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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA
TUCSON DIVISION

Center for Biological Diversity and Maricopa Audubon Society, Plaintiffs; v. David Bernhardt, in his official capacity as Secretary of the Interior; United States Fish and Wildlife Service; Aurelia Skipwith, in her official capacity as the Director of FWS; Amy Lueders, in her official capacity as Regional Director of the FWS Southwest Region; Mark Esper, in his official capacity as Secretary of Defense; Ryan D. McCarthy, in his official capacity as Secretary of the Army; and Major General Laura A. Potter, in her official capacity as the Senior Commander of Fort Huachuca, Defendants.	Case No. _____ **COMPLAINT**

INTRODUCTION

1. The San Pedro River is the last free-flowing, undammed desert river in the American Southwest. Flowing through the arid Chihuahuan and Sonoran Deserts in southeastern Arizona, the San Pedro is an oasis of towering cottonwood trees, green grasses, and life-giving water. The river and its surrounding forest are a sanctuary to millions of migrating birds and home to one of the most diverse assortments of animal and plant species in the United States.

2. Groundwater pumping near the river, however, is intercepting water that would otherwise feed the upper San Pedro. This is lowering the water table and causing the San Pedro River—and its lush ribbon of riparian vegetation—to dry up.

3. Fort Huachuca, a U.S. Army base near Sierra Vista, Arizona, is largely responsible for the groundwater pumping that threatens to destroy the upper San Pedro River. This groundwater pumping, and its adverse impact on the flows that sustain the river, also imperils at least four threatened and endangered species and designated critical habitat that depend on the river. To address these impacts, the U.S. Fish and Wildlife Service (FWS) undertook formal consultation with the Fort pursuant to the Endangered Species Act (ESA), and issued a Biological Opinion (BiOp) completing the consultation on March 31, 2014.

4. Even though the Army and FWS acknowledge that the Fort's groundwater pumping will reduce the San Pedro's flows and cause the water table to continue to drop, the BiOp concludes that Fort Huachuca's activities and operations are not likely to jeopardize any endangered species or destroy or adversely modify critical habitat.

5. This conclusion is arbitrary, capricious, contrary to the ESA, and not based on the best available science. One basis for the BiOp's conclusions is a groundwater balance sheet that credits the Fort with water savings that are entirely speculative. The other basis, a groundwater hydrologic model, is equally flawed because it arbitrarily cuts short the modeling period before the full impact of the Fort's pumping will reach the San Pedro River. For these reasons, Plaintiffs Center for Biological Diversity and Maricopa Audubon Society (Plaintiffs) seek to set aside the BiOp as invalid. Plaintiffs also challenge the Army's reliance on the unlawful BiOp, in violation of the ESA.

JURISDICTION AND VENUE

6. Plaintiffs bring this lawsuit pursuant to 5 U.S.C. §§ 701–06 (Administrative Procedure Act) (APA), and 16 U.S.C. § 1540(g) (ESA citizen suit provision). Plaintiffs gave notice of their intent to sue on December 3, 2019, more than sixty days prior to the initiation of this action.

7. This Court has jurisdiction pursuant to 28 U.S.C. § 1331 (federal question) and *id.* § 2201 (declaratory judgments).

8. Venue is proper in this Court pursuant to 28 U.S.C. § 1391(c) & (e) and 16 U.S.C. § 1540(g)(3)(A). Center for Biological Diversity and Maricopa Audubon Society are headquartered in Arizona. Fort Huachuca is also located in Arizona.

9. This case should be assigned to the Tucson Division of this Court because the government's violation of the ESA implicates critically imperiled species located in Pima and Cochise Counties, which are within the Tucson Division. *See* L.R.Civ 77.1(a), (c).

PARTIES

10. Plaintiff CENTER FOR BIOLOGICAL DIVERSITY is a national nonprofit conservation organization with more than 1.7 million members and supporters. The Center is dedicated to the preservation of native plant and animal species. Through scientific research, grassroots activism, creative media, and legal action, the Center works to protect plant species facing extinction. The Center's members research, study, observe, publicize, and seek protection for ecosystems, plants, and animals, including the San Pedro River, Huachuca water umbel, Northern Mexican gartersnake, southwestern willow flycatcher, and yellow-billed cuckoo. The Center is the original petitioner for listing of the Huachuca water umbel, southwestern willow flycatcher, yellow-billed cuckoo, and Northern Mexican gartersnake.

11. The Center's members use, benefit from, and enjoy the lands, ecosystems, plants, and animals harmed by decreasing water levels in the San Pedro River. They observe the Huachuca water umbel, southwestern willow flycatcher, yellow-billed cuckoo and other plants and animals in the upper San Pedro River basin for research, educational trips, photography, aesthetic enjoyment, and other recreational, scientific, and educational activities. The Center's members intend to continue to engage in these activities in the future, with trips planned for the summer and autumn of 2020. The Center and its members also analyze and disseminate information to the public about the areas affected by the decreasing water levels in the San Pedro River. The Center and its members' extensive involvement in the San Pedro River includes more than three decades of activism and litigation. Defendants' failure to comply with the ESA has

adversely affected the foregoing interests of the Center and its members. *See, e.g.*, *Ctr. for Biological Diversity v. Rumsfeld*, 198 F. Supp. 2d 1139 (D. Ariz. 2002); *Ctr. for Biological Diversity v. U.S. Dep't of Hous. & Urban Dev.*, Civ. No. 05-261-TUC-CKJ (D. Ariz.); *Ctr. for Biological Diversity v. Salazar*, 804 F. Supp. 2d 987 (D. Ariz. 2011). Unless this Court grants the requested relief, the Center and its members will continue to be adversely affected and irreparably harmed by Defendants' failure to comply with environmental laws.

12. Plaintiff MARICOPA AUDUBON SOCIETY is a nonprofit organization with over 3,000 members dedicated to the study and enjoyment of birds and other wildlife, and to the protection and restoration of their habitat in the Southwest. Maricopa Audubon is run by volunteers and strives to protect and restore wildlife habitat through education and community involvement. Maricopa Audubon has worked to protect the San Pedro River since 1977, when it helped stop construction of the proposed Charleston Dam, which would have inundated the southern half of the upper San Pedro River into Mexico.

13. Maricopa Audubon Society's volunteers and members use, enjoy, and benefit from the San Pedro River for wildlife observation, research, education, and recreational activities. They intend to continue to engage in these activities in the future. Defendants' failure to comply with the ESA has adversely affected the foregoing interests of the Maricopa Audubon Society, its volunteers, and members. Unless this Court grants the requested relief, these interests will continue to be adversely affected and irreparably harmed by Defendants' failure to comply with these environmental laws.

14. Defendant DAVID BERNHARDT is sued in his official capacity as Secretary of the Interior. He is charged with implementing the ESA with regard to threatened and endangered terrestrial species.

15. The Secretary of the Interior has delegated his duties under the ESA to Defendant UNITED STATES FISH AND WILDLIFE SERVICE. FWS is the agency within the United States Department of Interior responsible for administering the provisions of the ESA with regard to species listed as either threatened or endangered under the ESA, including the Huachuca water umbel, southwestern willow flycatcher, western yellow-billed cuckoo, and northern Mexican gartersnake.

16. Defendant AURELIA SKIPWITH is sued in her official capacity as the Director of FWS. She is the official responsible for ensuring that FWS complies with its obligations under the ESA.

17. Defendant AMY LUEDERS is sued in her official capacity as Regional Director of the FWS Southwest Region. She is the official responsible for ensuring that FWS complies with its obligations under the ESA in the Southwest Region.

18. Defendant MARK ESPER is sued in his official capacity as Secretary of Defense and is responsible for the actions of the U.S. Army. Fort Huachuca is an Army installation.

19. Defendant RYAN D. MCCARTHY is sued in his official capacity as Secretary of the Army. He is the official responsible for ensuring that U.S. Army installations, including Fort Huachuca, comply with all applicable laws.

20. Defendant MAJ. GEN. LAURA A. POTTER is sued in her official capacity as the Senior Commander of Fort Huachuca. She is the official responsible for ensuring that Fort Huachuca complies with all applicable laws, including the ESA.

STATUTORY BACKGROUND

A. The Endangered Species Act

21. The ESA is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978). Its purpose is to "provide a means whereby the ecosystems upon which endangered species and threatened species may be conserved." 16 U.S.C. § 1531(b). Congress enacted the ESA to achieve two purposes: to provide for the protection of imperiled species to prevent their extinction, and to facilitate recovery of those species so that they no longer need the protections provided by the ESA.

22. To achieve its twin objectives of survival and recovery, the ESA directs FWS to determine which species of plants and animals are "threatened" or "endangered" within the meaning of the ESA. *Id.* § 1533. A species is "endangered" if "it is in danger of extinction throughout all or a significant portion of its range." *Id.* § 1532(6). A species is "threatened" if "it is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." *Id.* § 1532(20). Concurrently with listing, FWS must designate "critical habitat," which is defined as those areas "essential to the conservation of the species." *Id.* § 1533(a)(3); *id.* § 1532(5)(A) & (B).

B. ESA Section 7 Consultation

23. Section 7 of the ESA requires each federal agency to ensure that its actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of designated critical habitat. *Id.* § 1536(a)(2). An "action" includes "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies." 50 C.F.R. § 402.02.[1]

24. The ESA includes specific, mandatory processes designed to ensure that federal agencies comply with their substantive duty to avoid jeopardizing listed species or destroying or adversely modifying critical habitat. In particular, section 7 of the ESA provides that a federal agency proposing an action "shall . . . request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action." If the Secretary determines that such species may be present, the agency "shall conduct a biological assessment for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action." 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.14(a). An affirmative finding that the action will likely affect such species triggers the requirement for the agency to enter into formal consultation with FWS. 50 C.F.R. § 402.14(a).

[1] On October 28, 2019, new ESA regulations went into effect. *See* 84 Fed. Reg. 44,976, 44,976–78, 44,988 (Aug. 27, 2019); 84 Fed. Reg. 50,333 (Sept. 25, 2019) (delaying effective date until Oct. 28, 2019). The new regulations, however, are prospective and do not apply to previous consultations under ESA section 7(a)(2). *Id.* at 44,976. Because FWS issued the BiOp for Fort Huachuca's operations in 2014, the previous version of the regulations applies in this case.

25. The formal consultation process culminates in the issuance of a BiOp, which provides certain required information: 1) a summary of the information on which the BiOp is based; 2) a detailed discussion of the environmental baseline of the listed species and critical habitat; 3) a detailed discussion of the effects of the action on listed species or critical habitat; and 4) FWS's opinion as to whether the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat. 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. § 402.14(h)(1)(i)-(iv).

26. A BiOp resulting in a jeopardy finding must include reasonable and prudent alternatives to the proposal, if any, or indicate that there are none to the best of FWS's knowledge. 50 C.F.R. § 402.14(h)(3).

27. In fulfilling the consultation requirements of the ESA, both FWS and the agency proposing the action must use the best scientific data available. 16 U.S.C. § 1536(a)(2).

28. A BiOp must address the effects of an agency's action not only on the ability of the species to survive, but also to recover to the point that it no longer needs the protection of the ESA. Similarly, when addressing whether an agency action will adversely modify a species' designated critical habitat, FWS's BiOp must consider the effects of the action on the value of the critical habitat for the survival *and* recovery of the species. 50 C.F.R. § 402.02; *Salazar*, 804 F. Supp. 2d at 999 (holding that recovery must "be considered explicitly and separately from survival.").

29. The BiOp's finding must be based on FWS's independent analysis of the "action area," the "effects of the action"—including the action's "indirect effects" and effects of "interrelated or interdependent" activities—and the "cumulative effects" on listed species or critical habitat. *Id*. §§ 402.02, 402.14(g). In other words, the BiOp must consider "all the impacts . . . which can be anticipated" to result from the action "using the best available science." *Rumsfeld*, 198 F. Supp. 2d at 1156 (emphasis added). This means "[a]n agency may not ignore future aspects of a federal action" by segmenting or cutting off its analysis before impacts occur. *Id.* at 1155.

30. Of particular relevance to this case, the changing climate has made the American Southwest both hotter and drier in recent decades, and these effects will intensify during this century. A BiOp must consider and address the effects of climate change if—as is the case here—the best available information "indicates that climate change will have a significant negative effect on the listed populations of endangered or threatened species." *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 184 F. Supp. 3d 861, 873–74 (D. Or. 2016). In considering the effects of climate change, an agency cannot merely provide conclusory statements or generalized descriptions. Instead, it must actually analyze the impact of climate change on the proposed action and its effects. *See, e.g.*, *Wild Fish Conservancy v. Irving*, 221 F. Supp. 3d 1224 (E.D. Wash. 2016).

31. If FWS issues a BiOp that does not adequately evaluate the effects of the action and cumulative effects on listed species and critical habitat—considering both survival and recovery—then FWS's "opinion on whether the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse

modification of critical habitat" is fatally flawed. *See* 50 C.F.R. § 402.14(h)(3). In such instances, the BiOp would fail to adequately assess whether the proposed action was likely to jeopardize listed species. *See Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988).

32. When a BiOp's "no-jeopardy" or "no-adverse modification" conclusion is based in whole or in part on mitigation measures, those measures must be reasonably specific, certain to occur, and capable of implementation. *Rumsfeld*, 198 F. Supp. 2d at 1152. The proposed mitigation measures must also be subject to deadlines or other enforceable obligations, and must address threats to the listed species so as to satisfy the jeopardy and adverse modification standards set forth in the ESA. Regardless of the conclusion reached by FWS in the BiOp, the action agency has an independent duty to meet its substantive section 7 obligation to ensure its actions are not likely to jeopardize listed species or result in the destruction or adverse modification of designated critical habitat. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.16 (requiring re-consultation under certain circumstances and where agency maintains discretionary involvement over the action).

33. Although consultation may satisfy an agency's "*procedural* obligations under the ESA," a BiOp alone does not conclusively establish an agency complied "with its *substantive* obligations under section 7(a)(2)." *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990). An action agency violates its substantive section 7 duty if it relies on an inadequate, incomplete, or flawed BiOp in carrying out an action.

C. Conferral for Proposed Species

34. ESA section 7(a)(4) mandates that an action agency "confer" with FWS on any action that is "likely to jeopardize the continued existence" of any "species proposed to be listed" or is "likely to result in the destruction or adverse modification of critical habitat proposed to be designated for such species." 16 U.S.C. § 1536(a)(4); 50 C.F.R. § 402.10. Although not required, agencies can request that the conference "be conducted in accordance with the procedures for formal consultation." 50 C.F.R. § 402.10(d). The final product of this conference is a conference opinion. *See* FWS Consultation Handbook at 6-4.[2]

35. If a proposed species is listed after FWS issues its conference opinion, or its critical habitat is formally designated, the action agency has two options. First, it can request in writing that FWS adopt the conference opinion as a BiOp. 50 C.F.R. § 402.10(d). However, FWS may only adopt the opinion so long as "no significant new information is developed . . . and no significant changes to the Federal action are made." If the opinion is adopted as a BiOp, any incidental take statement that was provided with the conference opinion may take effect—but not before then. *Id.* § 402.10(d).

36. If FWS does not adopt the conference opinion as a BiOp, the action agency *must* pursue its second option and reinitiate consultation pursuant to 50 C.F.R. § 402.16(d) (requiring reinitiation of formal consultation if a "new species is listed or critical habitat designated that may be affected by the identified action"); *see also* BiOp

[2] *Available at* https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf.

at 369 (noting "reinitiation of formal consultation is required where . . . a new species is listed or critical habitat designated that may be affected by this action"). Either way, formal consultation is not concluded until FWS issues a BiOp. 50 C.F.R. § 402.14(l)(1).

D. Reinitiation Based on New Information

37. If, after a consultation is completed, significant new information becomes available and reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, FWS must reinitiate consultation. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.16(a)(2).

FACTUAL ALLEGATIONS GIVING RISE TO THE CLAIMS

A. The San Pedro River and its Representative Species

38. The San Pedro River originates in Mexico and flows north across the Arizona border until it joins the Gila River north of Tucson. It is home to one of the Southwest's most precious and rare wetland ecosystems. More than 490 species of birds, mammals, fish, amphibians, and reptiles reside in or near the San Pedro River, making it one of the most ecologically and biologically rich places on Earth.

39. In 1988, Congress designated 36 miles of the river's upper basin as the San Pedro Riparian National Conservation Area (Conservation Area). The Conservation Area encompasses one of the most extensive contiguous reaches of cottonwood-willow forest remaining in the Southwest.

40. The San Pedro River and the Conservation Area host millions of songbirds that migrate every year between their wintering grounds in Central America and Mexico and their summer breeding grounds in Canada and the northern United States. In 1995,

the American Bird Conservancy recognized the San Pedro River as its first "Globally Important Bird Area" in the United States. The San Pedro River also supports the richest variety of mammal species in the United States and the second richest variety in the world. In addition, it is home to 47 species of reptiles and amphibians.

41. The San Pedro is also home to at least four threatened and endangered species, including the western yellow-billed cuckoo and southwestern willow flycatcher (both neotropical songbirds), the Huachuca water umbel (a semi-aquatic plant), and the Northern Mexican gartersnake. These species all depend on healthy perennial aquatic environments, and their plight is inextricably tied to destruction of these habitats throughout the Southwest. More specifically, they are all negatively affected by the Fort's continued groundwater withdrawals and inadequate mitigation measures, which have dramatically reduced the flows of the San Pedro River.

Western yellow-billed cuckoo	Southwestern willow flycatcher
	

Huachuca water umbel	Northern Mexican gartersnake
	

42. FWS listed the western yellow-billed cuckoo as threatened in 2014 due to loss and degradation of its riparian habitat, including from surface and groundwater diversions, citing studies that have "documented the connection between overutilization of the ground water, lowering of the water table, and the decline and eventual elimination of riparian vegetation." 79 Fed. Reg. 59992, 60018 (Oct. 3, 2014). The Conservation Area has the largest population of cuckoos in the Western United States. FWS proposed critical habitat for the cuckoo on February 27, 2020, including an 83-mile segment of the upper San Pedro River.

43. The southwestern willow flycatcher is a riparian-dependent bird, nesting along rivers, streams, and other wetlands. The San Pedro serves as a migration corridor for southwestern willow flycatchers flying between wintering grounds in Latin America and breeding grounds in the American Southwest and points further north.

44. The lower reaches of the San Pedro River contain an increasing population of flycatchers, with nesting observed in the Conservation Area again in 2005 after a nearly twenty-year absence. Because the lower San Pedro is hydrologically connected to

the upper San Pedro, reductions in baseflow in the upper San Pedro River may reduce discharge in the lower reaches of the river, threatening the flycatcher's habitat and recovery.

45. The Huachuca water umbel is a rare plant that survives in only a few cienegas, springs, and river systems, including the San Pedro. The limited number of remaining populations and the small size of those populations mean that a single natural event, such as drought or a flood, could extirpate populations or cause the entire species to go extinct.

46. The upper San Pedro River provides the largest contiguous habitat capable of supporting populations of Huachuca water umbel and is the most important area for the umbel's recovery. Because it is essential to the survival and recovery of the Huachuca water umbel, FWS designated 33.7 miles of the upper San Pedro River as critical habitat for the species.

47. The northern Mexican gartersnake forages on the banks of waterbodies, feeding primarily on native fish and adult and larval amphibians. It historically was found in all major watersheds in Arizona, but has been extirpated from much of its range due to habitat destruction and competition from nonnative species. FWS observed that groundwater pumping in the snake's range can "result in a reduction or loss in surface water and riparian vegetation that can reduce or eliminate the local prey base that gartersnakes depend on for survival." 79 Fed. Reg. 38678, 38704 (July 8, 2014).

B. Groundwater Pumping and the San Pedro River

48. Human settlement of desert landscapes has led to reliance on groundwater for agricultural and municipal demands. Deep wells are used to bring water to the surface from aquifers—underground layers of water-bearing rock. Unless they are overdrawn, aquifers are recharged over time by percolation from surface water. Aquifers are also hydrologically connected to rivers, providing "baseflows" that sustain the river year-round regardless of seasonal variations in rainfall or snowmelt. But most aquifers in the American West are overdrawn: withdrawals for human use far exceed recharge rates. Aquifer overdraft creates a "cone of depression" that slowly radiates outward from the well site and eventually captures, diminishes, and ultimately eliminates the baseflows of aquifer-supported rivers.

49. The Sierra Vista subwatershed, a subpart of the San Pedro Basin, contains aquifers which underlie the San Pedro River and one of its major tributaries, the Babocomari River. Water runs off the Huachuca Mountains and percolates into the regional aquifer, resulting in aquifer groundwater flowing toward the San Pedro, which ultimately provides the river's stream flow during the driest times of the year.

50. Groundwater pumping affects this hydrologic system in two ways. First, it intercepts groundwater that would otherwise contribute to the San Pedro's streamflows. This diminishes the river's flows, starving vegetation and wildlife of water. As a result, in recent years, the upper San Pedro has slowed to a trickle in some areas during the dry season. Second, groundwater pumping lowers the water table. If the water table continues to drop, the river's normal hydrologic processes will be disrupted. Normally, the surface

water in the River is the surface the aquifer water, but as the water table drops, the top of the aquifer becomes lower than the level of the river and streamflow disappears.

51. Fort Huachuca is a U.S. Army base located near the town of Sierra Vista, directly between the Huachuca Mountains and the San Pedro River.

52. Groundwater pumping is the sole water source for Fort Huachuca, Sierra Vista, and the surrounding communities.

53. Fort Huachuca is the largest single source of groundwater pumping in the Sierra Vista subwatershed. The Fort's pumping is directly responsible for impacts to the aquifer, and it is also indirectly responsible for additional groundwater pumping by homes and businesses connected to the Fort or drawn to the area as a result of the Fort's presence or economic expenditures in the area. Fort Huachuca thus bears the greatest responsibility for the adverse effects of groundwater pumping on the San Pedro and the habitat it provides for hundreds of species.

54. In the Sierra Vista subwatershed, the rate of groundwater pumping exceeds the rate of natural recharge, creating a groundwater deficit that lowers the water table. In a 2017 report, the U.S. Geological Survey estimated that for 2012 (the most recent year available at the time), the groundwater deficit was 5,000 acre-feet per year.[3]

55. This deficit groundwater pumping has caused the upper San Pedro's base flows to decline dramatically in the last 50 years. Formerly perennial stretches of the

[3] Bruce Gungle et al., "Hydrological Conditions and Evaluation of Sustainable Groundwater Use in the Sierra Vista Subwatershed, Upper San Pedro Basin, Southeastern Arizona," *USGS Scientific Investigations Report 2016-5114* (Feb. 2017), *available at* https://new.azwater.gov/sites/default/files/sir20165114.pdf.

upper San Pedro River have become intermittent and, since 1996, the River has had an increasing number of days where it runs dry during the fall and winter.

56. These reduced base flows have adversely affected the riparian and wetland vegetation surrounding the San Pedro.

57. The Army's operation of Fort Huachuca harms the San Pedro River, its associated ecosystems, federally protected species, and designated critical habitat.

C. FWS's Past Biological Opinions

58. The Army and FWS have long recognized that activities and operations at Fort Huachuca are likely to adversely affect threatened and endangered species, including the western yellow-billed cuckoo, southwestern willow flycatcher, Huachuca water umbel, and northern Mexican gartersnake, and their designated critical habitat. Accordingly, the agencies have completed four formal consultations pursuant to ESA section 7.

59. In 1999, FWS issued a BiOp stating that operations at Fort Huachuca were not likely to jeopardize the flycatcher or water umbel and were not likely to destroy or adversely modify designated critical habitat. FWS based its no-jeopardy and no-adverse modification opinion on the future implementation of an Effluent Recharge Project in Sierra Vista, which was aimed at delaying the impacts of Fort Huachuca's groundwater pumping on the San Pedro River. The BiOp also was based on the Fort's commitment to identify, develop, and implement proposed mitigation measures as a long-term remedy to the groundwater deficit problem.

60. In 2000, the Center for Biological Diversity and others challenged the 1999 BiOp in this Court. *Rumsfeld*, 198 F. Supp. 2d at 1143. Plaintiffs argued FWS's no-jeopardy BiOp was arbitrary and capricious and a violation of the ESA in part because it did not require any specific or enforceable mitigation measures to control groundwater pumping related to Fort Huachuca's operations, and therefore failed to protect the San Pedro River and the species that depend on it. *Id.* at 1144–45.

61. In 2002, the Court agreed with plaintiffs and concluded the 1999 BiOp was arbitrary and capricious and a violation of the ESA. *Id.* at 1152–57. Judge Marquez noted the BiOp's premise—that the Army would identify mitigation measures to resolve the groundwater deficit within three years—was "an admission that what is currently on the table as far as mitigation measures is inadequate to support FWS's 'no-jeopardy' decision." *Id.* at 1154. The Court held the BiOp must identify and include specific mitigation measures to support a no-jeopardy conclusion. *Id.*

62. Importantly, regarding the Fort's largest claimed mitigation for its groundwater use, the City of Sierra Vista's wastewater treatment plant or Environmental Operations Park (EOP), the Court found that:

> This recharge project [the EOP] is not intended to compensate for or mitigate the effects of groundwater pumping. The project is designed to create a "mound" of groundwater between the cone of depression and the river that will, in theory, prevent baseflow from the San Pedro from flowing back into the groundwater during the next twenty years . . . . This will delay and mask the effects of the deficit groundwater pumping . . . but this is not a mitigating factor in relation to the Army's ten-year plan.

Id. at 1155.

63. To comply with the Court's decision, FWS and the Army again entered into formal consultation pursuant to ESA section 7(a)(2). The consultation considered the effects of the Fort and its associated population's groundwater pumping on threatened and endangered species and designated critical habitat.

64. In August 2002, FWS released a new BiOp. FWS acknowledged that decreased flow in the San Pedro River "would affect" Huachuca water umbel sites, and recognized that groundwater pumping that "appreciably decreases base flow and appreciably reduces the wetted surface area of perennial rivers or springs may destroy or adversely modify" the Huachuca water umbel's designated critical habitat.

65. To avoid these impacts, the Fort committed to eliminating its contribution to the groundwater deficit through various conservation measures. The BiOp used the Fort's on-base and associated local population to calculate the level of groundwater withdrawal for which the Fort was responsible. It determined Fort Huachuca was responsible for the presence of 34,993 persons, or 54% of the human population, in the Sierra Vista subwatershed. By multiplying the estimated 5,144 acre-foot water deficit by 54%, the 2002 BiOp calculated the Fort was accountable for 2,784 acre-feet of the deficit.

66. Based primarily on the Fort's commitment to eliminate its contribution to the groundwater deficit, FWS determined that the Fort's activities would not jeopardize the Huachuca water umbel or the southwestern willow flycatcher or destroy or adversely modify the umbel's designated critical habitat.

67. Between 2002 and 2007, the condition of the upper San Pedro River worsened. The river's base flows continued to decline, the estimated groundwater deficit more than doubled, and Huachuca water umbel sites disappeared. In addition, a key stretch of the river at the Charleston gauge, located just to the east of Fort Huachuca, went dry for the first time in recorded history from July 5-12, 2005. The Charleston gauge is the most sensitive indicator of the health of the San Pedro because the riverbed is composed of bedrock at that point, forcing all available groundwater to the surface. During the summers of 2006 and 2007, the River again precipitously declined at the Charleston gauge, registering only slightly more than zero flow each year.

68. Even though the river's condition declined and the Fort's proposed mitigation measures proved ineffective, the Fort significantly increased the number of employees and related population beyond the 1,369 people provided for in the 2002 BiOp.

69. On June 1, 2005, the Center for Biological Diversity and Maricopa Audubon Society filed suit against FWS and the Army, alleging that the changed circumstances and new information required FWS and Fort Huachuca to reinitiate formal consultation pursuant to section 7 of the ESA. *Ctr. for Biological Diversity v. U.S. Dep't of Hous. & Urban Dev.*, Civ. No. 05-261-TUC-CKJ (D. Ariz.).

70. On August 29, 2006, the parties filed a stipulated settlement agreement for this claim, whereby the Army and FWS agreed to complete a new formal section 7 ESA consultation on or before June 30, 2007. *Id.* (Docket Nos. 44, 49).

71. FWS's resulting 2007 BiOp evaluated effects of Fort Huachuca through 2016, acknowledging that the Fort's groundwater pumping would continue to diminish the San Pedro's base flows, and that the reductions in flow would make it difficult or impossible for young cottonwood trees to take root and sustain the cottonwood-willow forests upon which the southwestern willow flycatcher depends.

72. Nonetheless, the 2007 BiOp concluded the Fort's activities and operations would not jeopardize the umbel or flycatcher or adversely modify their critical habitat, and endorsed the Army's proposal to allow the Fort to expand by an additional 3000 people.

73. The Center for Biological Diversity and Maricopa Audubon Society filed suit again to challenge the 2007 BiOp, contending that it artificially minimized the Fort's impacts on the San Pedro by using a flawed methodology to estimate impacts of groundwater pumping and by ignoring the effects of the Army's increasing annual economic expenditures.

74. In 2011, this Court again decided for Plaintiffs, holding that the 2007 BiOp violated the ESA by failing to evaluate impacts on the species' recovery and by once again relying on mitigation measures "that are not reasonably specific nor reasonably certain to occur," and drew conclusions that were not supported by the record or the best scientific and commercial data available. *Salazar*, 804 F. Supp. 2d at 997–1009. The Court ordered FWS and the Army to reinitiate and complete formal consultation on the Fort's impacts to endangered and threatened species and their critical habitats.

D. FWS's Most Recent 2014 Biological Opinion

75. In November 2013, the Army completed a Programmatic Biological Assessment (PBA) to reinitiate formal consultation with FWS. Central to the PBA's determinations was a Groundwater Modeling Report, attached to the PBA as Appendix G. The PBA determined that the Fort's operations:

- will have no effect on the southwestern willow flycatcher;
- may affect, and are likely to adversely affect, the Huachuca water umbel. However, over the course of the consultation period beyond 2013 the primary constituent elements of the Huachuca water umbel critical habitat would generally be maintained or improved as a result of conservation easements implemented as part of the Proposed Action;
- [and] would not jeopardize the future existence of two species proposed for listing as threatened, the northern Mexican gartersnake and the western yellow-billed cuckoo, and would not cause adverse modification to the proposed critical habitat for the gartersnake.

76. In its PBA, the Fort employed two separate methods for determining its effects on groundwater, and subsequently on streamflows and listed species: 1) a groundwater accounting model, and 2) a groundwater hydrologic model. The accounting model was designed to estimate the Fort's net demand for groundwater and thus its effect on groundwater levels. It is essentially a water use balance sheet that evaluates withdrawals against water savings and recharge. On the other hand, the hydrologic model was designed to project the effects of the Fort's water use on groundwater contributions to streamflow on a spatiotemporal scale— allowing FWS to project when and where effects of pumping on streamflows will be greatest.

77. FWS responded with a BiOp for the umbel and flycatcher, and also issued a Conference Opinion for the western yellow-billed cuckoo and northern Mexican

gartersnake, whose listings as threatened species under the ESA had not yet been finalized. FWS issued its BiOp on March 31, 2014 and corrected some clerical errors on May 16, 2014.[4]

78. FWS agreed with the Fort that none of these species would be adversely affected by the Fort's operations, relying in large part on the anticipated Fort-attributable groundwater surplus predicted by the Fort's groundwater models. This surplus, however, was almost entirely predicated on the Fort's speculative mitigation measures. Because both models project positive effects—with the exception of lower Babocomari River baseflows—FWS concluded the Fort would not jeopardize the species that depend on groundwater contributions to baseflows, or adversely modify their critical habitats. As detailed below, both models fail to use the best available science.

1) Accounting Model

79. The groundwater accounting model estimates the Fort's effects on groundwater by deducting the recharge and avoided pumping for which it claims credit from its projected groundwater demand for the 2012–2022 period. BiOp at 150–54. Demand is calculated as the sum of: (1) on-post groundwater withdrawals; (2) the proportion of Sierra Vista groundwater withdrawals attributable to the Fort; and (3) estimated groundwater withdrawals by the Fort-attributable population in unincorporated areas, using a per capita water use rate.

[4] *Available at* https://www.fws.gov/southwest/es/arizona/Documents/Biol_Opin/130247%20Fort%20Huachuca%20FINAL%20BO%20DKD-jc%20DKD%2016%20May.pdf.

80. The BiOp credits the Fort with taking thirteen mitigation measures to offset its groundwater demand: ten completed measures, two in-progress measures, and one planned measure. BiOp at 26–31. Five of these measures are Fort-financed or directed water-recharge or transfer projects. Together, they credit the Fort with water savings through:

- Fort Huachuca stormwater capture: average recharge of 106 acre-feet per year (AFY);
- East Range recharge facility: average recharge of 368 AFY;
- EOP (wastewater effluent recharge project): Fort-attributable recharge of 1,072 AF in 2011 and 995 AF in 2012;
- Huachuca City effluent transfer program: estimated 88 AFY would be transferred initially, increasing to 200 AFY as Huachuca City grows; and
- Palominas pilot stormwater recharge project: 98 AFY estimated recharge. *Id. at* 27–31.

81. Another seven measures consist of hypothetical or realized water savings from conservation easements acquired or financed by the Fort. The most significant of these easements is the "Preserve Petrified Forest" conservation easement, which yields purported net water savings of 2,588 AFY from retirement of agricultural water use.[5]

[5] Other purported sources of water savings in the accounting model include: (1) Babocomari Area conservation easements: estimated 299 AFY of groundwater pumping avoided via restrictions on residential use; (2) "Clinton" and "Drijver" conservation easements: water savings of 631 and 442 AFY, due to the retirement of agricultural pumping; (3) "River Stone Ranch" conservation easement: 149 AFY of groundwater pumping avoided via residential use restrictions; (4) "Mansker" conservation easement: estimated 24 AFY of water savings; (5) "Bella Vista Ranch" conservation easement: 238 AFY residential water use avoided; and (6) Planned Babocomari Area conservation easements: projected 248 AFY of water savings from planned easement acquisitions. *See* BiOp at 28–31.

82. The Fort next calculated the "human-induced recharge" for which it claims credit. This includes recharge from: "[1] effluent recharge basins and stormwater detention facilities, [2] incidental stormwater recharge in urban areas, and [3] incidental recharge from turf grass irrigation, septic systems, and effluent discharged other than in basins." BiOp at 153. According to the Fort, "human-induced recharge except for septic systems in 2011 is estimated at 324 and 4,962 acre-feet for Fort Huachuca and Sierra Vista." BiOp at 153. This recharge is then added to the estimated water savings from avoided groundwater pumping via the conservation easement credits described above. BiOp at 168–69.

83. To calculate the Fort's annual net groundwater demand from 2013 through 2022, FWS projected total groundwater demand, incidental recharge, and water savings or recharge from conservation measures forward. *Id.* at 154. For each year, it subtracted projected recharge and water savings from total groundwater demand to calculate the net demand. The calculation results in the following annual projected net groundwater deficits or surpluses:

- 2011: 1,453 AF deficit
- 2012: 1,180 AF deficit
- 2013: 1,495 AF deficit
- 2014: 1,419 AF surplus
- 2015 through 2021: 1,517 AFY surplus
- 2022: 1,765 AF surplus.

Id. at 169.

84. The shift from a groundwater deficit to surplus in 2014 is *entirely* due to alleged water savings from the Preserve Petrified Forest easement; without water savings

from that easement, the Fort would run a groundwater deficit each year of the consultation period. *See id.*

2. Hydrologic Model

85. FWS used the hydrologic model (also termed "groundwater flow model" in the BiOp) to estimate the Fort's spatial and temporal effects on groundwater contributions to streamflows in the Babocomari and San Pedro Rivers over a 2012–2030 timeframe. *See id.* at 75–76, 155–59. This model is a modified version of a "calibrated groundwater flow model for the Upper San Pedro Basin" first published by the U.S. Geological Survey (USGS) in 2007 ("base San Pedro model"). Dr. Laurel Lacher updated the base San Pedro model in 2011 to add more recent pumping and recharge data and to run the model forward to 2105 using projected pumping and recharge rates ("Lacher model"). The Fort generally retained the model assumptions and inputs from the Lacher model in its simulations.

86. To determine the Fort's effects on San Pedro River baseflows, the Fort ran two model simulations. Future inputs to the first simulation—the "With Fort Attributable" (WFA) run—were based on the assumption that the Fort continues its current operations through 2030. Future inputs to the second simulation—the "No Fort Attributable" (NFA) run—reflected conditions that would exist if the Fort ceased operations at the end of 2010. The results of the NFA simulation were subtracted from those of the WFA simulation to calculate the net effects of the Fort's continued operations on the river's baseflows. The Fort, however, limited its model simulation to end in 2030, and thus did not analyze any impacts beyond that period.

87. The hydrologic model projects the Fort's operations will reduce baseflows in the lower Babocomari River by 0.1 cubic feet per second (cfs) by 2030. In the San Pedro River, the model projects a Fort-attributable *positive* effect on baseflows beginning just downstream of the EOP from 2015—the first map after the Fort's hypothetical 2010 closing—onward. In other words, and somewhat counterintuitively, the WFA simulation generates higher overall baseflows than the NFA simulation. However, both temporal graphs and mapping show steady declines in the Fort's beneficial effects on baseflows after 2020. Although the Fort contended that the post-2020 decline is "due to both Fort-attributable withdrawal and other water users in the Sierra Vista Subwatershed," there is no similar decline in the NFA simulation. Thus, the WFA decline must be entirely due to Fort-attributable withdrawals. The Fort attempted to minimize the fact that "the magnitude of the [Fort's] positive impact is slightly declining" by 2030 by suggesting that the Fort-attributable urban-enhanced recharge and conservation easements that were not included in the model would more than offset any declines. PBA at G-20. But the Fort provided no analysis supporting that statement.

88. The conservation easements described in ¶ 81, *supra*, were considered in the Fort's groundwater accounting model, but were not incorporated into its hydrologic groundwater model. BiOp at 294. According to FWS and the Fort, "[i]t is not feasible to model conservation easements due to uncertainty in estimating precisely where and when future development would occur (on easements intended to preclude residential or commercial development) or when agricultural pumping would recommence (on easements intended to retire or prevent future agricultural pumping)." *Id.* There is no

explanation for how the conservation easements could be valid in the accounting model if their water savings are too uncertain to be included in the hydrologic model.

89. According to FWS, "the groundwater demand accounting provides the best estimate of the Fort's continuing groundwater demands and its contribution (positive or negative) to the sustainable yield of the regional aquifer." BiOp at 80–81. And "groundwater demand and recharge estimates used in the groundwater demand accounting are important inputs to the groundwater model." *Id.* at 81; *accord id.* at 77.

90. FWS later stated the "spatially- and temporally-explicit groundwater demand accounting methodology, *combined with* the results of the groundwater model . . . represent the best available scientific information." *Id.* at 295 (emphasis added). However, this statement conflicts with FWS's earlier statement that the "water demand accounting [results are] not spatially or temporally explicit." *Id.* at 159. There is no explanation for how FWS could combine results from the models when one contains spatial and temporal detail, while the other does not. Nevertheless, based on some combination of these models, FWS concluded the Fort's continuing operations are not likely to jeopardize the continued existence of the Huachuca water umbel, northern Mexican gartersnake, or western yellow-billed cuckoo, or adversely modify the umbel's or gartersnake's critical habitats. *Id.* at 164, 274–75, 305–06.

E. The 2010 GeoSystems Report

91. Another report confirming the adverse impacts of the Fort's pumping on the San Pedro River recently came to light. Before its preparation of the PBA in 2013, the Fort also commissioned a report on the environmental impact of its groundwater

pumping. Prepared by GeoSystems Analysis, Inc. and confidentially provided to the Fort in 2010, the report is titled "Calculation of Pumping-Induced Baseflow and Evapotranspiration Capture Attributable to Fort Huachuca."[6]

92. The Fort did not publicly release the GeoSystems report when it was completed, but it was ultimately leaked to the public nearly a decade later, in late 2019. The GeoSystems report finds that Fort-attributable groundwater pumping was already causing harm to the San Pedro River by 2003, and that the harm to the San Pedro from Fort-attributable groundwater pumping's "peak impacts to simulated baseflow occur in 2050," *id*.—after the truncated analysis period ending in 2030 that was used in the BiOp.

93. Due to the constrained analysis period in the 2014 BiOp, FWS did not acknowledge that the Forts' groundwater-pumping impacts would peak in 2050, and did not consider these adverse impacts when it made the no-jeopardy conclusions in the BiOp, which only considered the effects of hydrological modeling through 2030.

94. Although FWS cited the GeoSystems report in its 2014 BiOp (*see, e.g.*, BiOp at 71), it did not incorporate the principal findings of the Geosystems report into its hydrologic modeling or into its conclusions, which directly conflict with the Geosystems report. For instance, FWS's reliance on a hydrologic model that forecasts impacts only until 2030 is fundamentally at odds with the GeoSystems report's conclusion that peak impacts will not occur until 2050. Thus, FWS's constrained timeframe ignored post-2030

[6] *Available at* https://www.biologicaldiversity.org/programs/public_lands/rivers/san_pedro_river/pdfs/report-20101100-CALCULATION-OF-PUMPING-INDUCED-BASEFLOW-Fort-Huachuca.pdf.

impacts that it knew about from the GeoSystems report. The GeoSystems report also demonstrates that modeling effects of current groundwater pumping several decades into the future is both feasible and necessary to meet the ESA's mandate to use the best scientific data available in determining the effect of federal actions on protected species. The GeoSystems report also demonstrated that Fort Huachuca-attributable groundwater pumping has already removed approximately 300,000 acre-feet that was not accounted for in the BiOp's hydrological accounting models.

F. FWS's Analysis of Water Loss to the Babocomari River

95. According to FWS, the hydrologic model is the "best science available to analyze the potential timing and location of future baseflow conditions" on the San Pedro and Babocomari Rivers. BiOp at 76. However, this model could not incorporate the Fort's supposed conservation-easement water savings. *Id.* at 294. It was simply "not feasible to model [these] conservation easements due to uncertainty in estimating precisely where and when future development would occur . . . or when agricultural pumping would recommence." *Id.* It is also infeasible to predict the effect of an easement on baseflows, especially since FWS has admitted that conservation easements do not affect baseflows "unless an active water use is retired." *Id.* at 294. Therefore, FWS relied on a model to predict baseflows that it has admitted is not appropriate for that purpose.

96. The original hydrologic model concluded the Fort's operations would reduce Babocomari baseflows by 0.1 cfs by 2030. *Id.* at 293–94. But rather than accept this conclusion and its biological consequences, FWS conducted a "revised effects analysis" to subtract the supposed beneficial effects from the Babocomari Area

easements from the modeled Babocomari baseflow declines. *Id.* at 294–301. Under this modeling, projected baseflow declines were reduced from 0.12–0.13 cfs to somewhere between 0.04 and 0.10 cfs, depending on season and the time period used. *Id.* at 301. Based on these adjusted results, FWS concluded that the flow reductions are "insignificant and discountable," and thus are unlikely to adversely affect the cuckoo or gartersnake. *Id.* at 273–74, 301.

97. This conclusion was flawed because FWS explicitly recognized that the Babocomari Area easements retired no active water uses, and that conservation easements cannot affect baseflows unless an active use is retired. Yet FWS ended up subtracting the "easement's [sic] resulting *yield in baseflow*" from the modeled streamflow declines. *Id.* at 296 (emphasis added). In effect, FWS's methodology adds 299 AFY of "paper water" to the effects analysis. *See Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova*, 150 P.3d 709, 720 (Cal. 2007). This ignores FWS's own scientific data.

98. In its "revised effects analysis," FWS also gave the Fort credit for conservation easements that FWS has conceded are "not feasible" to model. BiOp at 294. FWS admitted it could not incorporate easements into the original hydrologic model because it did not know "where and when" future development might occur. *Id.* Yet after running its hydrologic simulation, FWS simply subtracted the data from the accounting model from the simulation's results. *Id.* at 296. The problem with this is that the accounting model outputs just reflect hypothetical water savings for the general area—they are unsuitable for a complex hydrologic model because they are not tied to a

"where" and "when." *Id.* at 159. FWS irrationally ignored the stated limits of the Fort's hydrologic model. As a result, its revised effects analysis is arbitrary and capricious, and violates the best available science requirement.

99. Third, FWS failed to use the best available science in interpreting its modeling results. Early in the BiOp, FWS noted that "[p]revious modeling efforts considered differences in the -0.1 to 0.1 [cfs] range to be in the numerical 'noise' of the model results." BiOp at 158. The Fort adhered to this range in its original hydrologic model, noting any changes smaller than 0.1 cfs were considered "noise"—or possible random errors—and were disregarded. FWS did not use a different model in its "revised effects analysis"—it simply converted the easements' expected "yield in baseflow" to cfs and subtracted them from the modeled declines. *Id.* at 296. This methodology adjusted the modeled Babocomari baseflow values by 0.08 cfs at most—well within the 0.1 cfs error rate. *See id.* at 309. In other words, FWS refined its model outputs to a degree of specificity that FWS acknowledged is beyond the model's level of precision.

100. Even if FWS's revised effects analysis were correct, the agency still arbitrarily and capriciously concluded the Fort's operations will not jeopardize the western yellow-billed cuckoo. In its conference opinion, FWS recognized that even after adding in the Babocomari Area easement's baseflow yields, declines in the Babocomari might still result in the losses of cottonwood and willow forests. *Id.* at 305. Because the optimal habitat for the cuckoo consists of riparian woodlands with "dense canopy closure and high foliage volume of willows and cottonwoods," these losses could be destructive to the species. *Id.* at 283. However, FWS noted that any loss of the Babocomari's

cottonwood and willow riparian community is "likely to be replaced by increased cover" of the mesquite community, which can also provide cuckoo habitat. *Id.* at 305. FWS did not explain what effect, if any, this community shift would have on the cuckoo. Instead, FWS simply concluded that the proposed action's effects on the cuckoo are "insignificant and discountable" because any losses of cottonwood and willow are likely to be offset by "increases in mesquite bosque." *Id.* at 301–04. Yet it provided no scientific analysis or evidence supporting its assertion that cuckoos would survive and recover in mesquite bosque habitat.

101. FWS's proposed critical habitat designation and the BiOp suggest the shift will harm the cuckoo. For example, the proposal notes that the cuckoo's "food availability is largely influenced by the health, density, and species of vegetation." Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo, 79 Fed. Reg. 48548, 48552 (proposed Aug. 15, 2014) [hereinafter Cuckoo Habitat Proposal]. However, the cuckoo's favorite food—poplar sphinx-moth larvae—"are found *only* in willows and cottonwoods." *Id.* at 48551–52 (emphasis added). According to a California study, these insects alone accounted for 45% of the cuckoo's diet. *Id.* at 48551. Even the BiOp recognizes that the cuckoo's preferred foraging conditions "are usually found in cottonwood-willow riparian associations" and that foraging areas "often have a high proportion of cottonwoods in the canopy." BiOp at 281, 283.

102. Nesting is also highly influenced by tree species: throughout the cuckoo's range, "most nests are placed in willows (72[%] of 217 nests), and willows generally

dominate nesting sites." 79 Fed. Reg. at 48553 (further noting that "optimal breeding habitat contains willow dominated groves . . . with nearby foraging areas consisting of a mixture of cottonwoods and willows with a high volume of healthy foliage"). In contrast, only 7% of nests were documented in mesquite trees. *Id.* This preference for cottonwoods and willows over mesquite is not just a geographic artifact, moreover—statewide surveys in Arizona revealed that 85% of all historic cuckoo detections occurred in "habitat *dominated* by cottonwood with a strong willow and mesquite *understory*." *Id.* In sum, both historic data and recent studies suggest that pure mesquite habitat is not as valuable for the cuckoo.

103. FWS's northern Mexican gartersnake conference opinion concluded that the Fort's continued operations are "not likely to jeopardize the continued existence of the [species], and [are] not likely to destroy or adversely modify proposed critical habitat." BiOp at 274. FWS employed two conflicting rationales to justify its determination. First, it stated that "it is reasonable to conclude" that when the lower Babocomari River streamflows disappear or become too low, individual snakes "will either move upstream into more suitable reaches of the Babocomari River (~10 km) or they will move downstream into the San Pedro River in search of more suitable foraging habitat." *Id.* at 272–73. Second, FWS used the revised effect analysis results to conclude that the lower Babocomari's "small, and difficult to measure expected reduction in baseflow will have minimal seasonal, and regionally localized effects on" the gartersnake's occupied habitat. *Id.* at 273. The former lacks a rational basis and violates the best available science requirement. The latter is flawed for the reasons described in ¶¶

98–99, *supra*—namely, the model's degree of error exceeds the anticipated effect being modeled.

104. FWS admitted that the dewatering of the lower Babocomari would extirpate the fish on which the snake preys in that reach, making it uninhabitable. *See* BiOp at 261 ("The presence of water is critical for northern Mexican gartersnakes, as well as their prey base."). But FWS concluded that snakes on the lower Babocomari will simply move elsewhere because (1) northern Mexican gartersnakes "are known to be opportunistic foragers" and (2) resident snake populations in the receiving habitats are at low enough densities that an influx of displaced migrants would probably not push these populations over their carrying capacities. *Id.* at 272–73. But FWS provides no scientific support for either assumption.

105. In fact, the best available science weighs against these assumptions. First, FWS's own proposed critical habitat designation—published a year before the BiOp—recognizes that while the gartersnake may wander, "perhaps in response to a decline or disappearance of the prey base," observational records have only found "individuals wandering *hundreds of meters* away from water." Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, 78 Fed. Reg. 41550, 41554 (proposed July 10, 2013) (emphasis added). The BiOp also documented the gartersnake's limited overland dispersal ability, noting that radio telemetry has shown gartersnakes traveling up to "528 ft away from water." BiOp at 270; *see also* 79 Fed. Reg. at 38679 (noting that telemetry data has found "that the species may travel at least *528 feet* (161 m) from the nearest

water [source] and as much as *0.4 mi (0.6 km)* in a single day (total distance traveled)" (emphasis added)). The BiOp assumes, however, that the gartersnake will be able to disperse as much as 10 *kilometers* in response to lower Babocomari dewatering. Yet the best available science described above suggests the gartersnake's overland dispersal ability is much more limited—on the order of hundreds of meters, not tens of thousands.

106. Second, FWS provided no evidence to support its "belie[f]" that the San Pedro and upper Babocomari gartersnake populations are currently under their carrying capacities. BiOp at 273. Although FWS notes that "resident populations in [the San Pedro and upper Babocomari] are at low or very low densities," *id.*, carrying capacity is a measure of how many animals a habitat can sustainably support, not density. In fact, carrying capacities can be lowered by many of the factors that are already impacting the gartersnake: invasive species, habitat destruction, disease, and extreme weather. BiOp at 256–63.

107. Moreover, FWS expressly noted that "[a]ll identified areas described in the San Pedro River Subbasin Unit have records for northern Mexican gartersnakes, and all identified areas are considered as being *within the area occupied* by the species." *Id.* at 267 (emphasis added); *see also id.* ("The Babocomari River Subbasin Unit is proposed as critical habitat for the northern Mexican gartersnake *because it is occupied* at the time of listing." (emphasis added)). In summary, FWS simply assumed, without support, that lower Babocomari gartersnakes will disperse dozens of times farther than any scientist has ever observed.

G. Significant New Information

108. Since FWS issued the BiOp in 2014, several circumstances in the region have changed significantly.

109. First, water consumption at the Fort has significantly increased since the BiOp was published in 2014, from 1,453 AFY to 2,325.2 AFY, an increase of 60%.

110. Second, the impacts of climate change have become more severe than FWS anticipated in 2014. The Fourth National Climate Assessment, compiled by thirteen federal agencies in 2018, found that in the Southwest, extreme heat episodes drought have become much more common. Fourth National Climate Assessment Chapter 25: Southwest (2018).[7] Increased temperatures, especially the earlier occurrence of spring warmth, have significantly altered the water cycle in the Southwest. *Id.* at 1112. The Assessment also found that the integrity of Southwestern ecosystems has declined due to recent droughts. *Id.* at 1115.

111. Third, the Fort's efforts at recharge have proven much less effective than expected. For instance, although the BiOp claims that Fort Huachuca recharge projects will be responsible for 108 AFY of stormwater capture, the Fort's annual reports show that those same recharge projects have generated far less than that in the past four years: totals from 2015–2018 range from 61.6 AFY to as little as 27 AFY. Similarly, the BiOp claims that "East Range Recharge" will result in 368 AFY of recharge, but actual recharge from 2015 to 2018 ranged from 155 to 246 AFY. Relatedly, the Palominas Pilot

[7] *Available at* https://nca2018.globalchange.gov/downloads/NCA4_Ch25_Southwest_Full.pdf.

Stormwater Project was expected to generate 98 AFY of recharge, but generated only 9.7 and 10.2 AFY of recharge in 2017 and 2018.

112. Fourth, new hydrologic modeling simulating the effects of Fort-attributable pumping on local groundwater levels shows that by 2100, expected drawdowns will exceed 18 meters in the Fort Huachuca/Sierra Vista area, 2 meters beneath and north of the central Babocomari River, and nearly 2 meters beneath portions of the southern extent of the Conservation Area, south of Lewis Springs. Evaluation of Impacts of Fort Huachuca Long-term Well Pumping and Recharge on San Pedro River Stream Flow (from 2011 to 2100), Prepared by Robert H. Prucha, PhD, PE, Integrated Hydro Systems, LLC, Boulder, CO (Nov. 21, 2019).

FIRST CAUSE OF ACTION
(*Violation of ESA § 7(a)(2)—Reliance on speculative water savings offsets in accounting model*)

113. Plaintiffs incorporate all preceding paragraphs by reference.

114. FWS's accounting model relies on speculative, unsupported water savings from conservation easements and unreasonable assumptions.

115. FWS identified flaws in the Fort's accounting model used in the PBA but then ignored these shortcomings in its BiOp, which relied in part on the flawed accounting model to make its no-jeopardy findings.

116. The accounting model improperly credited the Fort with speculative water savings attributed to its conservation easements. By relying on these illusory mitigation measures, FWS and the Fort obscured the fact that the Fort will continue to have net-negative effects on the aquifer and San Pedro and Babocomari River baseflows.

117. In particular, FWS has not demonstrated that the agricultural easement—the Preserve Petrified Forest easement, representing a purported water savings of 2,588 AFY—retired any "active" groundwater pumping. Although the easement was not finalized until 2013, the Preserve Petrified Forest easement report concluded that the parcel had not been irrigated since 2006. In the hydrologic model, agricultural pumping from the Preserve Petrified Forest parcel is removed in 2005, presumably because alfalfa cultivation ended in 2006. This modeling choice cuts directly against the "offset" of this parcel in the accounting model. This is a consequential oversight—without getting credit for significant water savings from this easement in the accounting model (more than 2,500 AFY), the accounting model would show the Fort running a groundwater deficit each year of the consultation period, ultimately putting the threatened and endangered species that depend on the river at risk. *See* BiOp at 169.

118. Additionally, FWS and the Fort repeatedly treat these mitigation measures as if they are effective immediately, while their own science suggests these benefits may take decades to be fully realized—assuming they have any positive effect at all.

SECOND CAUSE OF ACTION
(*Violation of ESA § 7(a)(2)—Reliance on flawed hydrologic model*)

119. Plaintiffs incorporate all preceding paragraphs by reference.

120. FWS's no-jeopardy conclusion is based primarily on outputs from the hydrologic model, which concludes the Fort will have a net-positive contribution on water levels throughout the 2020s despite its increased groundwater pumping. But the

Fort arbitrarily cut off the model simulation in 2030, in contravention of the best scientific information available, including the GeoSystems report.

121. In conducting ESA consultations, FWS is required to use the best scientific data available, and also must avoid conducting "a series of short-term analyses," which "could mask the long-term impact" of its actions. *Wild Fish Conservancy*, 628 F.3d at 523. But neither FWS nor the Fort gave a scientific basis for using an abbreviated 20-year period to run the hydrologic model.

122. The effect of cutting off the analysis at 2030 was to obscure the Fort's increasingly negative effects on baseflows. While the hydrologic model projects the Fort's operations will have a positive effect on baseflows, this positive effect peaks in 2020 and then declines in magnitude, to the point that the Fort's groundwater pumping overwhelms recharge efforts. The GeoSystems report reveals that the Fort's peak impacts on groundwater occur in 2050. FWS was aware of, and had access to, scientific information and methodologies that would allow it to quantify long-term reasonably certain effects, but it ignored them when it assessed the Fort's impacts on ESA-protected species.

THIRD CAUSE OF ACTION
(*Violation of ESA § 7(a)(2)—Failure to consider impacts of climate change*)

123. Plaintiffs incorporate all preceding paragraphs by reference.

124. FWS had information that climate change may diminish or eliminate the effectiveness of some of the asserted mitigation efforts, but failed to consider or analyze that information in the BiOp.

125. Although FWS and the Fort acknowledged that the benefits of the Fort's mitigation measures may take decades to be fully realized, they did not address the harmful effects listed species will face from climate change during that same time period, including increases in extreme temperature and precipitation events, reduced streamflows, and more intense, frequent, and longer-lasting droughts.

126. The Fort and FWS also entirely failed to analyze climate change in connection with the Fort's operations. The BiOp and PBA do contain extensive information on global climate change, climate modeling, precipitation trends, decreased streamflows, and rising temperatures, and the BiOp does mention potential effects of climate change in its jeopardy and adverse modification determinations for the lesser long-nosed bat, the Huachuca water umbel, the northern Mexican gartersnake, the western yellow-billed cuckoo, and the Mexican spotted owl. But FWS never *considered* these general statements together with the groundwater model results to inform the analysis of potential and synergistic cumulative effects on federally listed species.

127. Instead, FWS made clear that the groundwater models were the principal, if not the only, factor it considered in its no-jeopardy and no-adverse modification determinations for the cuckoo, umbel, and gartersnake. Climate change is never considered or even mentioned in the sections discussing "Effects of the Action," "Cumulative Effects," or Conclusions for each species. While the BiOp recognizes that climate change will exacerbate threats to listed species, FWS never considered these threats "in connection with its analysis" of the Fort's operations. *See Irving*, 221 F. Supp. 3d at 1234. However, "an agency may not entirely fail to develop appropriate projections

where data was available but [was] simply not analyzed." *Pac. Coast Fed'n of Fishermen's Ass'ns v. Gutierrez*, 606 F. Supp. 2d 1122, 1184 (E.D. Cal. 2008) (citations omitted).

128. There is no question that climatic-recharge data was available, as some is cited in the BiOp. *See, e.g.*, BiOp at 65 (describing a study that estimated "recharge in the San Pedro Basin would decrease 4 to 6 percent by 2020, 6 to 8 percent by 2030, and 17 to 30 percent by the end of the 21st century" due to climate change). There is also no question that this climate-change data could be incorporated into the hydrologic model—the model's original designers recognized as much. Finally, there is no question that "including climate-based recharge variations" would improve the model simulations. BiOp at 156. The Fort simply chose not to.

FOURTH CAUSE OF ACTION
(*Violation of ESA § 7(a)(2)—failure to consider short-term impacts to the umbel)*

129. Plaintiffs incorporate all preceding paragraphs by reference.

130. FWS must consider whether short-term adverse effects to listed species might jeopardize the species' continued existence or adversely modify its critical habitat. It cannot simply conclude that there will be no jeopardy or adverse modification because conditions will be acceptable in a few years. *See, e.g.*, *Nat'l Wildlife Fed'n*, 524 F.3d at 934 (holding NMFS violated Section 7 by "ignor[ing] the short-term adverse modification and consider[ing] only long-term impacts").

131. Here, FWS stated that although the hydrologic model predicts no Fort-attributable baseflow reductions in the mainstem San Pedro River from 2012 to 2030,

"negative net groundwater demands attributable to the Fort are projected [by the accounting model] to exist in 2012 and 2013 [and] can be reasonably assumed to reduce discharges to the San Pedro River." BiOp at 158–59. The result, according to FWS, is a "residual, and temporary, reduction" in San Pedro baseflows "before the onset of the conservation measure-driven water savings overtakes the negative influence of Fort Huachuca's water demands." *Id.* at 160. This reduction will cause the Huachuca water umbel "some degree of mortality [and] some associated reduction in occurrence counts and length of occupied critical habitat." *Id.* at 159. FWS ultimately concluded, however, that any short-term adverse effects "will be within the range of conditions experienced by the species" and are "unlikely to result in a long-term permanent contraction of the species' occurrence." *Id.* at 160.

132. This cursory and conclusory analysis of short-term effects does not satisfy the ESA. First, it contains no discussion of the umbel's life cycle or biology, or whether destroying this particular habitat might have further-reaching effects on the species' survival and recovery. Even if the umbel has survived similar conditions in the past, its populations have decreased to the point that it now is an endangered species without the resilience of a self-sustaining, healthy population. Second, it does not consider the time-lagged effects of the Fort's supposed mitigation measures.

FIFTH CAUSE OF ACTION
(*Violation of the Fort's substantive duty under ESA § 7(a)(2)*)

133. Plaintiffs incorporate all preceding paragraphs by reference.

134. ESA section 7(a)(2) prohibits action agencies, such as the Fort, from undertaking actions that are "likely to jeopardize the continued existence" of any listed species or "result in the destruction or adverse modification of" their critical habitat. 16 U.S.C. § 1536(a)(2). The agency has an independent duty to meet its substantive section 7 obligation to ensure its actions are not likely to jeopardize listed species or result in the destruction or adverse modification of designated critical habitat. *See* ¶ 33, *supra.*

135. As explained above, FWS committed legal errors in its BiOp by relying on unreasonable assumptions and speculative water savings, failing to use the best available science, and neglecting to adequately consider adverse effects to listed species. Because the Fort's reliance on a legally flawed BiOp is arbitrary and capricious, the Fort violated its substantive duty under section 7 of the ESA.

136. Insofar as the Fort selectively withheld from FWS information that was pertinent to FWS's assessment of impacts, the Fort compounded its violation of section 7(a)(2) by relying on the BiOp.

SIXTH CAUSE OF ACTION
(Violation of ESA § 7(a)(2)—unreasonable "no effect" determination for flycatcher)

137. Plaintiffs incorporate all preceding paragraphs by reference.

138. In its 2006 PBA, the Fort concluded, "ongoing and future military operations and activities on and near Fort Huachuca may affect, and are likely to adversely affect the southwestern willow flycatcher." But in the current PBA, the Fort determined that "[d]ue to the positive impacts of the Fort's water-related conservation and mitigation measures, the action would have no effect on the southwestern willow

flycatcher or its habitat." Yet the Fort also concluded that its actions "are likely to adversely affect" the Huachuca water umbel, "possibl[y] . . . would . . . adverse[ly] [a]ffect" the western yellow-billed cuckoo, and "may possibly have a minor effect" on the northern Mexican gartersnake—all of which, like the flycatcher, rely on perennial baseflows in the San Pedro and Babocomari Rivers. The flycatcher and cuckoo in particular "have many similar habitat requirements and partially overlap in range." Memorandum from Assistant Reg'l Dir., Ecological Servs., U.S. Fish & Wildlife Serv., to Acting Field Supervisor, Sacramento Fish & Wildlife Off., U.S. Fish & Wildlife Serv., Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (Coccyzus americanus) (Aug. 6, 2013).

139. In short, the Fort stated its operations will cause baseflow declines in suitable cuckoo and flycatcher habitat, but then concluded, without factual support, that there will be a possible adverse effect on the cuckoo but no effect on the flycatcher. Because any possible effect triggers section 7(a)(2), the Fort's failure to consult with FWS on the southwestern willow flycatcher violated the ESA.

SEVENTH CAUSE OF ACTION
(*Violation of ESA § 7(a)(2)—Failure to reinitiate consultation or to adopt conference opinions for cuckoo and gartersnake)*

140. Plaintiffs incorporate all preceding paragraphs by reference.

141. When FWS issued the Fort Huachuca BiOp and Conference Opinion on May 16, 2014, it had already proposed the northern Mexican gartersnake and the western yellow-billed cuckoo for listing, and it had proposed critical habitat for the gartersnake.

FWS incorporated conference opinions for these species into its BiOp, along with a provisional incidental take statement for the gartersnake. BiOp at 252, 276–80. Less than two months later, FWS published a final rule listing the gartersnake as threatened. Endangered and Threatened Wildlife and Plants; Threatened Status for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, 79 Fed. Reg. 38,678 (July 8, 2014). Shortly thereafter, FWS also listed the western distinct population segment of the yellow-billed cuckoo as threatened. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus), 79 Fed. Reg. 59,992 (Oct. 3, 2014).

142. By the end of 2014, the Fort requested that FWS adopt the conference opinions for the gartersnake and cuckoo as a BiOp. But although the Consultation Handbook gives FWS 45 days after an action agency's request to adopt a conference opinion as a BiOp, FWS has not acted in nearly five years. Consultation Handbook at 6-6. As a result, FWS can no longer be certain that "no significant changes have occurred in the proposed action or the information used in the conference." *Id*. Moreover, the Fort never reinitiated consultation pursuant to 50 C.F.R. § 402.16(d), as it should have based on the length of time that has passed since the species were listed. A new interagency consultation for the gartersnake and cuckoo is the only way to assess the Fort's impacts to these species' continued existence. *See id.*

143. In sum, the agencies have failed to complete formal consultation on an action which the Fort already recognized may adversely affect both the northern Mexican gartersnake and the western yellow-billed cuckoo. Moreover, because the 2014

conference opinions were never confirmed, the provisional incidental take statement issued for the gartersnake never took effect. *See* BiOp at 276–79; 50 C.F.R. § 402.10(d). This means the Fort has been operating for five years in a manner FWS already recognized would likely result in the take of ten northern Mexican gartersnakes over the course of the 10-year action period. *See* BiOp at 276 (issuing provisional incidental take statement for ten northern Mexican gartersnakes over the 10-year life of the project due to baseflow reductions in the lower Babocomari). Even assuming the Fort has not already violated section 9's take prohibition, the Fort's failure to consult violates section 7 of the ESA. 50 C.F.R. §§ 402.10(d) & 402.16(d).

EIGHTH CAUSE OF ACTION
(*Violation of the ESA § 7(a)(2)—substantive flaws in conference opinions)*

144. Plaintiffs incorporate all preceding paragraphs by reference.

145. Although FWS claims to be working on adopting the conference opinions as a BiOp, it cannot be sure that "no significant changes have occurred in the proposed action or the information used in the conference," including a more severe drought caused by climate change. *See* Consultation Handbook at 6-6; 50 C.F.R. § 402.10(d). But even if no changes have occurred, there are significant substantive flaws in each conference opinion that render them arbitrary, capricious, and in violation of the ESA.

146. First, FWS used an unreasonable "revised effects" methodology to model Babocomari baseflow declines in its western yellow-billed cuckoo and northern Mexican gartersnake analyses. *See* ¶¶ 96–99, *supra.*

147. Because FWS's adjustment methodology is flawed, the baseflow declines in the lower Babocomari projected by the unadjusted hydrologic model represent the best available science. FWS's revised effects analysis, and the northern Mexican gartersnake and western yellow-billed cuckoo determinations, which were based on the flawed adjustment methodology, violate the ESA's best available science requirement. 16 U.S.C. § 1536(a)(2).

148. Second, FWS unreasonably concluded that the Fort's operations would not jeopardize the western yellow-billed cuckoo. *See* ¶¶ 100–02, *supra.*

149. FWS failed to analyze how a shift to a less favorable, mesquite-dominated habitat, and a loss of the native cottonwood and willow forest fed by the San Pedro flows, would affect the cuckoo. FWS's arbitrary conclusion is unsupported by its own findings and ignores the best available science.

150. Third, FWS unreasonably concluded that the Fort's operations would not adversely affect the northern Mexican gartersnake or its proposed critical habitat. *See* ¶¶ 103–07, *supra*. FWS simply assumed—without evidence—that lower Babocomari gartersnakes will disperse dozens of times further than any scientist has ever observed into already occupied habitats that are currently unable to support more than a few snakes. In doing so, FWS ignored the best available science detailed in its own BiOp and violated the ESA.

NINTH CAUSE OF ACTION
(*Violation of the ESA § 7(a)(2)—failure to reinitiate consultation)*

151. Plaintiffs incorporate all preceding paragraphs by reference.

152. Significant new information shows that the Fort's water consumption has been greater than anticipated, that the Fort's recharge efforts have been less effective than anticipated, and that climate change has had a more rapid and severe impact in the Southwest than anticipated. *See* ¶¶ 108–12, *supra*. This new information reveals that effects of the action will affect protected species "in a manner or to an extent not previously considered," thus requiring FWS to reinitiate consultation. 50 C.F.R. § 402.16(a)(2). This is all the more true since FWS's hydrologic model did not consider climate change at all. *See* Third Cause of Action, *supra*.

PRAYER FOR RELIEF

Plaintiffs request that the Court:

1. Declare that FWS's May 16, 2014 BiOp is unlawful under the ESA and arbitrary and capricious under the APA;

2. Declare that the Army violated the ESA by relying on the unlawful BiOp in approving ongoing and future military operations and activities at Fort Huachuca;

3. Vacate, set aside and remand the BiOp and conference opinions challenged herein;

4. Order Defendants to reinitiate consultation on the effects of continued groundwater pumping associated with the Fort on listed species in accordance with ESA section 7;

5. Award Plaintiffs its costs, expenses, expert witness fees, and reasonable attorney fees pursuant to the Equal Access to Justice Act, 28 U.S.C. § 2412 and ESA, 16 U.S.C. § 1540(g)(4); and

6. Grant such other relief as the Court deems just and proper.

Respectfully submitted this 13th day of March, 2020,

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