name                                   | Common Name                 | Location    | Family           | Native Status | Sensitive |
|---------------------|---|-----------------------------|-------------|------------------|---------------|-----------|
| BEJU                | <i>Bebbia juncea</i>                              | Sweetbush                   | South Range | Asteraceae       | Native        | N         |
| BLKI                | <i>Blepharidachne kingii</i>                      | King's eyelashgrass         | South Range | Poaceae          | Native        | N         |
| BOGR2               | <i>Bouteloua gracilis</i>                         | Blue grama                  | South Range | Poaceae          | Native        | N         |
| BRAR2               | <i>Brickellia arguta</i>                          | Pungent brickellbush        | South Range | Asteraceae       | Native        | N         |
| BRAT                | <i>Brickellia atractyloides</i>                   | Spearleaf brickellbush      | South Range | Asteraceae       | Native        | N         |
| BRHO2               | <i>Bromus hordeaceus</i>                          | Soft brome                  | South Range | Poaceae          | Native        | N         |
| BRMAM3              | <i>Bromus madritensis</i> ssp. <i>madritensis</i> | Compact brome               | South Range | Poaceae          | Introduced    | N         |
| BRMAR               | <i>Bromus madritensis</i> ssp. <i>rubens</i>      | Red brome                   | South Range | Poaceae          | Introduced    | N         |
| BRTE                | <i>Bromus tectorum</i>                            | Cheatgrass                  | South Range | Poaceae          | Introduced    | N         |
| BUUT                | <i>Buddleja utahensis</i>                         | Utah butterflybush          | South Range | Buddlejaceae     | Native        | N         |
| CAAN7               | <i>Castilleja angustifolia</i>                    | Northwestern Indian         | South Range | Scrophulariaceae | Native        | N         |
| CAAND               | <i>Castilleja angustifolia</i> var. <i>dubia</i>  | Northwestern Indian         | South Range | Scrophulariaceae | Native        | N         |
| CAAPM               | <i>Castilleja applegatei</i> ssp. <i>martinii</i> | Wavyleaf Indian paintbrush  | South Range | Scrophulariaceae | Native        | N         |
| CABO7               | <i>Camissonia boothii</i>                         | Booth's evening primrose    | South Range | Onagraceae       | Native        | N         |
| CABR23              | <i>Camissonia brevipes</i>                        | Yellow cups                 | South Range | Onagraceae       | Native        | N         |
| CALOC               | <i>Calochortus</i> sp.                            | Mariposa lily               | South Range | Liliaceae        | Native        | N         |
| CAME16              | <i>Camissonia megalantha</i>                      | Largeflower suncup          | South Range | Onagraceae       | Native        | Y         |
| CAWA3               | <i>Camissonia walkeri</i>                         | Walker's suncup             | South Range | Onagraceae       | Native        | N         |
| CAWR                | <i>Calycoseris wrightii</i>                       | White tackstem              | South Range | Asteraceae       | Native        | N         |
| CELE3               | <i>Cercocarpus ledifolius</i>                     | Curl-leaf mountain mahogany | South Range | Rosaceae         | Native        | N         |
| CHAL11              | <i>Chamaesyce albomarginata</i>                   | Whitemargin sandmat         | South Range | Euphorbiaceae    | Native        | N         |
| CHBR                | <i>Chorizanthe brevicornu</i>                     | Brittle spineflower         | South Range | Polygonaceae     | Native        | N         |
| CHCA                | <i>Chaenactis carphoclinia</i>                    | Pebble pincushion           | South Range | Asteraceae       | Native        | N         |

Table 14-3. Floristics list for South Nevada Test and Training Range—Species with potential to be present in the undeveloped portions of Creech Air Force Base, compiled from the Nevada Natural Heritage Program geodatabase

| USDA Plants Acronym | Scientific Name                    | Common Name             | Location    | Family         | Native Status | Sensitive |
|---------------------|------------------------------------|-------------------------|-------------|----------------|---------------|-----------|
| CHER3               | <i>Chrysothamnus eremobius</i>     | Pintwater rabbitbrush   | South Range | Asteraceae     | Native        | Y         |
| CHFR                | <i>Chaenactis fremontii</i>        | Pincushion flower       | South Range | Asteraceae     | Native        | N         |
| CHRI                | <i>Chorizanthe rigida</i>          | Devil's spineflower     | South Range | Polygonaceae   | Native        | N         |
| CHST                | <i>Chaenactis stevioides</i>       | Esteve's pincushion     | South Range | Asteraceae     | Native        | N         |
| CHVI8               | <i>Chrysothamnus viscidiflorus</i> | Yellow rabbitbrush      | South Range | Asteraceae     | Native        | N         |
| CINE                | <i>Cirsium neomexicanum</i>        | New Mexico thistle      | South Range | Asteraceae     | Native        | N         |
| CIVU                | <i>Cirsium vulgare</i>             | Bull thistle            | South Range | Asteraceae     | Native        | N         |
| CORA                | <i>Coleogyne ramosissima</i>       | Blackbrush              | South Range | Rosaceae       | Native        | N         |
| CRAN4               | <i>Cryptantha angustifolia</i>     | Panamint cryptantha     | South Range | Boraginaceae   | Native        | N         |
| CRBI2               | <i>Crossosoma bigelovii</i>        | Ragged rockflower       | South Range | Crossosomatace | Native        | N         |
| CRCA5               | <i>Croton californicus</i>         | California croton       | South Range | Euphorbiaceae  | Native        | N         |
| CRCI2               | <i>Cryptantha circumscissa</i>     | Cushion cryptantha      | South Range | Boraginaceae   | Native        | N         |
| CRCO12              | <i>Cryptantha confertiflora</i>    | Basin yellow cryptantha | South Range | Boraginaceae   | Native        | N         |
| CRNE2               | <i>Cryptantha nevadensis</i>       | Nevada cryptantha       | South Range | Boraginaceae   | Native        | N         |
| CRPT                | <i>Cryptantha pterocarya</i>       | Wingnut cryptantha      | South Range | Boraginaceae   | Native        | N         |
| CRRA2               | <i>Cryptantha racemosa</i>         | Bushy cryptantha        | South Range | Boraginaceae   | Native        | N         |
| CRRE5               | <i>Cryptantha recurvata</i>        | Curvenut cryptantha     | South Range | Boraginaceae   | Native        | N         |
| CRUT                | <i>Cryptantha utahensis</i>        | Scented cryptantha      | South Range | Boraginaceae   | Native        | N         |
| CRVI5               | <i>Cryptantha virginensis</i>      | Virgin river cryptantha | South Range | Boraginaceae   | Native        | N         |
| CUPA                | <i>Cucurbita palmata</i>           | Coyote gourd            | South Range | Cucurbitaceae  | Native        | N         |
| CUSCU               | <i>Cuscuta</i> sp.                 | Dodder                  | South Range | Cuscutaceae    | Native        | N         |
| CYAC8               | <i>Cylindropuntia acanthocarpa</i> | Buck-Horn cholla        | South Range | Cactaceae      | Native        | N         |
| CYEC3               | <i>Cylindropuntia echinocarpa</i>  | Wiggins' cholla         | South Range | Cactaceae      | Native        | N         |

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| USDA Plants Acronym | Scientific Name                   | Common Name               | Location    | Family        | Native Status | Sensitive |
|---------------------|-----------------------------------|---------------------------|-------------|---------------|---------------|-----------|
| CYGI                | <i>Cymopterus gilmanii</i>        | Gilman's springparsley    | South Range | Apiaceae      | Native        | N         |
| CYMU2               | <i>Cymopterus multinervatus</i>   | Purplenerve springparsley | South Range | Apiaceae      | Native        | N         |
| CYRA9               | <i>Cylindropuntia ramosissima</i> | Branched pencil cholla    | South Range | Cactaceae     | Native        | N         |
| CYRI2               | <i>Cymopterus ripleyi</i>         | Ripley's springparsley    | South Range | Apiaceae      | Native        | N         |
| DAPU7               | <i>Dasyochloa pulchella</i>       | Low woollygrass           | South Range | Poaceae       | Native        | N         |
| DAWR2               | <i>Datura wrightii</i>            | Sacred thorn-apple        | South Range | Solanaceae    | Native        | N         |
| DEPA                | <i>Delphinium parishii</i>        | Desert larkspur           | South Range | Ranunculaceae | Native        | N         |
| DEPI                | <i>Descurainia pinnata</i>        | Western tansymustard      | South Range | Brassicaceae  | Native        | N         |
| DICA14              | <i>Dichelostemma capitatum</i>    | Bluedicks                 | South Range | Liliaceae     | Native        | N         |
| DICA4               | <i>Dicoria canescens</i>          | Desert twinbugs           | South Range | Asteraceae    | Native        | N         |
| ECEN                | <i>Echinocereus engelmannii</i>   | Engelmann's hedgehog      | South Range | Cactaceae     | Native        | N         |
| ECPO2               | <i>Echinocactus polycephalus</i>  | Cottontop cactus          | South Range | Cactaceae     | Native        | N         |
| ELEL5               | <i>Elymus elymoides</i>           | Squirreltail              | South Range | Poaceae       | Native        | N         |
| ENAC                | <i>Encelia actonii</i>            | Acton's brittlebush       | South Range | Asteraceae    | Native        | N         |
| ENCO                | <i>Enceliopsis covillei</i>       | Panamint daisy            | South Range | Asteraceae    | Native        | N         |
| ENFA                | <i>Encelia farinosa</i>           | Brittlebush               | South Range | Asteraceae    | Native        | N         |
| ENFR                | <i>Encelia frutescens</i>         | Button brittlebush        | South Range | Asteraceae    | Native        | N         |
| ENNU                | <i>Enceliopsis nudicaulis</i>     | Nakedstem sunray          | South Range | Asteraceae    | Native        | N         |
| ENVI                | <i>Encelia virginensis</i>        | Virgin river brittlebush  | South Range | Asteraceae    | Native        | N         |
| EPCA2               | <i>Ephedra californica</i>        | California jointfir       | South Range | Ephedraceae   | Native        | N         |
| EPFU                | <i>Ephedra funerea</i>            | Death Valley jointfir     | South Range | Ephedraceae   | Native        | N         |
| EPNE                | <i>Ephedra nevadensis</i>         | Nevada jointfir           | South Range | Ephedraceae   | Native        | N         |
| EPTO                | <i>Ephedra torreyana</i>          | Torrey's jointfir         | South Range | Ephedraceae   | Native        | N         |

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| USDA Plants Acronym | Scientific Name                                 | Common Name              | Location    | Family       | Native Status | Sensitive |
|---------------------|---|--------------------------|-------------|--------------|---------------|-----------|
| EPTR                | <i>Ephedra trifurca</i>                         | Longleaf jointfir        | South Range | Ephedraceae  | Native        | N         |
| EPVI                | <i>Ephedra viridis</i>                          | Mormon tea               | South Range | Ephedraceae  | Native        | N         |
| ERAN8               | <i>Eriogonum anemophilum</i>                    | West Humboldt buckwheat  | South Range | Polygonaceae | Native        | N         |
| ERCI6               | <i>Erodium cicutarium</i>                       | Redstem stork's bill     | South Range | Geraniaceae  | Native        | N         |
| ERCO23              | <i>Ericameria cooperi</i>                       | Cooper's goldenbush      | South Range | Asteraceae   | Native        | N         |
| ERDE6               | <i>Eriogonum deflexum</i>                       | Flatcrown buckwheat      | South Range | Polygonaceae | Native        | N         |
| ERFA2               | <i>Eriogonum fasciculatum</i>                   | Eastern Mojave buckwheat | South Range | Polygonaceae | Native        | N         |
| ERHE                | <i>Eriogonum heermannii</i>                     | Heermann's buckwheat     | South Range | Polygonaceae | Native        | N         |
| ERHEC               | <i>Eriogonum heermannii</i> var. <i>clokeyi</i> | Clokey's buckwheat       | South Range | Polygonaceae | Native        | Y         |
| ERIN4               | <i>Eriogonum inflatum</i>                       | Desert trumpet           | South Range | Polygonaceae | Native        | N         |
| ERMI4               | <i>Eriogonum microthecum</i>                    | Slender buckwheat        | South Range | Polygonaceae | Native        | N         |
| ERNA10              | <i>Ericameria nauseosa</i>                      | Rubber rabbitbrush       | South Range | Asteraceae   | Native        | N         |
| ERPA29              | <i>Ericameria paniculata</i>                    | Mojave rabbitbrush       | South Range | Asteraceae   | Native        | N         |
| ERPU2               | <i>Erigeron pumilus</i>                         | Shaggy fleabane          | South Range | Asteraceae   | Native        | N         |
| ERTE18              | <i>Ericameria teretifolia</i>                   | Green rabbitbrush        | South Range | Asteraceae   | Native        | N         |
| ERTR8               | <i>Eriogonum trichopes</i>                      | Little deserttrumpet     | South Range | Polygonaceae | Native        | N         |
| ESGL                | <i>Eschscholzia glyptosperma</i>                | Desert poppy             | South Range | Papaveraceae | Native        | N         |
| ESVI2               | <i>Escobaria vivipara</i>                       | Spinystar                | South Range | Cactaceae    | Native        | N         |
| ESVIR2              | <i>Escobaria vivipara</i> var. <i>rosea</i>     | Spinystar                | South Range | Cactaceae    | Native        | Y         |
| EUUR                | <i>Eucnide urens</i>                            | Desert stingbush         | South Range | Loasaceae    | Native        | N         |
| FAPA                | <i>Fallugia paradoxa</i>                        | Apache plume             | South Range | Rosaceae     | Native        | N         |
| FECY                | <i>Ferocactus cylindraceus</i>                  | California barrel cactus | South Range | Cactaceae    | Native        | N         |
| FRAN2               | <i>Fraxinus anomala</i>                         | Singleleaf ash           | South Range | Oleaceae     | Native        | N         |

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| USDA Plants Acronym | Scientific Name                                  | Common Name                | Location    | Family         | Native Status | Sensitive |
|---------------------|--|----------------------------|-------------|----------------|---------------|-----------|
| GAHIK               | <i>Galium hilendiae</i> ssp. <i>kingstonense</i> | Kingston mountain bedstraw | South Range | Rubiaceae      | Native        | Y         |
| GISC                | <i>Gilia scopulorum</i>                          | Rock gilia                 | South Range | Polemoniaceae  | Native        | N         |
| GRSP                | <i>Grayia spinosa</i>                            | Spiny hopsage              | South Range | Chenopodiaceae | Native        | N         |
| GUCA                | <i>Gutierrezia californica</i>                   | San Joaquin snakeweed      | South Range | Asteraceae     | Native        | N         |
| GUMI                | <i>Gutierrezia microcephala</i>                  | Threadleaf snakeweed       | South Range | Asteraceae     | Native        | N         |
| GUSA2               | <i>Gutierrezia sarothrae</i>                     | Broom snakeweed            | South Range | Asteraceae     | Native        | N         |
| HABR3               | <i>Hazardia brickellioides</i>                   | Brickellbush goldenweed    | South Range | Asteraceae     | Native        | N         |
| HAGL                | <i>Halogeton glomeratus</i>                      | Saltlover                  | South Range | Chenopodiaceae | Introduced    | N         |
| HECO26              | <i>Hesperostipa comata</i>                       | Needle and thread          | South Range | Poaceae        | Native        | N         |
| HECU3               | <i>Heliotropium curassavicum</i>                 | Salt heliotrope            | South Range | Boraginaceae   | Native        | N         |
| HENA                | <i>Hedeoma nana</i>                              | Dwarf false pennyroyal     | South Range | Lamiaceae      | Native        | N         |
| HESH                | <i>Hecastocleis shockleyi</i>                    | Prickleleaf                | South Range | Asteraceae     | Native        | N         |
| HOMU                | <i>Hordeum murinum</i>                           | Mouse barley               | South Range | Poaceae        | Native        | N         |
| HYSA                | <i>Hymenoclea salsola</i>                        | Burrobrush                 | South Range | Asteraceae     | Native        | N         |
| JUOS                | <i>Juniperus osteosperma</i>                     | Utah juniper               | South Range | Cupressaceae   | Native        | N         |
| KOMA                | <i>Koeleria macrantha</i>                        | Prairie junegrass          | North Range | Poaceae        | Native        | N         |
| KRER                | <i>Krameria erecta</i>                           | Littleleaf ratany          | South Range | Krameriaceae   | Native        | N         |
| KRGR                | <i>Krameria grayi</i>                            | White ratany               | South Range | Krameriaceae   | Native        | N         |
| KRLA2               | <i>Krascheninnikovia lanata</i>                  | Winterfat                  | South Range | Chenopodiaceae | Native        | N         |
| LAOC3               | <i>Lappula occidentalis</i>                      | Flatpine stickseed         | South Range | Boraginaceae   | Native        | N         |
| LASE3               | <i>Langloisia setosissima</i>                    | Great basin langloisia     | South Range | Polemoniaceae  | Native        | N         |
| LATR2               | <i>Larrea tridentata</i>                         | Creosote bush              | South Range | Zygophyllaceae | Native        | N         |
| LEFL2               | <i>Lepidium flavum</i>                           | Yellow pepperweed          | South Range | Brassicaceae   | Native        | N         |

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| USDA Plants Acronym | Scientific Name  | Common Name             | Location    | Family           | Native Status | Sensitive |
|---------------------|--|-------------------------|-------------|------------------|---------------|-----------|
| LEFR2               | <i>Lepidium fremontii</i>                                | Desert pepperweed       | South Range | Brassicaceae     | Native        | N         |
| LELA                | <i>Lepidium lasiocarpum</i>                              | Shaggyfruit pepperweed  | South Range | Brassicaceae     | Native        | N         |
| LETE3               | <i>Lesquerella tenella</i>                               | Moapa bladderpod        | South Range | Brassicaceae     | Native        | N         |
| LEVI3               | <i>Lepidium virginicum</i>                               | Virginia pepperweed     | South Range | Brassicaceae     | Native        | N         |
| LIDE2               | <i>Linanthus demissus</i>                                | Desertsnow              | South Range | Polemoniaceae    | Native        | N         |
| LIPU11              | <i>Linanthus pungens</i>                                 | Granite prickly phlox   | South Range | Polemoniaceae    | Native        | N         |
| LOGR                | <i>Lomatium grayi</i>                                    | Gray's biscuitroot      | South Range | Apiaceae         | Native        | N         |
| LYAN                | <i>Lycium andersonii</i>                                 | Water jacket            | South Range | Solanaceae       | Native        | N         |
| LYCO2               | <i>Lycium cooperi</i>                                    | Peach thorn             | South Range | Solanaceae       | Native        | N         |
| LYFR                | <i>Lycium fremontii</i>                                  | Fremont's desert-thorn  | South Range | Solanaceae       | Native        | N         |
| LYPA                | <i>Lycium pallidum</i>                                   | Pale desert-thorn       | South Range | Solanaceae       | Native        | N         |
| LYSH                | <i>Lycium shockleyi</i>                                  | Shockley's desert-thorn | South Range | Solanaceae       | Native        | N         |
| MACA2               | <i>Machaeranthera canescens</i>                          | Hoary tansyaster        | South Range | Asteraceae       | Native        | N         |
| MAGR9               | <i>Mammillaria grahamii</i>                              | Graham's nipple cactus  | South Range | Cactaceae        | Native        | N         |
| MAGR9               | <i>Machaeranthera grindelioides</i> var. <i>depressa</i> | Rayless tansyaster      | South Range | Asteraceae       | Native        | N         |
| MATE4               | <i>Mammillaria tetrancistra</i>                          | Common fishhook cactus  | South Range | Cactaceae        | Native        | N         |
| MEAL6               | <i>Mentzelia albicaulis</i>                              | Whitestem blazingstar   | South Range | Loasaceae        | Native        | N         |
| MESP2               | <i>Menodora spinescens</i>                               | Spiny menodora          | South Range | Oleaceae         | Native        | N         |
| METR4               | <i>Mentzelia tridentata</i>                              | Threetooth blazingstar  | South Range | Loasaceae        | Native        | N         |
| MIAL5               | <i>Mirabilis alipes</i>                                  | Winged four o'clock     | South Range | Nyctaginaceae    | Native        | N         |
| MIBI6               | <i>Mimulus bigelovii</i>                                 | Bigelow's monkeyflower  | South Range | Scrophulariaceae | Native        | N         |
| MILAV               | <i>Mirabilis laevis</i> var. <i>villosa</i>              | Wishbone-bush           | South Range | Nyctaginaceae    | Native        | N         |
| MIPU5               | <i>Mirabilis pudica</i>                                  | Bashful four o'clock    | South Range | Nyctaginaceae    | Native        | Y         |

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| USDA Plants Acronym | Scientific Name                                      | Common Name                 | Location    | Family           | Native Status | Sensitive |
|---------------------|--|-----------------------------|-------------|------------------|---------------|-----------|
| MUPO2               | <i>Muhlenbergia porteri</i>                          | Bush muhly                  | South Range | Poaceae          | Native        | N         |
| NADE                | <i>Nama demissum</i>                                 | Purplemat                   | South Range | Hydrophyllaceae  | Native        | N         |
| NIOB                | <i>Nicotiana obtusifolia</i>                         | Desert tobacco              | South Range | Solanaceae       | Native        | N         |
| NIOBO               | <i>Nicotiana obtusifolia</i> var. <i>obtusifolia</i> | Desert tobacco              | South Range | Solanaceae       | Native        | N         |
| OECA10              | <i>Oenothera caespitosa</i>                          | Tufted evening primrose     | South Range | Onagraceae       | Native        | N         |
| OECA2               | <i>Oenothera californica</i>                         | California evening primrose | South Range | Onagraceae       | Native        | N         |
| OEDE2               | <i>Oenothera deltoides</i>                           | Birdcage evening primrose   | South Range | Onagraceae       | Native        | N         |
| OESU3               | <i>Oenothera suffrutescens</i>                       | Scarlet beeblossom          | South Range | Onagraceae       | Native        | N         |
| OPBA2               | <i>Opuntia basilaris</i>                             | Beavertail pricklypear      | South Range | Cactaceae        | Native        | N         |
| OPPOE               | <i>Opuntia polyacantha</i> var. <i>erinacea</i>      | Grizzlybear pricklypear     | South Range | Cactaceae        | Native        | N         |
| OROBA               | <i>Orobanche</i> sp.                                 | Broomrape                   | South Range | Orobanchaceae    | Native        | N         |
| PEIN12              | <i>Perityle intricata</i>                            | Narrowleaf laphamia         | South Range | Asteraceae       | Native        | Y         |
| PENE3               | <i>Penstemon newberryi</i>                           | Mountain pride              | South Range | Scrophulariaceae | Native        | N         |
| PEPA8               | <i>Penstemon palmeri</i>                             | Palmer's penstemon          | South Range | Scrophulariaceae | Native        | N         |
| PEPE13              | <i>Penstemon petiolatus</i>                          | Petiolate beardtongue       | South Range | Scrophulariaceae | Native        | N         |
| PEPE26              | <i>Pectocarya penicillata</i>                        | Sleeping combseed           | South Range | Boraginaceae     | Native        | N         |
| PERE                | <i>Pectocarya recurvata</i>                          | Curvenut combseed           | South Range | Boraginaceae     | Native        | N         |
| PESC4               | <i>Peucephyllum schottii</i>                         | Schott's pygmycedar         | South Range | Asteraceae       | Native        | N         |
| PESI                | <i>Pediocactus simpsonii</i>                         | Mountain ball cactus        | South Range | Cactaceae        | Native        | N         |
| PETAL               | <i>Petalonyx</i> sp.                                 | Sandpaper plant             | South Range | Loasaceae        | Native        | N         |
| PHBE3               | <i>Phacelia beatleyae</i>                            | Beatley's phacelia          | South Range | Hydrophyllaceae  | Native        | Y         |
| PHCR                | <i>Phacelia crenulata</i>                            | Cleftleaf wild heliotrope   | South Range | Hydrophyllaceae  | Native        | N         |
| PHCR4               | <i>Physalis crassifolia</i>                          | Yellow nightshade           | South Range | Solanaceae       | Native        | N         |

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| USDA Plants Acronym | Scientific Name                                  | Common Name            | Location    | Family          | Native Status | Sensitive |
|---------------------|--|------------------------|-------------|-----------------|---------------|-----------|
| PHFR2               | <i>Phacelia fremontii</i>                        | Fremont's phacelia     | South Range | Hydrophyllaceae | Native        | N         |
| PHPA2               | <i>Phacelia parishii</i>                         | Parish's phacelia      | South Range | Hydrophyllaceae | Native        | Y         |
| PHST11              | <i>Phlox stansburyi</i>                          | Cold-desert phlox      | South Range | Polemoniaceae   | Native        | N         |
| PIDE4               | <i>Picrothamnus desertorum</i>                   | Bud sagebrush          | South Range | Asteraceae      | Native        | N         |
| PLAGI               | <i>Plagiobothrys</i> sp.                         | Popcornflower          | South Range | Boraginaceae    | Native        | N         |
| PLJA                | <i>Pleuraphis jamesii</i>                        | James' galleta         | South Range | Poaceae         | Native        | N         |
| PLOV                | <i>Plantago ovata</i>                            | Desert indianwheat     | South Range | Plantaginaceae  | Native        | N         |
| PLRI3               | <i>Pleuraphis rigida</i>                         | Big galleta            | South Range | Poaceae         | Native        | N         |
| PLSP7               | <i>Pleiocanthus spinosus</i>                     | Thorn skeletonweed     | South Range | Asteraceae      | Native        | N         |
| POGR5               | <i>Porophyllum gracile</i>                       | Slender poreleaf       | South Range | Asteraceae      | Native        | N         |
| POPY                | <i>Porophyllum pygmaeum</i>                      | Dwarf poreleaf         | South Range | asteraceae      | Native        | Y         |
| PRFA                | <i>Prunus fasciculata</i>                        | Desert almond          | South Range | Rosaceae        | Native        | N         |
| PRGL2               | <i>Prosopis glandulosa</i>                       | Honey mesquite         | South Range | Fabaceae        | Native        | N         |
| PRGLT               | <i>Prosopis glandulosa</i> var. <i>torreyana</i> | Western honey mesquite | South Range | Fabaceae        | Native        | N         |
| PSAR4               | <i>Psorothamnus arborescens</i>                  | Mojave indigobush      | South Range | Fabaceae        | Native        | N         |
| PSAR4               | <i>Psorothamnus arborescens</i>                  | Mojave indigobush      | North Range | Fabaceae        | Native        | N         |
| PSCO2               | <i>Psilostrophe cooperi</i>                      | Whitestem paperflower  | South Range | Asteraceae      | Native        | N         |
| PSEM                | <i>Psorothamnus emoryi</i>                       | Dyebush                | South Range | Fabaceae        | Native        | N         |
| PSFR                | <i>Psorothamnus fremontii</i>                    | Fremont's dalea        | South Range | Fabaceae        | Native        | N         |
| PSPO                | <i>Psorothamnus polydenius</i>                   | Nevada dalea           | South Range | Fabaceae        | Native        | N         |
| PTPE                | <i>Pteryxia petraea</i>                          | Rockloving wavewing    | South Range | Apiaceae        | Native        | N         |
| PUME                | <i>Purshia mexicana</i>                          | Mexican cliffrose      | South Range | Rosaceae        | Native        | N         |
| PUST                | <i>Purshia stansburiana</i>                      | Stansbury cliffrose    | South Range | Rosaceae        | Native        | N         |

Table 14-3. Floristics list for South Nevada Test and Training Range—Species with potential to be present in the undeveloped portions of Creech Air Force Base, compiled from the Nevada Natural Heritage Program geodatabase

| USDA Plants Acronym | Scientific Name                                | Common Name                | Location    | Family           | Native Status | Sensitive |
|---------------------|--|----------------------------|-------------|------------------|---------------|-----------|
| PUTR2               | <i>Purshia tridentata</i>                      | Antelope bitterbrush       | South Range | Rosaceae         | Native        | N         |
| RANE                | <i>Rafinesquia neomexicana</i>                 | New Mexico plumeseed       | South Range | Asteraceae       | Native        | N         |
| rare/at risk        | <i>Phacelia filiae</i>                         | Clarke phacelia            | South Range | Hydrophyllaceae  | Native        | Y         |
| RHTR                | <i>Rhus trilobata</i>                          | Skunkbush Sumac            | South Range | Anacardiaceae    | Native        | N         |
| RICE                | <i>Ribes cereum</i>                            | Wax currant                | South Range | Grossulariaceae  | Native        | N         |
| SABA14              | <i>Sarcobatus baileyi</i>                      | Bailey's greasewood        | South Range | Chenopodiaceae   | Native        | N         |
| SADO4               | <i>Salvia dorrii</i>                           | Purple sage                | South Range | Lamiaceae        | Native        | N         |
| SAKI                | <i>Sairocarpus kingii</i>                      | Least snapdragon           | South Range | Scrophulariaceae | Native        | N         |
| SAME                | <i>Salazaria mexicana</i>                      | Mexican bladdersage        | South Range | Lamiaceae        | Native        | N         |
| SAMO3               | <i>Salvia mohavensis</i>                       | Mojave sage                | South Range | Lamiaceae        | Native        | N         |
| SATR12              | <i>Salsola tragus</i>                          | Prickly Russian thistle    | South Range | Chenopodiaceae   | Introduced    | N         |
| SAVE4               | <i>Sarcobatus vermiculatus</i>                 | Greasewood                 | South Range | Chenopodiaceae   | Native        | N         |
| SAXIF               | <i>Saxifraga</i> sp.                           | Saxifrage                  | South Range | Saxifragaceae    | Native        | N         |
| SCAR                | <i>Schismus arabicus</i>                       | Arabian schismus           | South Range | Poaceae          | Introduced    | N         |
| SCBA                | <i>Schismus barbatus</i>                       | Common mediterranean       | South Range | Poaceae          | Introduced    | N         |
| SCPO4               | <i>Sclerocactus polyancistrus</i>              | Redspined fishhook cactus  | South Range | Cactaceae        | Native        | Y         |
| SEFLD               | <i>Senecio flaccidus</i> var. <i>douglasii</i> | Douglas' ragwort           | South Range | Asteraceae       | Native        | N         |
| SILEN               | <i>Silene</i> sp.                              | Catchfly                   | South Range | Caryophyllaceae  | Native        | N         |
| SOLAN               | <i>Solanum</i> sp.                             | Nightshade                 | South Range | Solanaceae       | Native        | N         |
| SPAM2               | <i>Sphaeralcea ambigua</i>                     | Desert globemallow         | South Range | Malvaceae        | Native        | N         |
| SPGR2               | <i>Sphaeralcea grossulariifolia</i>            | Gooseberryleaf globemallow | South Range | Malvaceae        | Native        | N         |
| SPRU2               | <i>Sphaeralcea rusbyi</i>                      | Rusby's globemallow        | South Range | Malvaceae        | Native        | N         |
| STEL                | <i>Stanleya elata</i>                          | Panamint princesplume      | South Range | Brassicaceae     | Native        | N         |

Table 14-3. Floristics list for South Nevada Test and Training Range—Species with potential to be present in the undeveloped portions of Creech Air Force Base, compiled from the Nevada Natural Heritage Program geodatabase

| USDA Plants Acronym | Scientific Name                       | Common Name             | Location    | Family         | Native Status | Sensitive |
|---------------------|---------------------------------------|-------------------------|-------------|----------------|---------------|-----------|
| STLO4               | <i>Streptanthella longirostris</i>    | Longbeak streptanthella | South Range | Brassicaceae   | Native        | N         |
| STPA3               | <i>Stephanomeria parryi</i>           | Parry's wirelettuce     | South Range | Asteraceae     | Native        | N         |
| STPA4               | <i>Stephanomeria pauciflora</i>       | Brownplume wirelettuce  | South Range | Asteraceae     | Native        | N         |
| STPI                | <i>Stanleya pinnata</i>               | Desert princesplume     | South Range | Brassicaceae   | Native        | N         |
| SUMO                | <i>Suaeda moquinii</i>                | Mojave seablite         | South Range | Chenopodiaceae | Native        | N         |
| SYLO                | <i>Symphoricarpos longiflorus</i>     | Desert snowberry        | South Range | Caprifoliaceae | Native        | N         |
| TAMAR2              | <i>Tamarix</i> sp.                    | Tamarisk                | South Range | Tamaricaceae   | Introduced    | N         |
| TEAX                | <i>Tetradymia axillaris</i>           | Longspine horsebrush    | South Range | Asteraceae     | Native        | N         |
| TEGL                | <i>Tetradymia glabrata</i>            | Littleleaf horsebrush   | South Range | Asteraceae     | Native        | N         |
| TESP2               | <i>Tetradymia spinosa</i>             | Shortspine horsebrush   | South Range | Asteraceae     | Native        | N         |
| THMO                | <i>Thamnosma montana</i>              | Turpentine broom        | South Range | Rutaceae       | Native        | N         |
| THPE4               | <i>Thymophylla pentachaeta</i>        | Fiveneedle pricklyleaf  | South Range | Asteraceae     | Native        | N         |
| TICA3               | <i>Tiquilia canescens</i>             | Woody crinklemat        | South Range | Boraginaceae   | Native        | N         |
| TIPL2               | <i>Tiquilia plicata</i>               | Fanleaf crinklemat      | South Range | Boraginaceae   | Native        | N         |
| TRMU                | <i>Tridens muticus</i>                | Slim tridens            | South Range | Poaceae        | Native        | N         |
| VIPA14              | <i>Viguiera parishii</i>              | Parish's goldeneye      | South Range | Asteraceae     | Native        | N         |
| VUOC                | <i>Vulpia octoflora</i>               | Sixweeks fescue         | South Range | Poaceae        | Native        | N         |
| XAGY                | <i>Xanthocephalum gymnospermoides</i> | San Pedro matchweed     | South Range | Asteraceae     | Native        | N         |
| XYTO2               | <i>Xylorhiza tortifolia</i>           | Mojave woodyaster       | South Range | Asteraceae     | Native        | N         |
| YUBA                | <i>Yucca baccata</i>                  | Banana yucca            | South Range | Agavaceae      | Native        | N         |
| YUBR                | <i>Yucca brevifolia</i>               | Joshua tree             | South Range | Agavaceae      | Native        | N         |
| YUEL                | <i>Yucca elata</i>                    | Soaptree yucca          | South Range | Agavaceae      | Native        | N         |
| YUSC2               | <i>Yucca schidigera</i>               | Mojave yucca            | South Range | Agavaceae      | Native        | N         |

2440 *Appendix I—Maps*

2441 The documents in this folder contain CUI and may be available upon request from Creech AFB's Chief  
2442 Environmental Officer

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