

FINDINGS AND RECOMMENDATIONS
for the
ISSUANCE OF AN ENDANGERED SPECIES ACT SECTION 10(A)(1)(B)
INCIDENTAL TAKE PERMIT
for the
WASHINGTON COUNTY HABITAT CONSERVATION PLAN

U.S. FISH AND WILDLIFE SERVICE
MOUNTAIN-PRAIRIE REGION
ECOLOGICAL SERVICES

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INTRODUCTION

Authorities

We, the U.S. Fish and Wildlife Service (FWS), received an application for an incidental take permit (ITP or permit) for the Mojave desert tortoise (*Gopherus agassizii*) (desert tortoise), which is listed as threatened under the Endangered Species Act (ESA). The permit would authorize take associated with Washington County's (County) proposed covered activities in Utah for 25 years. We reviewed the County's application for a permit under section 10(a)(1)(B) of the ESA (16 USC 1531 *et seq.*) and its implementing regulations for incidental take permits (50 CFR 17.22). The County's application included a required habitat conservation plan (Amended HCP) and associated documents (Washington County 2020, entire).

We also conducted an intra-Service consultation under section 7(a)(2) of the ESA, analyzing effects to listed species from the implementation of the Amended HCP and issuance of an incidental take permit for the County (FWS 2021a). We complied with the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*) and its implementing regulations (40 CFR 1506.6; 43 CFR 46) for the proposed Federal action of issuing an incidental take permit by preparing draft and final environmental impact statements (EIS) for public review and providing other opportunities for public input. We also analyzed and found our action to be in compliance with the Migratory Bird Treaty Act (16 USC 703-712), Bald and Golden Eagle Protection Act (16 USC 668), and National Historic Preservation Act (54 USC 470).

This set of findings addresses whether the County's application, including the required habitat conservation plan (HCP), meets the permit issuance criteria under section 10(a)(1)(B) of the ESA for take of the desert tortoise. Desert tortoise is the only covered species in the Amended HCP and the analysis herein is focused on desert tortoise. Because we cannot issue a permit if another listed species is jeopardized by the action, we analyzed impacts to other listed species in the action area briefly herein and more extensively in the HCP biological opinion.

Throughout the HCP development process, we worked with the County to examine potential impacts to all federally listed species in the project area. The standard for determining whether activities are likely to result in incidental take is whether take is "reasonably certain" to occur in considering both the direct and indirect impacts of the activities. In addition to the desert tortoise, the County and the FWS conducted and reviewed assessments of potential effects of the HCP to the Western yellow-billed cuckoo (*Coccyzus americanus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), Mexican spotted owl (*Strix occidentalis lucida*), California condor (*Gymnogyps californianus*), Yuma Ridgeway's rail (*Rallus obsoletus* [=longirostris] *yumanensis*), Virgin River chub (*Gila seminuda*), woundfin (*Plagopterus argentissimus*), Holmgren milkvetch (*Astragalus holmgreniorum*), Shivwits milkvetch (*Astragalus ampullarioides*), dwarf bear-poppy (*Arctomecon humilis*), Siler pincushion cactus (*Pediocactus sileri*), Fickiesen Plains cactus (*Pediocactus peeblesianus* var. *fickeiseniae*), Gierisch mallow (*Sphaeralcea gierischii*), Ute ladies' tresses (*Spiranthes diluvialis*), and Jones cycladenia (*Cycladenia humilis* var. *jonesii*). We also reviewed whether there were effects to designated critical habitat for southwestern willow flycatcher, Mexican spotted owl, Virgin River chub, woundfin, Holmgren milkvetch, Shivwits milkvetch, and Gierisch mallow. Either there is no designated critical habitat for the other species, or they do not have designated critical habitat in the permit area where incidental take of desert tortoise is anticipated.

Our analysis for the federally listed Jones cycladenia, Ute ladies' tresses, and Yuma Ridgeway's rail concluded that these species did not occur in the HCP analysis area and therefore the project would have no effect on these listed species and would not be covered by the permit. Our analysis for the federally listed Western yellow-billed cuckoo, Southwestern willow flycatcher, Mexican spotted owl, woundfin, and Virgin River chub concluded that the project may affect, but is not likely to adversely affect these species from HCP covered activities. In addition, we determined the project is not likely to jeopardize the non-essential experimental population of California condors. Thus, we agree that these species would not be covered by the permit. The January 13, 2021, memorandum transmitting our HCP Biological Opinion under section 7(a)(2) of the ESA details our determinations that issuance of the permit is likely to adversely affect six federally listed endangered plants (Holmgren milkvetch, Shivwits milkvetch, dwarf bear-poppy, Siler pincushion cactus, Fickiesen Plains cactus, and Gierisch mallow). The HCP biological opinion provides the rationale supporting these determinations and is herein incorporated by reference (FWS 2021a).

These findings are organized as follows: 1) a description of the Amended HCP covered activities, 2) analysis of impacts from the taking, 3) measures to minimize and mitigate the taking, and 4) alternatives considered. In conclusion, we evaluated and provided a record of how the Amended HCP satisfies each of the issuance criteria for the permit. This includes an analysis of the maximum impact that is anticipated assuming the requested acreage is fully developed and the likely conservation benefit of the Amended HCP. The analysis also incorporates any changed circumstances that are likely to occur. Because the Northern Corridor Right-of-Way (ROW) is likely to occur and was evaluated as an action under the same NEPA evaluation of the action of issuing the ITP, we include a summary of effects under the Northern Corridor changed circumstance and incorporate by reference analyses in the Northern Corridor biological opinion (FWS 2021b). We conclude with our recommendations for permit issuance.

Project Description

In the Amended HCP, the County is proposing to cover a variety of human-use activities that would cause habitat loss on 66,301 acres of potentially suitable and occupied desert tortoise habitat in the County. The County is proposing to amend the 1995 HCP in order to: 1) update information, 2) extend their HCP Conservation Program for another 25 years and 3) continue human-use activities resulting in loss of habitat and continued take of desert tortoise. Because the Amended HCP is based on the 1995 HCP with some changes and updates, and because the Amended HCP continues to rely on the basic tenet of the 1995 HCP Conservation Program, it is important to understand the 1995 HCP as a basis of the evaluation of the Amended HCP.

In 1995, the County applied for and in 1996 received, an ITP for desert tortoise for a permit term of 20 years from the FWS. The County's stated purpose for the 1995 HCP was to "provide, to the maximum extent practicable, for the perpetual protection of the Mojave desert tortoise in the Upper Virgin River Recovery Unit and conserve other listed, candidate, and sensitive species as much as possible, irrespective of the incidental take of the desert tortoises authorized by the permit." In response, the County and HCP Partners¹ established the 61,022-acre Red Cliffs

¹ The HCP Partners are the signatories to the Amended HCP Implementation Agreement and include: Bureau of Land Management (BLM), Utah Department of Natural Resources (UDNR), Utah State Institutional Trust Lands Administration (SITLA), Ivins City, and FWS (Washington County 2020).

Desert Reserve (Reserve) north of St. George. The Reserve was established and managed for the long-term conservation of desert tortoise. The 1996 analysis found that the Reserve offset loss of habitat and incidental take of 1,169 desert tortoises from covered activities “on up to 12,264 acres of Mojave desert tortoise habitat on non-Federal land in Washington County, Utah, and on all other non-Federal land in Washington County outside the Beaver Dam Slope area designated as desert tortoise habitat on the date of this permit” (FWS 1996).

The HCP Partners have worked cooperatively and collaboratively since 1996 to acquire, administer, and manage lands in the Reserve for the overall benefit of desert tortoise. Conservation actions of the HCP Partners and the continued management of the Reserve is considered to be a positive conservation outcome for desert tortoise in light of the human population growth in the County and the potential losses of the desert tortoise population that may have occurred without the 1995 HCP.

Before the 1996 ITP expired in 2016, the County applied to FWS for a new ITP. FWS authorized activities under the existing permit while we reviewed the renewal request by letter dated March 25, 2015 (50 CFR 13.22). Since that time, the County has been operating under an extension of the previous ITP while working with the FWS on an Amended HCP that incorporates updated and changed information.

Changed information includes available desert tortoise information, as well as methodologies for data collection, and how we quantify habitat in the County. There have also been Reserve boundary adjustments since 1995, such that the Reserve now encompasses 62,009 acres (a net gain of 987 acres).

The purpose of the Amended HCP is to:

- 1) allow continued economic growth and development in the permit area by extending the 1995 conservation program, with necessary updates to information, condition, and status, through an Amended HCP and ITP;
- 2) continue to support a conservation program that conserves desert tortoise in the Reserve and within the Upper Virgin River recovery unit (UVRRU) in perpetuity.
- 3) respond to potential impacts to the HCP conservation program that would result under the Northern Corridor changed circumstance.

Detailed description of landownership of the plan and permit area and for covered activities can be found in chapter 2 of the HCP and section 2.4 of the Final EIS, herein incorporated by reference.

Certain activities associated with human-use growth and development are likely to adversely affect desert tortoise and their habitat and result in incidental take. The permit would authorize take resulting from such activities, henceforth referred to as covered activities. Due to the programmatic nature of the HCP, the exact timing or scale of individual project impacts are unknown and likely to occur over time at a variable rate with economic factors and other changes. Chapter 2 of the HCP provides a detailed explanation of all covered activities that are likely to result in take of the desert tortoise and that are to be covered by the permit.

The HCP describes three mechanisms for the County to establish direct control and streamline incidental take on non-Federal lands for covered activities described and analyzed in the HCP: (1) the Implementation Agreement (IA), (2) Interlocal Agreements, and (3) Certificates of Inclusion. These written agreements expand the project description through establishing direct control by the County, as the permittee, over the covered activities expected to result in incidental take and as agreed to by non-Federal HCP Partners (i.e., SITLA, UDNR, municipalities, etc.) and non-Federal project proponents (i.e., Utah Department of Transportation; UDOT) for the purposes of the Amended HCP (Amended HCP, p. 113). These agreements allow non-Federal entities to conduct covered activities and benefit from the incidental take coverage in the ITP with a commitment, enforceable by the County and the FWS, to abide by the Amended HCP and the applicable terms and conditions of the ITP and to fee and funding commitments as well as various conservation measures. The IA was signed by all partners on or before January 13, 2021, prior to our signing of the Biological Opinion. Interlocal Agreements with municipalities were likewise signed prior to issuance of the ITP and ensure consistency with the language of the Amended HCP.

Permit Area

The HCP plan area includes the entirety of Washington County. The permit area is the UVRRU in Washington County, which is a subset of the plan area, because the Beaver Dam Mountains and habitat westward are included in the Northeast Mojave Recovery Unit (NEMRU) (FWS 1994 and 2011). Detailed description of landownership of the plan and permit area and for covered activities can be found in chapter 2 of the HCP and section 2.4 of the Final EIS, herein incorporated by reference.

In the UVRRU, we estimate there are approximately 325,898 acres of habitat of variable quality. The County has requested a permit for incidental take of desert tortoises associated with habitat loss of 66,301 acres on non-Federal lands in the permit area. This includes 66,101 acres outside the Reserve and up to 200 acres inside the Reserve. The remaining 239,008 acres of modeled suitable habitat within the permit area outside the Reserve is BLM land.

The UVRRU in the County includes 53,366 acres of designated critical habitat of which 46,856 acres are within the Reserve. Implementation of the Amended HCP may result in the loss of 633 acres of designated critical habitat outside the Reserve and up to 200 acres inside the Reserve. The 833 acres of critical habitat subject to loss is 1.6 percent of the designated critical habitat in the UVRRU in the County and 0.01 percent of the designated critical habitat across the range of the species.

The HCP assumes that desert tortoises are present throughout habitat modeled as potentially suitable at or below 4,000 feet in the permit area. Non-Federal lands within the permit area not modeled or known as desert tortoise habitat (and above 4,000 feet) are not part of the Amended HCP take area, as the County considers incidental take of desert tortoise not reasonably certain to occur in these areas. However, desert tortoises are occasionally found in areas outside the delineated Amended HCP take area. The County advises that proponents of activities outside the Amended HCP take area (i.e., outside the 66,301 acres) should be prepared to document their methods and findings of desert tortoise absence or coordinate with the FWS if occupancy is expected or detected.

The Amended HCP take area includes 66,101 acres of modeled desert tortoise habitat managed by several non-Federal and non-Tribal landowners, including the County, UDNR, SITLA, municipalities, and private landowners outside the Reserve. The Amended HCP take area also includes up to 200 acres of occupied habitat at locations to be determined and as needed within the Reserve where utility development and recreation management may occur on non-Federal lands. The Reserve currently includes 16,698 acres of non-Federal lands where these 200 acres of loss may occur.

Currently, the Reserve comprises 62,009 acres, 46,856 acres of which are designated critical habitat. We estimate that 41,300 acres of the Reserve are modeled suitable desert tortoise habitat, 39,334 acres of which overlap with designated critical habitat. Most of the Reserve land is BLM-administered land. The UDNR owns Snow Canyon State Park (6,106 acres), and Utah Division of Wildlife Resources (UDWR), a division of UDNR, holds title to lands acquired with the support of ESA section 6 HCP Land grants (1,185 acres). The SITLA retains 6,426 acres in the Reserve (HCP Table 17. p. 80). Private landowners and municipalities retain an additional 2,981 acres in the Reserve. Approximately 7,091 acres of these SITLA and private lands remain a priority for acquisition by BLM or the State of Utah to ensure long-term protection and management consistent with the Reserve. In 2020, several acquisitions of private lands in the Reserve have been finalized or are nearing completion (HCAC 2020a).

Other lands in the County are not considered in this analysis. The BLM manages approximately 105,400 acres of potentially suitable habitat outside the Reserve within the UVRRU on which actions are subject to evaluation under ESA Section 7 Consultation. The Shivwits Band of the Paiute Reservation lands may include desert tortoise habitat. These lands are not considered in this analysis except as they contribute to desert tortoise viability in the UVRRU. A more detailed description and map of the permit area can be found in Chapters 1, 4, and 5 of the HCP and *Action Area* in our Biological Opinion (FWS 2021a), herein incorporated by reference.

Change in permit area as a response to Northern Corridor Changed Circumstance

Simultaneous to the amended HCP, UDOT has applied to BLM for a right-of-way (ROW) to construct a highway through the Federal Red Cliffs National Conservation Area (NCA) and through associated non-Federal lands in the Reserve. The proposed highway would connect Washington Parkway in Washington City to Red Hills Parkway in St. George. The proposed Northern Corridor highway alignment would cross the Reserve Zone 3, including portions of designated critical habitat for desert tortoise. The establishment and management of the Reserve for desert tortoise in perpetuity represents the primary commitment of the County's 1995 HCP conservation program and is carried forward into the Amended HCP. The proposed Northern Corridor highway is presented as a changed circumstance in the Amended HCP. We consider this changed circumstance likely to occur and as such, is fully evaluated in these findings.

The issuance of the Northern Corridor highway ROW is a Federal action. The BLM initiated consultation with the FWS under ESA Section 7. We have reviewed and addressed the effects of the Northern Corridor highway on listed species and designated critical habitat, and we have authorized incidental take associated with this project in our consultation with the BLM in the Northern Corridor Biological Opinion (FWS 2021b). Although the Northern Corridor ROW and subsequent highway construction is not a Covered Activity of the Amended HCP, the County

acknowledges that construction of the Northern Corridor highway would (1) affect the use, management, and conservation value of the Reserve for desert tortoise; (2) affect individual desert tortoises and the population within the UVRU; and (3) represent a change in circumstances as defined in the HCP Handbook (HCP p. 127) and Section 10 regulations (50 CFR 17.22).

The Northern Corridor changed circumstance also includes the establishment of a newly proposed Zone 6 to the Reserve. Zone 6 comprises approximately 6,813 acres, of which 3,229 acres are SITLA-administered land, 3,472 are BLM-administered lands, 70 acres are UDOT-owned, and 42 acres are private lands.

The County's covered activities would be applicable to 62,960 acres under the Northern Corridor changed circumstance. We analyzed the sufficiency of the HCP to meet issuance criteria with and without the Northern Corridor changed circumstance in our Biological Opinion (FWS 2021a). We estimate the level of incidental take with the changed circumstance as a condition that is likely to occur (50 CFR 17.22). Thus, the total acreage where take of desert tortoises would occur under the Amended HCP take areas is 62,960 acres. From henceforth in this analysis, we analyze take resulting from covered activities on 62,960 acres of non-Federal land outside the Reserve as the likely outcome resulting from issuance of the permit.

Permit Duration

The proposed permit duration is 25 years to provide authorization for covered activities resulting in take of the desert tortoise that may occur in conjunction with human-use activities in the County. If desert tortoise habitat remains undeveloped on non-Federal lands in the Amended HCP take area at the end of the permit duration, the County will coordinate with the FWS to renew or amend the permit, if needed. The HCP No Surprises assurances apply for the duration of a permit if the HCP is being properly implemented and the permittee is compliant with the terms of the permit. With a request for renewal, we may identify the need for amendments to the HCP and permit, including the need for additional conservation commitments on the part of the applicant (FWS and NMFS 2016, section 17.4). After the amendments associated with a renewal are finalized, No Surprises assurances would apply to the Amended HCP and permit for the duration of the new term (FWS and NMFS 2016, section 12.9.6). Issuance of a new section 10 permit for an amendment, renewal, or transfer requires that we review all section 10 permit requirements anew (see FWS and NMFS 2016, section 17.4).

Anticipated Forms and Level of Take of the Mojave desert tortoise

Incidental take of desert tortoise from covered activities is expected to occur. Details on the types and sources of take are described in Chapter 5 of the HCP, and in the *Effects of the Action* and *Incidental Take Statement* sections of our HCP Biological Opinion, herein incorporated by reference. A thorough explanation of methods and calculations can be found in the HCP Biological Opinion.

In this section we describe:

- 1) the habitat acreage associated with covered activities in the permit area (i.e., Amended HCP take areas) and use of a habitat surrogate to measure take,
- 2) the number of animals that may have home ranges that overlap Amended HCP take areas; all or a subset of which will be subject to handling as part of minimization measures that include surveys, clearance, and translocation by HCP staff, and
- 3) the number of animals we anticipate detecting subject to injuries and fatalities from covered activities in the permit area.

Take associated with habitat loss in the Permit Area (including in the Reserve)

The Amended HCP proposes take associated with habitat loss on 62,960 acres under the Northern Corridor changed circumstance with up to 200 acres of these occurring inside the Reserve (FWS 2021a). For the ITP, we rely on a habitat surrogate as an accurate estimate of authorized take and to track impacts to the species (50 CFR 402.14(i)(1)(i)). Loss of habitat is a surrogate for take of desert tortoises in the ITP due to the difficulty in both estimating the number of desert tortoises in the Amended HCP Take Area and detecting desert tortoises taken as part of the 1995 HCP. In this case, habitat is a more reliable metric than number of animals, due to uncertainties associated with estimating desert tortoise population density and abundance and the added uncertainty that results from extrapolating densities broadly to unsurveyed lands. Due to the programmatic structure of the HCP, we cannot know exact locations of impacts and extent of covered activities on specific land parcels, nor can we know the exact timing of loss over the term of the permit. Therefore, our analysis assumes all desert tortoise habitat within the Amended HCP take areas are completely lost and take of all desert tortoises associated with that habitat. While we further do not know where or to what extent covered activities inside the Reserve could occur, the HCP section 5.3 describes the process that guides development activities in the Reserve. For purposes of applying an accurate measure to track take of and impacts to desert tortoise under the Amended HCP, we concur with the use of a habitat surrogate. For more information on the criteria and analysis for appropriate use of the habitat surrogate for tracking associated incidental take, see our HCP Biological Opinion (FWS 2021a) and the Amended HCP, section 5.2.2.1.

Although we are analyzing take using a habitat surrogate, we provide an estimate of the number of animals expected to be associated with the loss of habitat in order to specify the impact, *i.e.*, the amount or extent, of such incidental taking on the species (50 CFR 402.14(i)(1)(i)). These estimates support our jeopardy analysis based on effects to the population in the HCP Biological Opinion (FWS 2021a). An estimate of number of animals can be useful for general population and trend inferences over time and meets our regulatory requirements despite uncertainty.

Uncertainty relating to density estimates outside the Reserve is due to three factors: limited survey data, low precision, and application of a single, generic density estimate broadly across habitat that has not been surveyed. We assume densities are generally low based on previous survey data from the early 1990s (Washington County 1995) and that most known, high-density areas have been previously cleared of desert tortoise (UDWR 2018). In an effort to reduce

uncertainty related to desert tortoise density estimates, the County will support work with the UDWR to inform and validate density and distribution information within the next five years. Desert tortoise data in the Reserve has been more thoroughly collected and is better understood and supports our understanding that the distribution and density of desert tortoise is not uniform across the landscape, including within the Reserve (FWS 2020).

Using the habitat surrogate described in the Amended HCP for 62,960 acres, we estimate the number of animals (within a range based on 95 percent confidence intervals) that are likely to be 'taken' through handling, harm, and other impacts associated with the loss of habitat. The estimated number of animals is calculated using density estimates from local survey data, where available, and from monitoring surveys in the Beaver Dam Slope in the neighboring NEMRU where site-specific survey data is not available. The Beaver Dam Slope density from 2017 (FWS) was applied across potentially suitable habitat most likely to support desert tortoises in the UVRRU (FWS 2021c). In the HCP Biological Opinion, we estimated the number of animals subject to take based on shapefiles of the area provided by the County, which is approximately 63,030 acres (FWS 2021a). The difference of 70 acres resulting from variation in the use of geo-spatial layers for calculations is minor and is not considered to affect the outcome of the analysis. For the purposes of consistency with the Amended HCP, in this analysis and in our permit, we use the County's requested take of desert tortoises associated with 62,960 acres. Table 1 provides a summary of the number of animals expected to be impacted using densities from respective survey locations.

The following summarize the important points from Table 1.

- We estimate 351 adult desert tortoises occur in or have home ranges that overlap Amended HCP take areas and will be detected and translocated.
- We estimate 2,282 sub-adults desert tortoises and an unknown number of eggs will occur in or have home ranges that overlap Amended HCP take areas. Larger sub-adults will most likely be detected and translocated, but eggs and smaller sub-adults have very low detection rates and are likely to be missed.
- The estimated take of 351 adults represents eight percent of the estimated desert tortoise population in the UVRRU (FWS 2021c). Averaged over 25 years this is an average of 14 adult desert tortoises each year removed from their home range. This number is similar to the past 25 years where an average of 11 adults were handled by the County due to HCP covered activities (HCAC 2020a) which provides some level of confidence in the estimate. In addition, most of these areas outside the Reserve have been cleared under the 1996 ITP and are assumed to now support low numbers of desert tortoises, if any. Based on this information, we believe our estimate of 351 adult desert tortoises is as accurate as possible.
- We anticipate a small number of desert tortoises will be killed or injured as a result of covered activities. Data collected over 25 years shows three to seven desert tortoises were killed or injured as a result of covered activities (Rognan 2020). Based on this, we estimate ten (10) fatalities or injuries. This estimate is for animals likely to be detected.

No data is available on desert tortoise detection rates (e.g. the number of animals that go undetected through surveys); therefore, no estimate is provided for the number of desert tortoise fatalities that are may be undetected.

Table 1. Estimated desert tortoises in Amended HCP take area where covered activities would occur.

Take Area	Extent	Desert tortoise per mi ²	Estimated desert tortoises subject to take in the permit area (95 percent Confidence Interval)
Outside Reserve without Zone 6 as part of take	62,760 acres (98.1 mi ²)	3.4 adults per mi ² (1.0 to 10.9) on 62,742 acres + 58.3 per mi ² (33.9 to 99.5) on 18 acres	335 (99 to 1,072) adults
		Juveniles (Estimated adult abundance * 5.2)	1,742 (515 to 5,574) juveniles
		Hatchlings (Estimated adult abundance * 1.3)	436 (129 to 1,394) hatchlings
Zone 6 as part of take (non-Federal lands in Zone 6)	3,341 acres (3,293 habitat)	58.3 per mi ² (33.9 to 99.5) on 2,944 acres + 3.4 adults per mi ² (1.0 to 10.9) on 320 acres	270 (157 to 464) adults 1,409 (816 to 2,413) juveniles 352 (204 to 603) hatchlings
Inside Reserve	200 acres (0.3 mi ²)	50.8 adults per mi ² (38.9 to 66.3)	16 (12 to 21) adults
		Juveniles (Estimated adult abundance * 5.2)	83 (62 to 109) juveniles
		Hatchlings (Estimated adult abundance * 1.3)	21 (16 to 27) hatchlings
Total County requested take without Zone 6 as part of take (adults)	62,960 acres (98.4 mi²)	3.4 to 50.8 adults per mi²	351 (111 to 1,093) adults
Total County requested take without Zone 6 as part of take (sub-adults)	62,960 acres (98.4 mi²)	Juveniles (Estimated adult abundance * 5.2) + Hatchlings (Estimated adult abundance * 1.3)	2,282 (722 to 7,104)
Total take (all life stages)	62,960 acres (98.4 mi²)	3.4 to 50.8 adults per mi²	2,633 (833 to 8,197)
Percent of UVRU	19 percent	NA	8 percent

*Life stage multiplier (FWS 2019)

Monitoring, Adaptive Management, and Reporting

Chapter 6.3.3.2 and 7.6 of the HCP provide details on compliance and effectiveness monitoring. Compliance monitoring will include:

- Annual reports that document habitat lost to covered activities and that determine whether the permit's take limit as measured through the habitat surrogate may be exceeded. These reports will further include the number of animals detected, moved, injured or killed or otherwise documented through minimization measures and through covered activities.
- Utility development protocols implemented in the Reserve include on-site monitors to ensure that the HCP's avoidance and minimization measures are properly implemented.

- Provisions for reporting any activities found to be out of compliance and measures to rectify them (see also *Project Description* for more information about the Implementation Agreement, Interlocal Agreements, and Certificates of Inclusion).
- Fenceline monitoring and support for desert tortoise monitoring on non-Federal or UDNR lands to evaluate effectiveness of habitat restoration and inform the adaptive management program as needed.

The County will provide an annual work plan and an annual report, which will include incidental take, handled and moved desert tortoises, and results from the fenceline and other monitoring needs (e.g., ravens). Annual HCP reports will include: (1) the amount of habitat lost to covered activities and (2) the total number of desert tortoises handled by HCP staff and associated information on whether they were handled relative to covered activities, life-stage, condition, and disposition. The report will document status and criteria that would require an adaptive management response to emerging or evolving issues as identified in the workplan or adaptive management process (e.g., wildfire, disease, drought). The HCP includes specific criteria for responses to changed circumstances (e.g., wildfire, disease, and drought), and if a criterion is met, as identified through annual reporting, adaptive management measures will be implemented (further detailed in chapter 9 of the HCP). Other potential criteria, such as a severe population density decline, or raven abundance will be managed per the committee process using the best available science at the time and as agreed to by FWS. All reports will be submitted to the FWS following review and approval by the advisory committee and the Washington County Commission by March 1 for the preceding year. Compliance monitoring of the HCP will also continue through oral reports at quarterly advisory meetings.

The 1995 HCP developed an effective adaptive management process that is continued in the Amended HCP. Adaptive management provides a framework to set objectives, design actions, develop information and monitor response. It also provides a process to address uncertainties or changes to conditions regarding species biology and the effectiveness of the HCP's conservation program for the desert tortoise. The 1995 HCP process for adaptive management operates through committees and has proven able to identify and resolve issues regarding the HCP's conservation program. The committees have overseen the translocation program, proposed and acted on new conservation measures to restore habitat in parts of the Reserve damaged by wildfire, established a pilot raven-monitoring program, and found innovative ways to evaluate and manage recreation impacts through human impact monitoring and the volunteer Trail Stewards. Chapter 6.3.3 of the HCP provides the adaptive management framework for the Reserve, wherein the County will continue to rely on the demonstrated success of the committee process for responding adaptively to new management needs.

Because most high-density desert tortoise areas have been cleared, we do not expect to find significant sub-populations (high densities with more than 100 desert tortoises) on non-Federal, non-Tribal lands in the County outside of the Reserve, including Zone 6. Surveys conducted by the County with the State for the Translocation Plan can inform and validate density and distribution data that is the foundation of our analysis.

In the unexpected event surveys or improved detection methodologies result in new information about the species that indicates unanticipated effects, the adaptive management program serves as a process to consider, evaluate, and adapt the conservation program. If information suggests that effects to the species or effectiveness of conservation actions are different than what was assessed or analyzed in the HCP Biological Opinion, the FWS will work with Washington County and other partners on the Habitat Conservation Advisory Committee through the Adaptive Management process to determine measures to address the issue and minimize loss. The adaptive management process is designed to incorporate new information that we learn into biological goals, planning, and management.

The Amended HCP includes the County's commitment for continued support for adaptive management and limited monitoring of translocation populations in coordination with the State to complement commitments of the HCP Partners. To ensure that the effects of translocation are minimized, the County will work with UDWR to establish criteria for success and adaptively manage translocations in coordination with FWS. As mentioned above, once transferred to the State, translocation activities are covered by a separate section 6 agreement (FWS 2015). The Amended HCP states that the County's previous contributions to monitoring demonstrated the efficacy of the conservation program and clarifies that under the Amended HCP, desert tortoise monitoring is more appropriately a long-term responsibility of UDWR and BLM (HCP p. 97). In the Amended HCP, the County will provide financial support to assist with monitoring for long-term recovery planning purposes on Reserve lands not yet acquired by a land management agency that has the jurisdiction and capacity for monitoring. The County and HCP Partners will coordinate monitoring efforts and share results to measure effectiveness of the program and coordinate adaptive measures. These actions are intended to support the HCP stated biological objective to monitor desert tortoise population status, trends and threats in the permit area in order to direct adaptive management (HCP p. 65). As part of adaptive management, criteria for success towards biological goals (i.e., stable or increasing population) will be established and can be used to track success of the conservation program in addition to tracking accomplishments and funding.

PUBLIC INVOLVEMENT

In accordance with NEPA, we announced public scoping to prepare an EIS on December 5, 2019 (79 FR 64619). The BLM and the FWS also held a public scoping meeting on December 17, 2019, in St. George, Utah. We published a notice of availability of the draft EIS and draft HCP on June 12, 2020, (82 FR 22153) and requested public comments on those draft documents. This notice also announced two virtual public meetings on the draft EIS and draft HCP, which we held in July, 2020. We closed the comment period for the draft EIS and draft HCP on September 10, 2020 (82 FR 42561). We published the notice of availability of the final EIS, our responses to comments on the draft EIS, draft record of decision, and final HCP and associated documents for public inspection and protest from November 13, 2020, (85 FR 72683) until December 13, 2020.

SECTION 10(a)(2)(A) HABITAT CONSERVATION PLAN REQUIREMENTS – ANALYSIS AND FINDINGS

Section 10(a)(2)(A) of the ESA specifically mandates that no permit may be issued by the Secretary of the Interior, through the FWS, authorizing any taking referred to in paragraph (1)(B) unless the applicant submits to the Secretary a conservation plan that specifies: (i) the impact which will likely result from such taking; (ii) the steps the applicant will take to minimize and mitigate such impacts; (iii) what alternative actions to such taking were considered and the reasons why such alternatives are not being utilized; and (iv) such other measures as the Secretary may require as being necessary or appropriate for the purposes of the HCP. Our analysis of the Amended HCP and associated information in our record is provided below.

HCP Specifies the Impacts from the Taking

Chapter 5 of the HCP specifies the types of anticipated take that could occur from covered activities and the incorporation of updated habitat modeling. This chapter also describes the impacts as expected to the recovery unit.

Effects of covered activities that may kill, wound, or harm desert tortoises in the UVRU and associated analytical units (AUs) discussed in the HCP include:

- Habitat loss, fragmentation and edge effects may affect desert tortoise population demographics, genetics, and health;
- Utilities, renewable energy, mining, drilling, water development, and flood control would cause habitat loss, degradation, fragmentation, and stress to individuals;
- Roadways and vehicle traffic could result in injury, fatality, habitat fragmentation, habitat degradation, fire, genetic integrity, resilience, litter consumption and predator draw; collection and release and other stress associated with humans;
- Predation could result in decreased survival and recruitment;
- Disease could result in decreased survival and recruitment; and
- Fire management could result in saving of injuries and fatalities and improving habitat conditions and health.

The County anticipates that incidental take is reasonably certain to occur on 62,960 acres of habitat with the Northern Corridor changed circumstance. Of this acreage, inside the Reserve, the County anticipates a maximum take from habitat loss on up to 200 acres on all non-Federal lands (including Snow Canyon State Park). The County's intent is to "allow small-scale utility development in the Reserve in accordance with the Development Protocols, which include consideration of "avoidance areas" (HCP p. 55). General Reserve management, while overall beneficial to the species, may also result in take incidental to covered activities (e.g., invasive weed control) (HCP, p. 104). We do not know where those activities may occur or the extent of habitat loss, but the overall benefit of the Reserve and the application of protocols and land protection measures are assumed to offset any potential loss. Utility projects in the Reserve are reviewed by the Habitat Conservation Advisory Committee for the HCP. Projects are sometimes referred to the Technical Committee for recommendations (HCP p. 55).

Using updated habitat modeling, section 5.4 of the Amended HCP describes the take request as approximately 20 to 30 percent of the desert tortoise habitat, depending on consideration of the permit area or plan area and inclusion of Zone 6 (p. 60 and p. 135). The Amended HCP explains that the Reserve supports more than 50 percent of the local population and higher densities of desert tortoises than areas outside of the Reserve (p. 61 and 62). The Amended HCP also describes that the protection and management of the Reserve to conserve desert tortoise and desert tortoise habitat was established in advance of impacts to desert tortoise from covered activities which ameliorates loss of acres and animals (HCP p. 58 and 59). Overall, the Amended HCP specifies the impacts of the taking in the context of the UVRU habitat, distribution, and occupancy.

HCP Specifies Steps to Minimize and Mitigate Impacts of the Take

Chapter 6 of the Amended HCP describes the conservation program's overarching biological goals and the objectives to achieve those goals. These goals include establishing the Reserve, supporting and coordinating activities that result in most Reserve lands being acquired by BLM or UDNR, the County's monitoring and management of non-Federal lands consistent with the Amended HCP goals and objectives, and moving desert tortoises prior to and during covered activities into areas that may benefit recovery of the population and species. The Amended HCP's conservation program stipulates several measures to avoid, minimize, and mitigate the impacts of the anticipated take of desert tortoises.

Measures to Avoid, Minimize, and Mitigate the Impacts of the Take

Amended HCP without Northern Corridor changed circumstance

The primary goal of the 1995 HCP conservation strategy was the establishment and management of a Reserve that would support a sustainable desert tortoise population in the UVRU in perpetuity. The objectives that continue to support achieving a sustainable population, as stated in the Amended HCP are: 1) supporting Reserve biological values (see *General description of Biological Values Evaluated* below) by acquisition and management, 2) minimizing impacts through fencing, law enforcement, education, development protocols, recreation management, and habitat management, and 3) moving desert tortoise prior to or during activities into areas that support population and species recovery (Appendix A and E). In the Amended HCP section 6.4.3, Table 18 summarizes the ways in which the desert tortoise is likely to be affected by the covered activities, how those effects impact individual desert tortoises, and the conservation measures that offset the impacts of the incidental take. Details of each measure are described in section 6.3 of the HCP, which is herein incorporated by reference.

The Reserve was established under the 1995 HCP to mitigate development impacts, with limited funding to support acquisition and management. In the Amended HCP, the conservation program includes (without the Northern Corridor changed circumstance):

- 1) Establishment and protection of a 62,009 acre Reserve in perpetuity. This includes Reserve boundary adjustments resulting in a net increase of 987 acres since 1995. These acquisitions were opportunistic or related to development offsets and were not part of the County's commitments in the 1996 ITP. Under the Amended HCP, the County would

continue to facilitate acquisitions by funding appraisals, coordination, and providing other land acquisition services.

- 2) Administration and adaptive management of the Reserve on non-Federal lands and of the Amended HCP program with any new or updated information. This includes executing the Implementation Agreement, Interlocal Agreements, and managing Certificates of Inclusion to ensure activities and lands are managed consistent with the HCP as the minimum conservation standard across a variety of project proponents and landowners.
- 3) Measures to avoid, minimize and mitigate take of desert tortoise Section 6.3.2 of the Amended HCP (page 84) and Table 18 in the HCP describe conservation measures to minimize and mitigate the impacts of the covered activities on take. The Amended HCP includes a detailed description of these activities. These measures include:
 - Reserve fencing
 - Desert tortoise translocation (including surveys and clearance)
 - Application of the utility development protocols
 - Reserve habitat and fire management
 - Recreation management
 - Reserve litter clean up
 - Law enforcement
 - Community education and outreach
 - Grazing permit acquisition and retirement

The County describes in Chapter 6.4 of the HCP that the majority of the high-density occupied desert tortoise habitat is protected in the Reserve, which minimizes and offsets impacts to the population by protecting the most important areas and by protecting these areas prior to the impacts from the taking. The UDWR report included in Appendix E of the Amended HCP describes that the number of desert tortoises translocated has declined since 2004, likely as a result of clearance surveys in known high-density areas in the preceding years. The Amended HCP also describes that the Reserve is consistent with recovery plan recommendations (i.e., partnerships, protection, augmentation, monitoring, applied research, and adaptive management). The Amended HCP concludes that the viability of the local population continues to rely primarily on the Reserve concept, which is robustly managed by the HCP partners, including establishment and administrative support from the County. The Amended HCP specifies that the County's measures to minimize and mitigate fully offset the impacts of the take by the establishment of the Reserve, implementation of the translocation program, and the County's management and monitoring activities.

Amended HCP with the Northern Corridor changed circumstance

The Northern Corridor highway would result in direct loss of 276 acres as well as habitat degradation and fragmentation (2,343 additional acres) to the Reserve in Zone 3. These impacts affect the Reserve values (see below, section *Reserve Biological Values*) and adding a significant new anthropogenic stressor within the Reserve. We estimate 21 percent of the Zone 3 sub-population and 8 percent of the UVRU may be impacted directly or indirectly by the Northern

Corridor (FWS 2021b). The Northern Corridor changed circumstance would cause habitat loss on 276 acres and degradation on an additional 2,343 acres of designated critical habitat. Loss of 276 acres is less than one half of one percent of critical habitat in the Reserve. Impacts to 2,343 acres is approximately 5 percent of the critical habitat in the Reserve, and 46,205 acres would remain unaffected or improved FWS 2021b.

Impacts from construction of the Northern Corridor are extensively analyzed and summarized in the Northern Corridor Biological Opinion as part of our consultation with UDOT and the BLM. The Amended HCP describes that the Northern Corridor highway would impact the conservation value of the Reserve and the effectiveness of the Amended HCP conservation program. To maintain the integrity of the HCP conservation program, Washington County has included conservation measures to specifically respond to this changed circumstance. For a detailed description of the avoidance, minimization, and mitigation for the Northern Corridor to the Reserve population, see the HCP section 9.1.1, the Implementation Agreement, the Northern Corridor Biological Opinion, the BLM's Biological Assessment, and UDOT's Plan of Development.

The Northern Corridor will negatively impact the Reserve conservation value through habitat fragmentation, degradation, and loss, which each affect desert tortoise breeding, feeding, and sheltering. We briefly discuss below the County's commitments in the HCP in response to the Northern Corridor changed circumstance. See the Northern Corridor Biological Opinion for a full analysis of the Northern Corridor (FWS 2021b). The Northern Corridor will fragment habitat, impacting connectivity and intactness of the Reserve and affecting dispersal of animals. Although the Northern Corridor project includes a minimum of eight passage structures to support desert tortoise passage across the Northern Corridor highway and includes commitments to evaluate potential passage on SR-18 (BLM 2020), some level of fragmentation effects will impact the desert tortoises in Zone 3. To offset these remaining impacts, the County will provide \$150,000 towards improving desert tortoise passage (construction, maintenance, and monitoring) across Cottonwood Spring Road, an existing road that is a dispersal barrier within Reserve Zone 3. An estimate of three to five crossing structures have been proposed based on currently available information. A final number and design will be determined through adaptive management to ensure passage is effective to achieve biological outcomes for desert tortoise. This will be done within the next 5 years upon issuance of the ROW grant.

The Northern Corridor will act as a conduit for non-native invasive plant species, fire potential, toxicants, and other effects that may degrade the condition of adjacent desert tortoise habitat. This impacts the Reserve condition biological value. The Amended HCP includes Habitat and Fire Management Guidelines (Appendix D) to address current habitat degradation concerns from invasive plant species throughout the Reserve, trail braiding in Zone 6, and the Northern Corridor in Zone 3. The Amended HCP includes \$15,000 a year (\$5,000 a year set aside for habitat and fire management with additional \$10,000 a year with the Northern Corridor changed circumstance, page 94 and 121) as well as additional staff resources to support habitat restoration efforts in the Reserve.

The Northern Corridor will result in the loss of habitat acres in the Reserve Zone 3. This is an impact to the biological value related to size and area. In the Amended HCP, the County has proposed to establish Reserve Zone 6 located to the west of Interstate 15 and south of the Santa Clara River. Reserve Zone 6 would add 6,813 acres, approximately half are SITLA-

administered lands and half are BLM-administered lands (see *Permit Area*). Zone 6 includes a relatively dense sub-population of desert tortoise that we estimate is eight percent of the UVRU population. In addition to adding acreage, Zone 6 supports redundancy within the UVRU and intactness through its proximity with and potential movement corridors to the NEMRU. Connectivity with the species range to the west is a critical biological value that supports recovery of the UVRU. The Zone 6 area is of a sufficient size to support a redundant sub-population with the potential to connect the UVRU with the species range to the west.

While Zone 6 land acquisition would primarily be the responsibility of the BLM and the State, the County has proposed to fund the acquisition of approximately 450 acres of the non-Federal lands within Reserve Zone 6. The funding would be three times the acreage of land within the proposed Northern Corridor roadway ROW and the County intends for this to specifically offset the loss of habitat in the ROW. This acquisition commitment would be satisfied prior to the start of highway construction. The remainder of the non-Federal lands within the Reserve Zone 6 would be subject to acquisition as funds are acquired for SITLA lands and by willing sellers for the limited private lands following the strategy identified for Reserve Zones 1 through 5 which have proven successful since 1996. The County and the HCP Partners intend that these acquisitions be completed as soon as made possible and within the ITP Term (25 years). In the interim and until acquired, through the Amended HCP, the County is committing to manage these lands as part of the Reserve for the long-term protection of desert tortoise. In the Northern Corridor Biological Opinion, SITLA has agreed to allow County management of these lands until they are acquired. The Amended HCP would prioritize acquisition for remaining SITLA and private lands in Zone 3 before Zone 6 lands (HCP p. 130) in order to complete the commitments of the original HCP; however this prioritization strategy should not inhibit opportunistic acquisitions in Zone 6.

In managing SITLA lands as part of the Reserve, the County would exclude covered activities in Zone 6 and limit allowed activities to those consistent with management of the Reserve. This reduces the loss of habitat to development on almost 3,500 acres of the non-Federal lands and adds 6,813 acres to the Reserve (including the BLM lands in Zone 6) under the Northern Corridor changed circumstance. The County would fund and/or implement a variety of conservation measures within Reserve Zone 6 to benefit the desert tortoise as part of their commitment (see HCP section 9.1.1). The County would expand funding for Reserve implementation and management, such as fencing, biological monitoring, outreach and education, and law enforcement to include Zone 6.

Overall, the Amended HCP concludes that these conservation measures in Zone 6 ensure the Zone 6 area would remain intact, improved and protected as habitat for the desert tortoise sub-population until permanent land acquisition by BLM or UDNR. By protecting and ensuring the viability of the Zone 6 sub-population, in conjunction with other minimization measures implemented by the County, the Amended HCP concludes that the remaining impacts to the Reserve biological values and UVRU population from Northern Corridor habitat fragmentation, degradation, and loss in Zone 3 are offset and the Conservation Program remains intact.

The Amended HCP as described and under the Northern Corridor changed circumstance specifies steps to minimize and mitigate impacts of the take.

Alternatives to the Take and Reasons Not Used

Chapter 10 of the HCP describes three alternatives to the take anticipated under the County's proposed HCP.

No Incidental Take Permit Issuance Alternative

Under this alternative, the HCP states that the County would not seek issuance of an ITP associated with their 2020 Amended HCP, would not continue implementing the 1995 HCP, and would not approve/permit covered activities within desert tortoise habitat. Covered activities authorized by the 1996 ITP would no longer be able to operate under the temporary letter of extension and the County would cease to expend resources on implementation of the 1995 HCP, including support for implementing the 2006 Development Protocols (such as performing desert tortoise clearance surveys and translocations) (HCP p. 143). The Amended HCP states that the funds deposited into the HCP Trust Fund will be used to further the purposes of implementing the Amended HCP or for expenditures that are otherwise consistent with the conservation or recovery of the desert tortoise (p. 124). Thus, if this alternative were to occur, any remaining balance of funds collected for purposes of the HCP would be expended for desert tortoise as determined by the County and the FWS. In addition, we would seek to engage the County and/or other local entities in discussion and through partnerships that would support desert tortoise recovery, as possible.

The Reserve boundary would not be changed and continue to be managed by the current landowners. Incidental take of the desert tortoise associated with covered activities in the Amended HCP take area would no longer be offset through a streamlined, programmatic HCP and ITP. The County determined that not obtaining an incidental take permit per this alternative is not feasible to meet their community goals and objectives, which is the County's purpose and need for the HCP. Sections 4.1 and 5.4.2 of the HCP, herein incorporated by reference, provide further details on the extent where covered activities overlap desert tortoise habitat.

Alternative Including the Northern Corridor as a Covered Activity

The County considered an alternative to this Amended HCP that would address the proposed Northern Corridor as a Covered Activity with Zone 6 specifically as mitigation for the Northern Corridor. The Northern Corridor includes Federal action that requires formal consultation under Section 7 of the ESA. The County did not select this alternative, because the incidental take of desert tortoise associated with the Northern Corridor is addressed through the interagency consultation process. Section 10.2 of the HCP, herein incorporated by reference, provides further details on this alternative.

Reduced HCP Take Area Alternative

The County considered alternatives to this Amended HCP that would reduce the size of the Amended HCP take area to either the remaining undeveloped portions of the incidental take areas delineated in the 1995 HCP or the updated areas of known occupied desert tortoise habitat that are on non-Federal and non-Tribal lands. In either alternative the Reserve itself would be retained in the permit area to allow covered activities inside the Reserve.

This reduced Amended HCP take area alternative would have the effect of reducing the extent of take associated with covered activities but would also result in a void in coverage for non-Federal project proponents in Washington County that do not have a ready means to address ESA compliance for the desert tortoise and would need to apply for independent permits under Section 10. The County did not select this alternative because the reduced Amended HCP take area alternative does not satisfy their community goals and objectives and the stated purpose and need for the Washington County Amended HCP.

SECTION 10(a)(1)(B) INCIDENTAL TAKE PERMIT ISSUANCE CRITERIA – ANALYSIS AND FINDINGS

Section 10(a)(2)(B) of the ESA requires the following criteria to be met before the FWS may issue an incidental take permit. If these criteria are met and there are no disqualifying factors, the FWS shall issue the incidental take permit (ESA section 10(a)(2)(B)(v)). The FWS's findings and recommendations document must provide the rationale and results of the analyses used to determine if the applicant and HCP meet all permit issuance criteria.

The taking will be incidental

Take of desert tortoises will be incidental to the otherwise lawful covered activities associated with the HCP. As described above in *Anticipated Forms of Take of the Mojave Desert Tortoise* of this Findings document, all anticipated forms of take are unintentional and not the purpose of the covered activities, which include actions such as residential and commercial development, grazing, and agriculture. Following handling during clearance surveys, translocations are covered under our Section 6 agreement with the State (FWS 2015).

The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking

Amended HCP

The statutory standard of minimizing and mitigating the impacts of the take “to the maximum extent practicable” under ESA section 10(a)(2)(B)(ii) will always be met if it is demonstrated that the impacts of the taking will be fully offset by implementation of the measures in the HCP (FWS and NMFS 2016, section 9.5). We identified the biological impacts of the taking, and then evaluated whether the conservation measures that the applicant has proposed fully offset impacts of the taking, or if not, whether they minimize and mitigate those impacts to the maximum extent practicable.

We anticipated that destruction or degradation from covered activities in the Amended HCP, with the Northern Corridor changed circumstance, will result in the permanent loss of 62,960 acres of desert tortoise habitat with up to 200 acres of desert tortoise habitat lost within the Reserve. We evaluated how the losses may affect desert tortoise viability in the UVRU. We also evaluated whether Reserve biological values that we describe below are supported under the Amended HCP conservation program and subsequently restored and maintained under the Northern Corridor changed circumstance. Our analysis also included factors that we used to evaluate the ability of the species to survive: desert tortoise reproduction, numbers, and distribution, and we discuss these briefly in *The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild* section below.

To minimize take of desert tortoises, the County would implement several avoidance and minimization measures, as described above and in detail in Chapter 6 of the HCP. In summary, to offset the impacts of the take associated with the permanent loss of habitat, the Amended HCP:

- Carries forward the benefits from establishing a large Reserve of 62,009 acres established in and managed since 1996, based on the 1994 desert tortoise reserve design criteria (FWS 1994),
- Carries forward the benefits from establishing BLM-acquired lands in the Reserve Zones 1 to 5 as a National Conservation Area²,
- Formalizes the addition of 987 acres to the Reserve,
- Continues to prioritize acquisition of the remaining in-holdings from willing sellers with financial help from other HCP partners,
- Dedicates funds toward restoration in the Reserve to address impacts from droughts and wildfires.
- Continues to implement utility development protocols to survey and translocate desert tortoises prior to or during covered activities, and offset impacts in the Reserve according to the Management Oversight Group 1991 ratios (up to 6 to 1), and
- Continues to provide funds for monitoring and management of the remaining unacquired lands, including commitments relating to the Reserve fencelines, litter clean ups, recreation management, law enforcement, community education and outreach, and responses to new threats to the desert tortoises, as funding is available.
- In the event of the Northern Corridor changed circumstance, establishes and manages Zone 6 SITLA lands as part of the Reserve, managed for desert tortoise conservation, which, in cooperation with BLM commitments (BLM 2020, FWS 2021), increase the Reserve by 6,813 acres.
- In the event of the Northern Corridor changed circumstance, provides support to address connectivity across Cottonwood Springs Road in Zone 3.

In 1995, the County used the 1994 recovery plan design criteria as the basis for the Reserve that was established and managed under the previous ITP (Washington County 1995). These Reserve design criteria included consideration of the UVRU distribution, protecting large blocks of habitat (containing large populations), proximity of large blocks of habitat, minimizing fragmentation within blocks, providing for potential interconnectivity between blocks of habitat, maximizing edge to area ratios, and maximizing roadless areas (thus protecting habitat quality and ecological function).

For our analysis of the Amended HCP (FWS 2021a), we used a similar qualitative analysis framework for evaluating the impacts to Reserve design based on updated fundamental concepts of conservation design. Where feasible, we referenced quantitative analyses (see Biological Opinion, FWS 2021a for more details), but we employed a qualitative analysis to evaluate whether intrinsic biological values necessary to sustain a viable population and important to support recovery of desert tortoise in the UVRU are supported and retained in the Reserve.

² The congressionally designated NCA boundary is the entirety of the Reserve but only includes the BLM lands therein. Any BLM-acquired lands within the current Reserve Zones 1 to 5 boundaries would also become part of the NCA.

This approach allowed us to consider to what extent the proposed conservation measures support Reserve integrity, the ability of the Reserve to continue to support desert tortoise recovery in the UVRRU, and thus the ability of the Reserve to offset impacts of the taking associated with the covered activities of the HCP. It also allowed us to evaluate whether impacts seen as likely to occur, such as from the Northern Corridor changed circumstance, can be offset such that the Reserve values remain intact.

General descriptions of Biological Values Evaluated

- *Animals* – A Reserve with animals of all life stages (eggs, hatchlings, juveniles, and adults) in a ratio sufficient to maintain a stable population, population growth, or rebound from population decline. This value inherently includes natural reproduction and can include some level of augmentation, reintroduction, or translocation or introduction activity that leads to a natural self-sustaining, reproducing population. The Reserve design criteria distribution and discussion of protecting large populations generally fall under this value.
- *Size and Area* – A Reserve of sufficient size and adequate distribution within a species' native range or recovery unit to allow for demographic and genetic viability and recovery of the species amidst possible habitat loss or degradation. The Reserve design criterion of protecting large blocks of habitat is described in this Reserve biological value.
- *Intactness* – A Reserve that retains connectedness within the species' native range to allow for ecological function of the species across the landscape and among populations to allow demographic and genetic flow that supports population dynamics and a natural evolutionary trajectory. Intactness allows for some level of movement commensurate with the species life-history and supports the native bio-diversity that the species requires in its range. Habitat corridors are maintained to allow for this natural exchange. The Reserve design criteria of proximity of large blocks and maximizing edge to area ratios are described under this Reserve biological value.
- *Connectivity* – A Reserve that has sufficient connectivity of sufficient habitat blocks such that there is unimpeded demographic movement such as dispersal, seasonal shifts or migration that allows animals to move and disperse to meet life-history needs. The Reserve design criteria of minimizing fragmentation and providing potential interconnectivity between populations are described under this Reserve biological value.
- *Condition* – A Reserve that retains habitat with physical and biological features necessary for breeding, feeding and sheltering to support all life stages. Habitat features can be impacted by changes in local climatic conditions, vegetation community, invasive species, an unnatural increase in predators, or alterations to natural terrain features. The Reserve design criterion of maximizing roadless areas is described under this Reserve biological value.

Evaluation of Biological Values in the Reserve

Animals in the Reserve

To evaluate the number and life-stage representation of animals in the Reserve as it relates to viability, we used the population viability analyses in Appendix C of the 1994 recovery plan. In 1994, we estimated a minimum viable density of 10 adult desert tortoises per square mile. Areas that support less than 10 per square mile required intensive management to achieve population stability (population growth rate near 1). Populations with densities well above minimum (e.g., 30 per square mile) with a positive average population growth rate can be maintained with low variance through steep reduction of extrinsic sources of mortality. As such, small reserves that provide high-quality, secure habitat for 10,000 to 20,000 adult desert tortoises should provide persistence probabilities for the species into the foreseeable future (FWS 1994, Appendix C).

Since establishment in 1996, the Reserve population has exceeded the described density targets in some areas but has been below the abundance targets overall. This discrepancy is in part due to the small size of the UVRU. The highest reported combined abundance of adult desert tortoises in Reserve Zones 2, 3, and 5 was 3,392 (95 percent Confidence Interval [CI]: 2,521 to 4,563) in the year 2000 (UDWR 2018). Zone 1 is not surveyed, and Zone 4 supported low density or no desert tortoises until translocations began in 1999. The 1995 HCP estimated the entire County may have supported 7,883 adult individuals. In 2017, the Reserve supported 44.5 adult desert tortoises per square mile as averaged across transects in the Reserve, which is well above the minimum viable density of 10 adult desert tortoise per square mile (UDWR, FWS 1994, also see *Animals*). Currently we estimate that the Reserve Zones 1 to 5 may currently support 2,341 adult desert tortoises (95 percent CI: 1,684 to 3,294), which includes desert tortoises translocated to Zone 4 (FWS 2021c). Zone 3 supports 75 percent of the Reserve population, 1,749 adults (CI: 1,286 to 2,380). We estimate the UVRU as a whole may support 4,306 adult desert tortoises (95 percent CI: 2,443 to 8,888), approximately two percent of the range-wide population (212,343 adult desert tortoises; Allison and McLuckie 2018). The UVRU as a whole represents 44 percent of the minimum abundance target. This target assumes functional connectivity across the recovery unit which is not yet achieved; however, the Reserve protects more than 50 percent of the UVRU population and the majority of the remaining population occupies BLM land. To reduce road injuries or fatalities (loss of animals), the Reserve includes barrier fencing along roads. The fragmentation effects from roads are discussed below in connectivity.

Due to the small size and fragmented state of the Reserve and the UVRU, this recovery unit likely requires continued intensive management in high-density areas that are maintained with minimized threats. Threats result in greater variability in population growth rate, and even when localized, likely have a disproportionate impact to persistence compared to the same threat in larger units.

The Reserve Zones 1 to 5 are documented as including reproducing adults and recruitment (UDWR 2020). The population has experienced episodic mortality events resulting in an average 3.2 percent annual decline in adults (the monitored age class; Allison and McLuckie 2018). Despite these events, all life-stages continue to be present (eggs, juveniles and adults) in the Reserve and densities remain sufficient to suggest robust population dynamics (UDWR 2020). The densely occupied areas in the Reserve are protected by buffer areas that support

dispersal and other life-history needs for a long-lived, robust species. Each Reserve Zone includes representation of all desert tortoise life stages, reproduction, and recruitment (UDWR 2020). More information is needed on population variables such as fecundity, reproductive rate and recruitment over time (at least one to several generation times) to evaluate population trends and determine causal relationships and severity of impacts from habitat degradation and fragmentation (FWS 2021c).

The Reserve as a whole protects five of the six known relatively large, high-density subpopulations, and is assumed to represent the most robust sub-populations in the UVRRU (e.g., 100 or more adult desert tortoises) (FWS 2021c). The translocation program under the HCP has led to an increase in occupied habitat and to the successful conservation of desert tortoise in Zone 4. There is potential for the translocation program to lead to more occupied habitat and increased abundance within the Reserve as animals are cleared and moved to available unoccupied or low-density areas in the Reserve.

We calculated that the loss of home range and habitat from the HCP covered activities during the permit term may result in removal of approximately 351 adult desert tortoises to other areas. We estimate there may be up to 2,282 sub-adults associated with the habitat and that less of these will be detected and moved. The loss of adult animals and their habitat from their home ranges could reduce desert tortoise abundance and affect reproductive output of the population overall. Based on recruitment, sub-adults contribute less to the population per individual compared to adult life-stages (FWS 1994), thereby diminishing the level of impact to the population from their taking. To minimize impacts, the County will survey and clear desert tortoises from areas where covered activities would occur. Animals are known and expected to survive and continue to breed after being moved to new areas during clearance activities, as evidence from the success of the Translocation Program over the past 25 years (UDWR 2018). These successful translocation efforts have resulted in the repopulation of an area within the Reserve (Zone 4) where the animals continue to breed, feed, and shelter. Thus, impacts to the number of animals and breeding in the UVRRU should be minimized through implementation of the Amended HCP conservation measures. In section 5.4.1, the Amended HCP also describes that the protection of the Reserve population to conserve desert tortoise (including their abundance and reproduction) over the past 25 years occurred in advance of impacts from covered activities. The implementation slows the rate of impact such that the population can continue to breed, feed, and shelter in some of the Amended HCP take areas. Although this benefit has not been quantified it can reasonably be expected to occur. Overall, the County's clearance and translocation commitments and their protection of the Reserve minimize and mitigate impacts of the taking associated with the number of animals available to contribute to reproduction and sustainable population dynamics.

Animals in the Reserve with the Northern Corridor changed circumstance

In the past decade, an area of desert tortoise habitat outside the Reserve was found to support a relatively high-density sub-population of desert tortoise occupying an area larger than previously suspected. Surveys of this sub-population added to the known distribution of desert tortoise in high-density habitat in the UVRRU. The proposed Zone 6 includes 6,813 acres in and adjacent to this habitat and supports the majority of the surveyed and known high-density habitat. Zone 6 will be added to the Reserve in the event of the Northern Corridor changed circumstance as described in the HCP (section 9.1.1.1) thereby including another sub-population into the Reserve

managed for protection in perpetuity. Zone 6 is estimated to include 361 adult desert tortoises and is considered to include all life stages (Washington County 2017). Because Zone 6 is currently not directly connected to the rest of the Reserve through protected areas and is somewhat geographically separated, the sub-population adds redundancy and representation to the overall Reserve population.

Size and Area

The Reserve is in the UVRU and at the northeastern edge of the species' native range. Other protected areas exist across the species' range and in Washington County (e.g., Beaver Dam Slope NCA). Within the UVRU, we identified 11 analytical units (AUs) distributed in a ring-like pattern around St. George metropolitan areas, that have some known occupancy of desert tortoise sub-populations (FWS 2021c). The size of the Reserve Zones 1 to 5 is approximately 62,009 acres, an increase in 987 acres from the original 1995 Reserve boundaries, with approximately 40,000 acres of suitable desert tortoise habitat. Covered activities would result in habitat loss on up to 200 acres within the Reserve, or less than 1 percent of suitable desert tortoise habitat. Outside the Reserve, covered activities would occur on 66,101 acres of potentially suitable habitat resulting in its permanent loss, 20.3 percent of the modeled suitable habitat in the UVRU and 0.4 percent of the habitat range-wide. Covered activities would not substantially affect the distribution of the desert tortoise in the UVRU and would not affect the distribution across the species range. Furthermore the Reserve has a size and covers an area that allows sufficient buffers that minimize edge effects. The Reserve size and shape minimize and mitigate the impacts of the taking by protecting a large contiguous block of habitat, including the majority of the known population in the UVRU.

The loss and degradation of 633 acres of undeveloped designated critical habitat from the covered activities outside the Reserve and up to 200 acres inside the Reserve is 1.6 percent of desert tortoise critical habitat in the UVRU less than 1 percent across the species' range (16.9 million acres; Allison and McLuckie 2018). However, most of these areas outside the Reserve have been cleared under the 1996 ITP and support low densities of, desert tortoises, if any.

The size of a reserve is optimally designed to minimize edge effects with a size and shape sufficient to allow natural movement and conditions within it. Habitat patches that minimize edge to area ratios are superior to those that do not (FWS 1994). The Reserve design minimizes edge to area ratios by protecting the largest contiguous habitat given existing and proposed roads and ROWs that were already part of the Reserve design in 1995. Edge effects and fragmentation are minimized through the utility development protocols that consider the Reserve an avoidance area where only small impacts can occur. Those small impacts that do occur are offset with acquisitions or measures that otherwise support size and area values (HCP p. 55). In addition, the County ensures that edge effects from existing ROWs are minimized through weed control, litter management, and other measures, thereby supporting biological values of Intactness and Condition (see HCP Table 18).

Size and Area of the Reserve with the Northern Corridor changed circumstance

The Northern Corridor changed circumstance would cause a total loss of 276 acres of Zone 3 with highway construction and habitat loss and degradation on approximately 2,343 acres in the Reserve. Edge effects would increase in the portion of Zone 3 fragmented by the highway.

The addition of Zone 6 would add 6,813 acres that contains the necessary physical and biological features to support breeding, feeding, and sheltering (Washington County 2017), 0.04 percent of the habitat range-wide. Although not designated critical habitat under ESA, the additional acreage is more than 10 times that directly lost to the highway and two to three times that of the area fragmented and degraded by the highway. Edge effects in Zone 6 are minimized by its oval shape allowing a core of protected land.

Federal lands as well as an BLM-administered Area of Critical Environmental Concern provide some protections for part of the large sub-population in and adjacent to the proposed Zone 6. The addition of Zone 6 would add another relatively large block of contiguous habitat, increasing the size of the Reserve substantially. Assuming habitat fragmentation barriers can be overcome within and between the Reserve sub-populations, the Reserve is a sufficient size and covers substantial area within the UVRU to support desert tortoise demographic and genetic population targets for recovery if managed for conservation. The addition of Zone 6 would further improve this Reserve biological value.

Intactness of the Reserve

Intactness is the ability of the Reserve to retain a level of connection with surrounding range of the species that allows for gene flow that supports the species natural evolutionary trajectory. Similar to size, minimizing the edge to area ratio helps support the intactness of the Reserve within the species range. Reserve Zones 1 to 5 are either geographically connected or relatively close together such that intactness is retained to some degree in the UVRU through surrounding occupied habitat, although there is a risk of loss or diminished conservation value of surrounding areas with increased development pressure. Overall, the Reserve with Zones 1 to 5 lacks a level of intactness with the species' range to the west. This hinders the potential for genetic exchange across the species range, and further human development can effectively isolate the Reserve particularly if there is potential for land management and jurisdictional changes consistent with community growth goals. Although the current land surrounding the Reserve is relatively intact and to some extent retains biological function, that could change as the County continues to develop.

Intactness of the Reserve with the Northern Corridor changed circumstance

The addition of Zone 6 would substantially add to intactness of the Reserve with the species range to the west in addition to being contiguous with a large occupied habitat block in the Green Valley AU. Challenges to connectivity with Zones 1 to 5 and intactness of the UVRU are substantial and the potential for desert tortoise habitat in Zone 6 to remain intact with the encompassing Green Valley AU and nearby Northeast Mojave recovery unit (NEMRU) through movement corridors over or around the Beaver Dam Mountains to the west provides value not achieved in the Reserve without Zone 6. The NEMRU is contiguous with other recovery units and with most of the species range to California and south to Mexico. The importance of this value to the UVRU is critical (FWS 2021c) and if achieved, any compromise to this intactness in the future should be minimized. Conservation actions in the future should emphasize the need to identify, maintain and protect movement corridors with range to the west. The ability for the Reserve to achieve intactness with the species' range is one of the most important aspects of Zone 6 in addition to the high-density population that resides there, particularly as the Washington County community continues to develop and expand westward into the future.

Connectivity

Habitat that occurs in less fragmented, contiguous blocks is of greater biological value than habitat that is fragmented (FWS 1994). Contiguous habitat blocks support demographic and genetic connectivity. For desert tortoise, which are long-lived and slow moving, genetic connectivity can be achieved with very limited exchange but demographic connectivity which allows for natural seasonal movement and life-history dispersal requires a higher level of porosity across barriers.

In the UVRU, connectivity allows some movement within and among AUs (FWS 2021c) naturally to meet their life-history needs and maintain their natural evolutionary trajectory. Barriers to connectivity throughout the UVRU include roads, fences, developed areas, rivers, mountain ranges, agricultural areas, or any intervening stretches of land unsuitable for desert tortoise and large enough to deter desert tortoise dispersal between analytical units (FWS 2021c). Low connectivity that allows movement between sub-populations affects resiliency by reducing rescue effects (repopulating an area after a population decline) and by increasing the risk of reduced genetic flow and long-term loss of genetic diversity. The Reserve design and management prioritizes protecting the largest contiguous blocks possible and minimizing fragmentation effects. However, some highest density areas in Zone 3 are completely disconnected east and west by roads. This includes the north-south running Cottonwood Springs Road and other roads that prevent movement across them. Passage across these roads would facilitate natural dispersal, promote reproductive matings, and allow dispersal of maturing desert tortoises to seek territories, forage, or adequate physical habitat commensurate with their life-stage changes.

Over the last 25 years, the HCP partners have minimized and mitigated fragmentation through the installation and monitoring of eight culverts designed specifically for desert tortoise dispersal on Red Hills Parkway (five culverts) and Tuacahn Drive (three culverts) (FWS 2021c). Some use of culverts by desert tortoise has been documented, but more data is needed to evaluate the effectiveness of these structures to support a more natural level of desert tortoise demographic dispersal and other movement needs (FWS 2021c). We note that some unknown level of human assisted migrations may also occur as desert tortoises are moved by the public out of harm's way. Given these passages, we determined in our biological report that connectivity within the Reserve was in poor to moderate condition within some sub-population areas (Zone 1 and 2) and in good condition in others (Zone 3 east of Cottonwood Springs Road) (FWS 2021c). Overall, the Reserve retains a rating of moderate for contiguous habitat within each AU, though connectivity across barriers such as fenced roads could be improved.

Because the AU sub-populations are generally considered too small to support a viable population as isolated units, connectivity to adjacent sub-populations is critical over time to support recovery. The Reserve currently comprises five of these sub-population AUs in close proximity or in connection to each other. The five AUs that overlap with portion of the Reserve do not align spatially with Reserve zones (Snow Canyon AU includes Zone 1 and 2 while Zone 3 is broken into two separate AUs). While the Reserve AUs represent less than half the AUs in the UVRU, the Reserve includes part or the entirety of AUs that were known to be densely occupied in 1995, thereby protecting most of the known desert tortoise distribution at the time. These AUs are also considered some of the most densely populated habitat throughout the species range, although the density varies spatially within and among AUs.

The 1994 recovery plan states that interconnected blocks of habitat are better than isolated blocks, and corridors or linkages function better when the habitat within them is represented by protected, preferred habitat for the target species (FWS 1994). Connectivity between Reserve AUs and between the Reserve and the NEMRU is possible but may be difficult within other parts of the UVRRU. The Reserve currently operates primarily as five isolated, but protected, blocks of habitat. With passages across Cottonwood Springs Road, the connectivity value of Zone 3 will be improved. The Amended HCP also promotes the need to retain or restore connectivity within the Reserve through the utility development protocols which are intended to minimize and mitigate impacts to connectivity and desert tortoise distribution inside and outside the Reserve from covered activities.

Connectivity of the Reserve with the Northern Corridor Changed Circumstance

The Northern Corridor highway would undermine connectivity values in one of the most important high-density areas in Zone 3 of the Reserve. The highway would effectively isolate a segment of Zone 3 south of the highway to the Reserve south boundary that is about 1,340 acres. This substantial impact could have significant impacts to the sub-population in Zone 3. Desert tortoise passage structures (two bridges spanning washes and at least six additional passage structures) are included by UDOT in the highway design, along with a commitment to evaluate passages on SR-18. These commitments will offset some of the fragmentation impact but not all. In the Amended HCP, upon issuance of the Northern Corridor ROW, the County commits to funding \$150,000 toward desert tortoise passage on Cottonwood Springs Road, an existing, north-south running, fenced road that currently bisects Zone 3. The County further commits in the Amended HCP to support research and implement adaptive management about effective passage structures so that any efforts to restore connectivity in Zone 3 across both the Northern Corridor and Cottonwood Springs Road can be maximized to achieve biological outcomes. Successful biological outcomes would improve connectivity and support this critical biological value in an important part of the Reserve.

The addition of Zone 6 would support additional opportunities for connectivity among Reserve Zones 1 to 5 and 6 or within occupied habitat and through potential corridors that connect the UVRRU to the rest of the range of the species to the west.

In the Amended HCP, the County will minimize and mitigate impacts to connectivity and distribution outside the Reserve from covered activities through adding or supporting construction of passage on existing barriers and supporting adaptive management to ensure effectiveness of passage structures. Other measures to support Reserve connectivity include monitoring, adaptive management, and implementation of the utility development protocols.

Condition

Condition refers to the physical and biological features necessary for breeding, feeding and sheltering to support all life stages. This can include conditions related to local climatic conditions, vegetation community, invasive weed species, geo-physical attributes such as soil or terrain, as well as an unnatural increase in predators, or alterations to natural terrain features that support desert tortoise survival.

The 1994 recovery plan states that blocks of habitat that are roadless or otherwise inaccessible to humans are better than roaded and accessible habitat blocks (FWS 1994). Minimizing accessibility from roads helps retain habitat condition and supports ecological function that might otherwise be impacted (e.g., invasive species conduits, trail braiding, and dispersal). While the Reserve includes several existing roads, the HCP conservation program supports desert tortoise ecological function (e.g., range, biodiversity, and dispersal) by maintaining habitat conditions. Among other things, the Reserve avoids and minimizes impacts to habitat condition by protecting habitat, restoring habitat, implementing weed control along existing roads, organizing litter clean-up efforts, encouraging landfill use, managing and limiting access, minimizing new utilities and ROWs, requiring new utilities that do occur minimize and offset their impacts, and employing law enforcement and education strategies.

We evaluated the current condition or ecological function of each AU in the UVRRU to support individual desert tortoise and sub-population needs (FWS 2021c). The current condition evaluation was based on habitat quality, habitat quantity, and demographic values. The five Reserve AUs, included the two Zone 3 AUs, are in Moderate condition, primarily due to size constraints, existing barriers, and the increase of invasive weed species. The UVRRU is considered in Moderate condition overall for ecological function. This overall condition of the UVRRU strongly reflects the Reserve condition.

Fires that have increased due to the establishment of invasive grass species (red brome and cheatgrass) has shortened and intensified fire cycles in the Reserve and exacerbated the dominance of invasive weeds. Some studies have shown nutritional deficiency in desert tortoises due to the loss of native Mojave Desert vegetation community species (Tracy et al. 2004, Abella and Berry 2016, Drake *et al.* 2016). Post-fire restoration and fire management activities are a commitment in the Amended HCP and will be included as part of adaptive learning through the adaptive management program. Post-fire restoration is a critical conservation action to offset losses and potential impacts from fire to desert tortoise populations in the Reserve. These actions help to offset the impacts by improving desert tortoise abundance and recruitment by through better habitat condition. However more restoration work is needed to fully ameliorate this threat and to ensure restoration efforts are successful. The Amended HCP includes Habitat and Fire Management Guidelines that were originally developed at the direction of the HCP advisory committee to respond to the wildfires and habitat degradation in the early 2000's. The 1996 HCP adaptive management process that resulted in the development and implementation of these guidelines is being carried forward in the Amended HCP.

In addition to the continued funding for monitoring desert tortoise population trends on non-Federal lands in the Reserve to adaptively manage conditions, the County has also initiated a raven monitoring program to evaluate impacts to the desert tortoise population and develop a management response.

Condition of the Reserve with the Northern Corridor Changed Circumstance

An additional road in Zone 3 is likely to contribute to further habitat degradation near and in the vicinity of the proposed road due to invasive weeds, predators being drawn to the ROW with litter accumulation, roadkill carcasses and other anticipated negative effects. These effects can be compounded by additional edge effects that come with roads.

Habitat condition in Zone 6 will be improved through management that emphasizes the conservation of desert tortoise such as fencing, trail closures, and recreation management changes. Although nearly half of the area is already managed by BLM for the protection of federally listed plant species, which likely also benefits desert tortoise, the SITLA-administered lands in Zone 6 are in a diminished condition currently. Desert tortoise will certainly benefit from management on these lands that improves habitat condition over time. Actions to improve habitat would include trail designation, grazing permit acquisition, application of the development protocols on non-Federal lands, signage, law enforcement, and habitat restoration. The County would install fencing in human conflict areas and reduce trails to approximately 50 miles, within 5 years of ROW issuance. They will also increase community education (including signs) and fund law enforcement activities in Zone 6. Overall, the condition of Zone 6 habitat which already supports a relatively high-density sub-population of desert tortoise is expected to improve through its inclusion in the Reserve.

Overall, the County will minimize and mitigate the impacts from habitat loss and degradation by supporting habitat and fire management efforts in the Reserve and supporting the work of HCP Partners on post-fire restoration. Habitat restoration is seen as a critical conservation activity to support recovery of population numbers after episodic losses of desert tortoise individuals due to stochastic events such as fire and drought.

Red Cliff Desert Reserve and Amended HCP as continued mitigation for incidental take

The Red Cliff Desert Reserve was designed to support and protect desert tortoise in perpetuity and would do so only through the retention of certain intrinsic biological values. The Reserve Zones 1 to 5 have been the primary focus of the UVRU strategy under the 1995 HCP. The Amended HCP continues to include the establishment and management of the Reserve as the primary conservation program and focuses on minimizing and mitigating the impacts of the taking through other measures. This Reserve was designed to support most known high-density areas in the UVRU and assumes that areas outside the Reserve are considered to be primarily low-density and of lower biological value (FWS 2021c). Overall, the Reserve supports more than 50 percent of the UVRU population. As discussed above, neither the Reserve nor the UVRU have supported the minimum target abundance as defined by 1994 recovery plan but does include important areas of some of the high-density habitat in the range of the species. Although the UVRU as a whole is highly fragmented and of a relatively small size with a corresponding relatively small population size, the Reserve retains quality habitat that supports one of the most important high-density populations in the range of the species. In light of this combination of attributes, the UVRU has required intensive management since 1996 and will likely continue to require a level of intensive management in addition to protection of Reserve lands in perpetuity.

Given the robust population demographics described in *Animals* above (high densities, all life stages), the population may be able to overcome episodic declines in abundance caused by wildfires and may be otherwise stable, though more data is needed to understand the long-term effects of stochastic events and episodic loss of individuals. In the meantime, managing habitat impacted by these events through restoration can promote viability of this recovery unit, especially in Zone 3 of the Reserve (FWS 2021c). Even with improved management, a reserve with the current population of approximately 2,000 adult desert tortoises is considered too small to withstand demographic stochasticity without active management (FWS 1994:C36); as such,

the Reserve requires continued intensive management and improvements to connectivity between AUs across the UVRU over the term of the permit and into the future.

Reserve with the Northern Corridor continues to mitigate for take

The Northern Corridor changed circumstance would impact the conservation program of the Amended HCP in an area where desert tortoise numbers are already noted as declining due to habitat degradation and episodic loss from fire and drought (Allison and McLuckie 2018, UDWR 2020). In response, the Northern Corridor changed circumstance includes County commitments and the proposed project design includes conservation measures intended to maintain Reserve biological values as described above that, with continued intensive management of the Reserve, would be likely to support a viable population of desert tortoise and would support the potential for recovery in the UVRU in the future. In addition to conservation commitments from the County described in the HCP, additional measures are detailed in the Northern Corridor Biological Opinion (FWS 2021b) and briefly described below as part of the baseline considerations associated with the changed circumstance. We also determined that Zone 6 is important to the UVRU as it supports the largest known abundance of desert tortoises outside the current Reserve (eight percent of the UVRU population). Furthermore, the protection and restoration of this area supports intactness and connectivity within the species range through movement corridors with the NEM recovery unit and thereby the species range-wide (FWS 2021c). Overall, under the changed circumstance of the Northern Corridor, impacts are anticipated, in particular to intactness, connectivity, and habitat condition, but the addition of Zone 6 into the Reserve, along with the committed actions below that support desert tortoise passage and habitat restoration, collectively offset the impacts and add critical biological values by increasing contributions to animals in the Reserve, Reserve size and area and a level of intactness with the range of the species that is not otherwise easily achieved.

Although the Northern Corridor is expected to impact the conservation value of the Reserve through habitat degradation, fragmentation, and loss, affecting animals and intactness through disruption of dispersal pathways or nesting grounds, the following fully offsets these impacts:

- 1) the Northern Corridor applicants (BLM and UDOT) committed to measures that minimize and mitigate some of these effects (see FWS 2021b and section *The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild*), and
- 2) the County's commitments for habitat improvements within the Reserve and improved passage on an existing road within Zone 3 support the values of animals, intactness, connectivity, and condition.
- 3) the County's commitments to establish, protect, and manage Zone 6 support the values of animals, size and area, intactness, connectivity, and condition.

Upon issuance of the ITP, the County will create a land acquisition subcommittee tasked with prioritizing and facilitating acquisition transactions (Amended HCP p. 82). To fulfill the HCP's mitigation commitment to establish and protect approximately 6,800 acres of occupied desert tortoise habitat, when the ROW grant is issued the County will coordinate with the FWS, BLM, and SITLA, to acquire, protect, restore, and maintain habitat in Zone 6 for the desert tortoise in perpetuity. The County commits to the immediate acquisition of 450 acres, in Zone 6 (see *The*

applicant will ensure that adequate funding for the conservation plan and procedures to deal with Unforeseen Circumstances will be provided). Other HCP Partner commitments relating to Zone 6 management are described more fully in our Northern Corridor Biological Opinion (FWS 2021b) and include land acquisition (SITLA, BLM, and UDNR), RMP Amendments that reduce stressors in Zone 6 such as grazing and OHV (BLM), and desert tortoise monitoring (UDWR). We are confident in SITLA's commitment to allow their lands in Zone 6 to be managed for conservation purposes during the permit term or until acquired based on their demonstrated commitment as an HCP Partner and good faith commitments over the past 25 years within Reserve Zone 3.

The Amended HCP also includes County commitments to monitor and manage Zone 6. Under the changed circumstance, the County will provide funding to UDWR to survey Zone 6 with similar line distance sampling and transects as has been done in other Reserve Zones. The County also commits to reducing hiking and biking trails, installing fencing, restoring habitat, increasing law enforcement presence, installing interpretative signs, and surveying and remove desert tortoises prior to and during any of the within-Reserve covered activities in Zone 6. As such, the habitat loss and degradation impacts to animals are minimized in Zone 3 through fire and habitat management contributions and through the protection, management, and restoration of Zone 6.

Conclusion

Overall, the County minimizes and mitigates impacts from covered activities to desert tortoises and habitat in the Reserve, including Zone 6, through establishment and management of the Reserve in advance of the taking, the utility development protocols (and fence maintenance, law enforcement, etc.), translocating desert tortoises prior to or during covered activities into areas that may support recovery, and adding resources to Zone 3 intended to improve habitat quality and dispersal needs, with the intention to improving population dynamics. The offsite Zone 6 area provides redundancy and intactness among the UVRRU and the range of the species to the west. Zone 6 further protects the majority of the largest known sub-population outside the current Reserve. For a full analysis of the Northern Corridor impacts, see our separate Biological Opinion (FWS 2021b).

For the reasons described above, we determine that the continued intensive management of the Reserve by the County will support the biological values necessary for the viability of desert tortoise population and its recovery in the UVRRU under the Amended HCP with or without the Northern Corridor changed circumstance. The FWS further determines that the HCP Conservation Program implementation is commensurate with the level of impacts of take from the covered activities and that the minimization and mitigation measures, especially those in Zone 3 and Zone 6, fully offset the biological impacts to the desert tortoise and to the Reserve biological values. Through the implementation of the HCP, the County will, to the maximum extent practicable, minimize and mitigate the impacts of the taking.

The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided

The FWS has determined that adequate funding is ensured for Washington County to fully implement the HCP and procedures are in place to deal with unforeseen circumstances. The County estimated its implementation costs based on a review of the 1995 HCP budget, recent Annual Work Plan budgets, and considerations for biological needs addressed through adaptive management and changed circumstances. For the past 25 years, the County has been able to produce revenues each fiscal year sufficient to fund annual operating expenses, as detailed in chapter 8 of the HCP. This financial history supports assurances that the County will continue to collect and distribute funds to implement the Amended HCP. In Table 20 of the Amended HCP, the County lists estimated budget allocations and staff time for items such as HCP administration, land acquisition, and conservation measures (e.g., fencing, translocation, and habitat restoration). Table 18 in Chapter 6 outlines the rationale connecting these funded conservation measures and expected biological response to the stressors anticipated to result from the covered activities. Actual budgeting for implementation of this Amended HCP will occur through the Annual Work Plan process, and both the budget line items and their associated costs in any given year may change (increase or decrease) over the course of the ITP Term. The County assures that funding will be available to implement this Amended HCP up to the level approximated in Table 20 in Chapter 8 of the Amended HCP. The funding committed is nearly \$12 million for the HCP and most changed circumstances and an additional \$16 million dollars in total under the Northern Corridor changed circumstance). The total expenses are estimated considering an annual rate of inflation consistent with the average for the 25-year period between 1994 and 2019 (i.e., 2.1 percent).

In addition to the above funding, the County has committed an additional \$2.3 million to purchase approximately 450 acres in Zone 6 in the event of the Northern Corridor changed circumstance. The Amended HCP further states that “the County intends that the lands acquired with these funds be considered, in full or in part as determined through negotiations between USFWS and UDWR, to be compensation for the lost conservation value of [Northern Corridor] affected lands in Reserve Zone 3 that were acquired with the support of ESA Section 6 grant funds” (HCP p. 131). This funding and land acquisition would further support the County’s contributions to offset impacts from the Northern Corridor changed circumstance. However, procedurally, the HCP Land Grant program must be evaluated according to the process and criteria of that program which includes the State of Utah as holding title to these lands. The FWS cannot make a decision on land grant effects and compensation needs prior to a decision on the Northern Corridor that would impact the conservation value of the Section 6 lands. When impacts to these lands are evaluated after the ROW grant is issued, we would follow the process of the grant program to determine loss of conservation value as impacted by the Northern Corridor project and to determine or agree to any compensatory value or action.

In Chapter 8, the HCP provides details on the funding mechanisms the County will use to ensure adequate funding for costs related to the implementation of the HCP, herein incorporated by reference. The County’s financial processes rely on a fee associated with building permits issued throughout the County for residential, commercial, or industrial construction projections within the County or Municipal Partners’ jurisdictions. The County created an interest-bearing HCP Trust Fund to collect the transferred fees and other funds made available for implementation of

the Washington County HCP. The fee is a 0.2 percent construction fee, which naturally adjusts with inflation and is committed to in the Implementation Agreement and will be included in the updated Interlocal Agreements (see *Permit Area and Duration*). The County has assured that this fee would only be lowered if they hold a surplus equivalent of three years of HCP implementation costs at inflation-adjusted average annual budget estimate. If the fee becomes insufficient to cover the average annual budget, the County and Municipal partners can increase the fee as well.

The County will fund implementation of the Amended HCP using its operating budgets in areas where they or the Municipal Partners have jurisdiction. In some cases, the County may contribute funds or staff resources toward actions outside their jurisdiction (e.g., if post-wildfire restoration funds are not sufficient from the Federal and State partners, the County may on a case-by-case basis contribute funds to these projects). We note that several conservation measures designed to achieve the biological goals and objectives in the Amended HCP rely on other HCP partners and cannot be guaranteed by the County (e.g., habitat restoration commitments). These commitments are included in the IA, but only the conservation measures funded by the County can be used to assess funding assurances.

In the event that the County is unable to meet all or part of its funding obligation, the County will enter into discussions with FWS to discuss feasible alternatives which can accomplish the requirements as stated in this Amended HCP or further amend the HCP. Compliance monitoring of the HCP will continue through quarterly and annual reports that will provide adequate evidence of the County's ability to fulfill its obligations under the implementation of the HCP.

Unforeseen circumstances are changes in circumstances that affect a species or geographic area covered by an HCP, were not or could not be anticipated, and result in a substantial and adverse change in the status of a covered species (50 CFR 17.3). Changed circumstances are changes that affect a species or geographical area covered by an HCP, the applicant and FWS can reasonably anticipate and can be planned for during development of the HCP (50 CFR 17.3). To the extent these changed circumstances are provided for in the HCP's operating program, the permittee is required to implement the appropriate measures identified in the HCP to respond to the changed circumstances. The "No Surprises" rule, codified at 50 CFR 17.22(b)(5), provides assurances to permittees that, as long as a permittee is properly implementing and funding the HCP and the permit, the FWS will not require any additional commitment of land, water, or financial compensation during the permit term for species that are adequately covered, nor will it impose additional restrictions on the use of land, water, or other natural resources beyond those specified in the HCP without the consent of the permittee. The "No Surprises" assurances apply to only species adequately covered in the HCP and when changed or unforeseen circumstances occur. In the event that unforeseen circumstances occur, the FWS would notify the County to coordinate potential procedures to address them. The FWS may require additional measures of the County where the HCP is being properly implemented only if such measures are limited to modifications of the HCP and maintain the original terms of the HCP to the maximum extent possible.

Chapter 9 of the HCP identifies several changed circumstances, including approval of the Northern Corridor, wildfire in the Reserve, exceptional drought, desert tortoise disease, private lands in the Reserve become developed, non-participating municipalities, delisting of the Mojave desert tortoise, and new listed species or critical habitat changes in the plan area. Changes in circumstances not identified in Chapter 9 of the HCP and that substantially alter the status of the desert tortoise are considered unforeseen circumstances. The HCP describes provisions to address the identified changed circumstances and also relies on specific measures in the adaptive management framework in chapter 6.3.3 of the HCP, which are herein incorporated by reference.

One of the most critical changed circumstance funding assurances relate to the Northern Corridor and wildfire changed circumstances, as these changed circumstances would have the greatest impact to the biology of the species in the UVRU. The assured funds for these, and other, changed circumstances are included in Table 20 under the 'Northern Corridor Changed Circumstance' and 'Other Changed Circumstances' headings respectively.

- The Amended HCP includes \$5,000 for Reserve habitat and fire management and an additional \$10,000 a year (\$15,000 total) is allocated for Reserve habitat and fire management under the Northern Corridor Changed Circumstance column as a recognition of the additional non-Federal habitat that could be affected by wildfire in Zone 6 (HCP, p. 121). An additional \$750 a year is allocated for Reserve habitat and fire management under the Other Changed Circumstances such as wildfire on any non-acquired Reserve lands (HCP, p. 121). The HCP notes that wildfire events on already acquired lands will be addressed by the agency that has management over that land (as is the case with the wildfires in 2020). In addition, the County would be able to contribute other discretionary funds from the HCP budget through adaptive management and the Changed Circumstances contingency funding to apply on non-acquired Reserve lands. For example, in response to the wildfires in Zone 3 in 2020, the County's 2020 and 2021 budgets include \$30,000 each year that can be used anywhere in the Reserve, including Zone 3 Federal lands. This sum may reduce the amount available in future years but is nearly double that of the Table 20 sample budget. In the event of multiple fires over several years and budgeted monies expended, the County will work with the HCP Partners to identify other funding opportunities to continue to support this commitment. The Amended HCP also states that no party will be at fault if additional funding is not obtained after good-faith efforts to seek additional sources (HCP p. 138).
- To address habitat fragmentation, the County will make available approximately \$150,000 within 5 years of issuance of the ROW for the Northern Corridor, to be used for improving connectivity across Cottonwood Road through the addition of desert tortoise passages. The County and the HCP Partners also commit to seek other sources of funding to help improve connectivity within the Reserve.
- The Amended HCP commits to funding changed circumstances as agreed upon in the adaptive management program (Table 20 in the Amended HCP). This includes \$338,214 total over the 25 years.
- The Amended HCP includes \$2.3 million for acquisition of approximately 450 acres of land in Zone 6.

The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild

The FWS finds that the taking to be authorized under the proposed permit will not appreciably reduce the likelihood of the survival and recovery of the desert tortoise in the wild. The ESA's legislative history establishes the intent of Congress that this issuance criterion be identical to a finding of "no jeopardy" pursuant to section 7(a)(2) of the ESA and its implementing regulations (50 CFR 402.02). The regulatory definition of likely to jeopardize is "...to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."

We analyzed and described the likely adverse effects to the desert tortoise from issuance of the ITP resulting in the implementation of the Washington County HCP, which includes the Northern Corridor changed circumstance (FWS 2021a). In the Amended HCP, the County defines "the establishment of the Reserve is the primary conservation measure of the 1995 HCP that offsets the impacts of incidental take cause by the Covered Activities" (HCP p. vi). We evaluated this conservation strategy in terms of the Reserve biological values and updated biological information (section *The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking*) and under the Northern Corridor changed circumstance that is likely to occur. In this section, we evaluate if the Reserve is sufficient to ensure the taking will not appreciably reduce the likelihood of survival and recovery in the wild by briefly reviewing the effects of the take on reproduction, numbers, and distribution to the species range-wide.

The purpose of the analysis in our intra-Service Biological Opinion was to assess the effects of the Amended HCP to reproduction, numbers, and distribution when combined with the status of the species, the environmental baseline, and any identified cumulative effects in order to form an opinion as to whether this action would be likely to jeopardize the continuing existence of the desert tortoise. We evaluated the status of the desert tortoise in the UVRU, because it is one of five recovery units identified as essential to the recovery of the species (FWS 1994 and FWS 2011), and we considered the impacts to the species range-wide. We reviewed the HCP in accordance with ESA section 7 procedures and the status of the species range-wide and determined in its Biological Opinion, herein incorporated by reference, that the desert tortoise would not be jeopardized by the issuance of the permit and implementation of the HCP. We further found that critical habitat would not be adversely modified.

Reproduction

As described in *The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking*, we anticipate that habitat losses from the HCP activities during the permit term would prevent desert tortoise reproduction in those areas. In addition, the Northern Corridor changed circumstance may impact breeding in Zone 3 through disruption of nesting grounds, dispersal pathways, or decreased recruitment as described in our separate Biological Opinion (FWS 2021b).

As the HCP applicant, the County will minimize impacts to reproduction from covered activities by as discussed in *Animals in the Reserve*, above (e.g., clearing and translocating animals, desert tortoise passages on existing roads, habitat improvements). As the ROW applicant, UDOT will minimize impacts to reproduction as discussed in our Northern Corridor Biological Opinion (FWS 2021b) (e.g., passageways in the highway design, translocating outside the ROW where individuals will remain in their home range and continue to reproduce). Given these minimization and mitigation commitments by both applicants, breeding and reproduction in the UVRU should not be appreciably reduced by implementation of the HCP and thus the status range-wide should also not be appreciably reduced.

Numbers

The covered activities on 62,960 acres is anticipated to result in take of 351 adult desert tortoises from death, injury, or translocation (Table 1). This represents 19 percent of the estimated desert tortoise habitat in the UVRU and 8 percent of the estimated UVRU desert tortoise population (Table 1). Density estimates indicate the Reserve with Zone 6 supports all of the known high-density, high-abundance sub-populations in the UVRU. Thus, while the HCP would remove nearly 20 percent of the habitat in the UVRU, the Reserve with Zone 6 protects approximately 60 percent of the estimated population (FWS 2021c). The Northern Corridor may impact 21 percent of the Zone 3 sub-population and 8 percent of the UVRU. We estimate that Zone 6 supports eight percent of the UVRU, which is equivalent to the eight percent affected by the highway. As described above, we used a qualitative analysis that evaluated the Reserve biological values to consider these numbers in context of the species' biological needs for persistence.

We estimate the UVRU represents approximately two percent of the range-wide population (212,343 adult desert tortoises; Allison and McLuckie 2018) and 2.8 percent of suitable habitat range-wide. We expect the range-wide impacts from the take associated with covered activities in the Amended HCP with the Northern Corridor Changed Circumstance to be minor (FWS 2021a, FWS 2021b).

The Reserve population has consistently been considered lower than at establishment and is now approximately 44 percent lower than the minimum abundance target set by the recovery office in 1994 (see *Animals in the Reserve*). Managing invasive weeds, fire prevention and response, and committed long-term restoration is a high priority committed to in the HCP and is included in the IA. These commitments and program direction provide opportunities to minimize the population growth rate variability and stabilize or allow growth of the desert tortoise population in the UVRU. We further expect that the HCP Conservation Program will have a beneficial effect to desert tortoise numbers through establishment and management of a Reserve in perpetuity that supports recovery in the UVRU and range-wide and adds 361 (208 to 642) desert tortoises to the number of individuals protected in the Reserve.

Distribution

As discussed above in *Size and Area*, desert tortoise distribution in the UVRRU would not change as a result of the Covered activities in the Amended HCP. The Northern Corridor may affect distribution on the landscape through impacts to the Reserve biological values (animals, size, intactness, connectivity, and condition). The conservation measures included in the highway design minimize potential impacts to distribution.

The Amended HCP take areas and the Northern Corridor represent 0.4 percent of the species' range-wide distribution that is likely to be lost. The Reserve and proposed Zone 6 would protect the range-wide distribution on 0.04 percent of habitat and 1.3 percent of the species across its range (FWS 2021b).

Biological Values

As described above, we primarily evaluated the impacts and benefits from the Amended HCP with the Northern Corridor changed circumstance to the Reserve biological values: animals, size, intactness, connectivity, and condition (Table 1). In Table 2 below we include the applicant committed conservation measures from the Northern Corridor ROW consultation that help ensure that the ROW as a standalone project would not jeopardize the desert tortoise or adversely

Table 2. Primary Reserve Design Conservation Measures associated with Northern Corridor BA and HCP Changed Circumstance

Conservation Measures [included in Northern Corridor (NC) or HCP Biological Opinion (BiOp)]	Reserve values minimized or mitigated				
	Animals	Size and Area	Intactness	Connectivity	Condition
Shifting alignment further south in pre-work, compared to pre-2017 alignment [NC BiOp]		✓	✓	✓	✓
Including eight desert tortoise passages on the 4.1 mile alignment (and additional culverts as convenient with topography) [NC BiOp]			✓	✓	
No human access to Reserve from ROW [NC BiOp]			✓		✓
Response to 2020 wildfires and habitat degradation [NC BiOp]	✓				✓
Increased County habitat restoration contribution [HCP BiOp]	✓				✓
Improving passage on Cottonwood Springs Road [HCP BiOp]			✓	✓	
Monitoring and improving passage (if needed) on SR-18 [HCP BiOp]			✓	✓	
Zone 6 protection and management [NC and HCP BiOp]	✓	✓	✓	✓	✓
Zone 6 acquisition at 3 to 1 ratio of direct loss of habitat from ROW [HCP BiOp]	✓	✓	✓	✓	

modify its designated critical habitat (FWS 2021b). We note that the conservation measures in that Northern Corridor Biological Opinion are not the responsibility of the County. Nonetheless, these commitments from the ROW applicant and those additional commitments from the County under the Amended HCP Northern Corridor changed circumstance minimize the impacts from the Northern Corridor. These commitments support our analysis of the Amended HCP and our conclusion that the Amended HCP conservation program can withstand the impacts from the Northern Corridor highway. This finding, the associated analysis and conclusion provide the rationale to ensure the taking from covered activities will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. County commitments were addressed in section *The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking* and in the HCP chapter 9.1.1.

As discussed above in *Condition*, habitat restoration is a fundamental aspect needed in the Reserve to stabilize or reverse population declines and sustain the population. The Northern Corridor would further degrade habitat and affect Reserve biological values (animals, intactness, connectivity, and condition). Habitat restoration proposed in the Amended HCP and as part of the Northern Corridor highway project for the Reserve and NCA by the BLM, State, and County includes seeking funds for over \$3 million and a longer-term commitment to target successful restoration of at least 2,600 acres of habitat in the Red Cliffs Desert Reserve Zone 3 (BLM 2020). While these efforts are occurring as an adaptive management response to wildfires, the restoration would concurrently offset habitat degradation that might occur as a result of activity in the Northern Corridor action area (i.e., Zone 3).

The County allocated \$60,000 for fire-related monitoring and response in its 2020 and 2021 HCP budgets (HCAC 2020b and 2020c). Due to the significant impacts of the 2020 wildfires on Reserve Zone 3, the County further intends to spend the entirety of these funds towards restoration efforts or other fire-preventative measures, as advised by the HCAC through the adaptive management process. Thus, we anticipate the effects from Northern Corridor habitat degradation to the Reserve condition would be maintained and improved through these and future restoration commitments. With this restoration package and continued commitments as determined through the adaptive management program, the Reserve population is expected to retain sufficient reproduction and recruitment such that it is likely able to rebound from impacts due to stochastic events and is likely to retain resilience necessary to withstand additional habitat degradation and stress caused by the Northern Corridor.

Conclusion

Overall, the UVRRU with continued intensive management as identified in the Amended HCP is likely to be viable over time in the absence of severe catastrophic events or reduction in carrying capacity caused beyond what is anticipated here (FWS 2021c). We reviewed the condition and viability of the UVRRU in our biological report and recommended that the Reserve remain the conservation priority of the UVRRU, followed by protecting connectivity to the adjacent NEM recovery unit (FWS 2021c). According to the best available science and information, the intensive management of extrinsic factors, high-density areas, and robust population dynamics of desert tortoises in the Reserve relative to the rest of the UVRRU allows persistence of this small population despite population growth rate less than one.

Recognizing the life history of this species, specifically its slow recruitment times, it would be difficult to achieve 10,000 adult desert tortoises (minimum viability; FWS 1994) throughout the UVRU through natural wild processes over the next 25 years of the permit. This condition highlights the importance of continued acute and intensive management to alleviate threats and stabilize local populations. Population augmentation and breeding or growing in captivity for release into the wild (*i.e.*, head-starting) may also prove useful tools in low-density areas where threats have been reduced or eliminated. We provide more specific recommendations to achieve UVRU abundance goals and objectives in our biological report (FWS 2021c). The Amended HCP supports desert tortoise recovery goals through the establishment of a Reserve, continued intensive management of threats impacting the majority of the known population in the UVRU, and further includes measures to connect, protect, and restore populated and abundant areas in the Reserve. The proposed Zone 6 protects additional animals and habitat and supports connectivity with the adjacent NEMRU and intactness of the UVRU with the species' range to the west. We find the commitments in the Amended HCP to implement these conservation actions to fully offset the impacts to the population in the UVRU from covered activities by sustaining and in some cases, improving Reserve biological values (e.g., habitat condition, intactness, and connectivity) and benefitting desert tortoise conservation.

We found that the Northern Corridor effects on the numbers of animals in Zone 3 to the UVRU, in addition to the impacts to Reserve biological values, were minimized with the highway design features (e.g., underpasses, fencing, etc.), land acquisition, restoration, and habitat connectivity efforts within the Reserve both through the actions of the County and by those of the Northern Corridor highway project proponents. Thus, we determined in our Biological Opinion that the estimated loss of habitat and associated take of desert tortoises through displacement, injury, or fatality, does not represent a catastrophic event or reduction in carrying capacity that would affect the species long-term persistence in the UVRU or range-wide. The Reserve, with intact biological values, remains the best option for long-term viability and protection of quality habitat within the UVRU. Based on the analyses and rationale in the Biological Opinions (FWS 2021a and 2021b), we determined that the described change from implementation of the HCP and ITP issuance is not likely to jeopardize the continued existence of the desert tortoise throughout its range. We further find the Reserve will benefit desert tortoise in the UVRU.

Adverse modification of designated critical habitat

Covered activities would cause the loss of critical habitat on 633 acres outside the Reserve and up to 200 acres inside the Reserve. This loss represents a minor amount, less than 1 percent, of the range-wide habitat and 1.6 percent of desert tortoise critical habitat in the UVRU. Most of the areas outside the Reserve have already been cleared of desert tortoises. In addition, invasive weeds and subsequent severe wildfire events have degraded some portions of designated critical habitat such that the physical and biological factors needed by the species may no longer be present. The Amended HCP includes conservation measures to improve the condition of designated critical habitat (Table 2).

The Northern Corridor changed circumstance would cause direct habitat loss of 276 acres and degradation and fragmentation on an additional 2,343 acres of designated critical habitat previously protected within the Reserve (1,340 acres south of the ROW and additional acreage within an affected buffer north of the ROW). Loss and degradation together may impact

approximately 6 percent of the total designated critical habitat protected in the Reserve. The degradation is being addressed with restoration inside and outside the ROW (Table 2). Although not designated critical habitat, Zone 6 contains the physical and biological features to support desert tortoises and, if managed for desert tortoise conservation and connectivity, Zone 6 can contribute to the UVRU viability and recovery potential. Until acquired, as described in the Amended HCP, the County is committed to managing the SITLA-administered lands in Zone 6 as part of the Reserve along with the BLM-administered lands in Zone 6 for the long-term protection of desert tortoise. When the BLM or other HCP partners acquire non-Federal Zone 6 lands for conservation purposes, they will achieve protection intended in perpetuity.

Thus, the direct and indirect alterations to designated critical habitat should not appreciably diminish the value of critical habitat for the desert tortoise in the UVRU or range-wide. Based on the analyses and rationale in the intra-Service Biological Opinion, we determined that the loss of designated critical habitat is not likely to result in the destruction (the loss does not appreciably reduce the value) or adverse modification of designated critical habitat.

Listed plant species

The HCP Handbook clarifies that while this issuance criterion states “the species” in reference to the covered species, it applies to all listed species in the plan area. If implementing the HCP would jeopardize any listed species (including plants) or adversely modify critical habitat, we cannot issue the permit (FWS and NMFS 2016, section 16.1.3.4). The Amended HCP take area contains individuals of three listed plant species (Holmgren milkvetch, dwarf bear-poppy, Siler pincushion cactus), designated critical habitat of three listed plant species (Holmgren milkvetch, Shivwits milkvetch, Gierisch mallow) and potential habitat of six listed plant species (Holmgren milkvetch, Shivwits milkvetch, dwarf bear-poppy, Siler pincushion cactus, Gierisch mallow, and Fickeisen plains cactus).

An estimated 46 percent of the Holmgren milkvetch total known population and 16 percent of its designated critical habitat is located in the Amended HCP take area, primarily on SITLA lands in the Central Valley population near the Arizona border. For the other listed plant species, the Amended HCP take area contains less than 10 percent of the total known populations and less than 10 percent of designated critical habitat.

To protect Holmgren milkvetch, the SITLA has agreed in the Amended HCP and the IA to protect conservation areas that support a viable population in perpetuity within the Central Valley critical habitat Unit 1c. The conservation areas will be limited to critical habitat and may be comprised of one or more conservation areas. SITLA will use its lease authority to prohibit development within the conservation area(s) until it is acquired and protected in perpetuity by a conservation entity. We estimate this conservation measure will reduce the loss of Holmgren milkvetch plants to less than 21 percent of the total known population and the loss of critical habitat to less than 13 percent of the designated acreage. The Amended HCP includes commitments to coordinate, support, and implement protections for Holmgren milkvetch in the Central Valley critical habitat Unit to avoid jeopardizing the continued existence of this species (HCP p. 19 and 107-108).

There is a considerable amount of undeveloped potential habitat for the six listed plant species in the Amended HCP take area. Holmgren milkvetch contains approximately 9,300 acres of potential habitat in the Amended HCP take area and slightly more potential habitat acreage on Federal lands in Washington County. The other five plant species have much more potential habitat on Federal lands in Washington County than in the Amended HCP take area.

If Zone 6 is established through the Northern Corridor changed circumstance, the County and HCP Partners will implement the following conservation measures for plants: conservation measures in Reserve Zone 6 that are similar to those afforded on Federal lands and the development and implementation of a survey, seed collection, and plant salvage plan for all listed plant species within the plan area.

In summary, the Holmgren milkvetch population within the Central Valley critical habitat Unit 1c will be protected in perpetuity to support a viable population and promote the recovery of the species as described in the HCP (Chapter 6.5). Because of this commitment, the FWS finds that the issuance of the ITP will not jeopardize the Holmgren milkvetch or result in the destruction or adverse modification of Holmgren milkvetch critical habitat. For the other listed plant species, the anticipated loss of plants and critical habitat in the Amended HCP take area will not rise to the level of jeopardy or adverse modification. Additional conservation measures will be provided if the Northern Corridor changed circumstances is triggered.

Other measures, required by the Director of the Service, have been met and the Service has received necessary assurances that the HCP will be implemented

The FWS finds that the HCP incorporates all of the elements we determined necessary for its approval and issuance of the permit. No other measures are necessary for the issuance of the permit under the HCP. The FWS finds that the HCP, combined with the permit conditions, provide the necessary assurances the HCP will be implemented.

GENERAL CRITERIA AND DISQUALIFYING FACTORS – ANALYSIS AND FINDINGS

We have no evidence that Washington County's permit application should be denied on the basis of the criteria and conditions set forth in the regulations for General Permit Requirements (50 CFR 13.21 (b) –(c)). The applicant has met all the criteria for issuance of the permit and does not have any disqualifying factors that would prevent the permit from being issued under current regulations.

RECOMMENDATIONS ON PERMIT ISSUANCE

Based on the foregoing findings with respect to the proposed action, I recommend approval of the issuance of the permit to the County, in accordance with the HCP.



Noreen Walsh
Regional Director, Interior Regions 5 and 7
U.S. Fish and Wildlife Service
Denver, CO



Date

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