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7 **CALIFORNIA STATE WATER RESOURCES CONTROL BOARD**
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9 **IN RE CALIFORNIA WATERFIX,**
10 **CALIFORNIA DEPARTMENT OF**
11 **WATER RESOURCES AND U.S.**
12 **BUREAU OF RECLAMATION'S**
13 **PETITION FOR CHANGES IN**
14 **WATER RIGHTS, POINTS OF**
15 **DIVERSION/RE-DIVERSION**

WRITTEN TESTIMONY OF MARK
PETRIE ON BEHALF OF
GRASSLAND WATER DISTRICT

16 **I. INTRODUCTION**

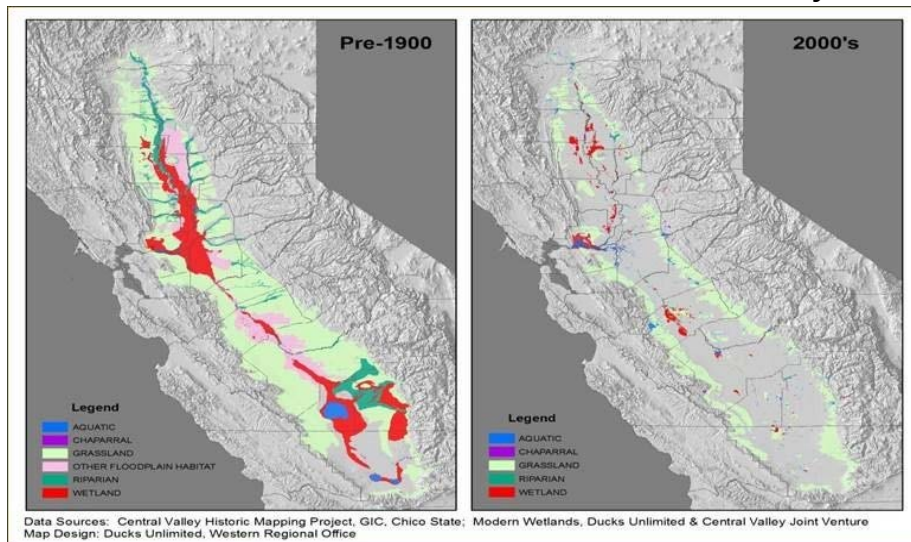
17 I am a professional wildlife biologist and the Director of Conservation Planning
18 for Ducks Unlimited, Incorporated's Western Regional Office. A Statement of my
19 Qualifications is submitted concurrently with my written testimony, as Exhibit GWD-3.
20 I am responsible for Ducks Unlimited's science program in the west and for developing
21 conservation strategies and objectives to help guide habitat and public policy programs. I
22 have been employed by Ducks Unlimited since 1997. During my employment with
23 Ducks Unlimited, I also served as a Science Coordinator for the Central Valley Joint
24 Venture and two other Joint Ventures, where I was a significant contributor to the Central
25 Valley Joint Venture 2006 Implementation Plan (Exhibit GWD-4). I hold a Ph.D. and a
26 Master of Science degree in wildlife ecology from the University of Missouri. I have
27 published more than a dozen peer-reviewed scientific papers on the wetland habitat and
food needs of birds.

1 In this testimony, I will explain the importance to wildlife species of the 14 public
2 and private wildlife habitat areas (“refuges”) located south of the Delta, which receive
3 Central Valley Project (CVP) water supply. (Exhibit GWD-5.) My testimony will first
4 review the history of formal protections and programs intended to ensure the continued
5 health of migratory bird populations that rely on these refuges. I will then explain the
6 ecological significance of refuge water deliveries from the CVP. My testimony concludes
7 with my professional opinions about the adverse impacts to wildlife that would occur if
8 the California WaterFix project is operated in a way that interferes with water deliveries
9 from the Delta to the refuges.

10 **II. FRAMEWORK OF PROTECTIONS FOR MIGRATORY BIRDS**

11 California’s Central Valley is one of the most significant places in North America
12 for migratory birds. The loss of more than 50% of wetlands in the United States,
13 including 95% of wetlands in the Central Valley, caused waterfowl populations to
14 plummet in the 1980’s. In response to this wildlife crisis, in 1986 the United States and
15 Canada established the North American Waterfowl Management Plan, an international
16 plan to conserve waterfowl and migratory birds in North America. The Plan was
17 authorized by Congress in the 1989 North American Wetlands Conservation Act (P.L.
18 101-233), and expanded to include Mexico in 1994.

19 **Loss of Historic Wetlands in the Central Valley**



1 The North American Waterfowl Management Plan is implemented by Joint
2 Ventures that manage and operate programs of regional scope. The Central Valley Joint
3 Venture (CVJV) was formed in 1988. The first CVJV Implementation Plan was issued in
4 1990 and updated in 2006. (Exhibit GWD-4.) The CVJV Implementation Plan has always
5 contained a stated objective to secure a water supply that is of “suitable quality and is
6 delivered in a timely manner” for optimum management of wetlands in the Central
7 Valley’s National Wildlife Refuges, State Wildlife Areas, and the Grassland Resource
8 Conservation District. (Exhibit GWD-4, p. 35.) This objective is referred to as “Level 4”
9 refuge water supply, based on the findings of a 1989 “Report on Refuge Water Supply
10 Investigations” by the U.S. Bureau of Reclamation. (Exhibit GWD-6.)

11 In 1992, Congress enacted the Central Valley Project Improvement Act (CVPIA),
12 and incorporated the Level 4 refuge water supply objective. The CVPIA requires the
13 Bureau of Reclamation to deliver a “firm water supply of suitable quality” to 19 wetland
14 habitat areas in the Central Valley, meeting both “the quantity and delivery schedules of
15 water” set forth in the Report on Refuge Water Supply Investigations. (P.L. 102-575,
16 Title 34, § 3406(d).) Two-thirds of that quantity, Level 2 refuge water, is delivered from
17 the CVP, and the additional increment to reach Level 4 is acquired from willing sellers.

18 Most CVPIA refuges are contained within the Grasslands Ecological Area (GEA).
19 Located in Merced County in the San Joaquin Valley, the GEA contains the largest
20 remaining block of wetlands in the state. This area has received numerous designations
21 and protections. Congress designated the Grasslands Wildlife Management Area in 1979,
22 allowing the U.S. Fish and Wildlife Service to acquire and hold permanent habitat
23 easements on private lands, which has proven to be a very successful investment. The
24 International Ramsar Convention on Wetlands listed the GEA as a Wetland of
25 International Importance in 2005. The Audubon Society designates the GEA as an
26 Important Bird Area, and the Western Hemispheric Shorebird Reserve Network
27 designates the GEA as a Site of International Importance. (Exhibit GWD-7.)

1 **III. SIGNIFICANCE OF CVP WATER DELIVERIES FOR WILDLIFE**

2 Historically, California’s Central Valley contained 4 million acres of wetlands and
3 hosted 20 to 40 million migratory birds each year. (Exhibit GWD-4, pp. 21.) There are
4 now fewer than 300,000 acres of wetlands remaining, which together with flooded
5 agricultural lands support 6 to 8 million migratory waterfowl (ducks, geese and swans),
6 350,000 migratory shorebirds (sandpipers, plovers, curlews, stilts and more), and
7 hundreds of thousands of other migratory birds (cranes and ibis) and resident birds
8 (herons, egrets and mallards). The remaining wetlands are managed intensively to
9 maximize food production and habitat value. Water delivered from the CVP accomplishes
10 three things on CVPIA refuges: improves moist-soil plant production which ultimately
11 increases food supply, the provision of flooded habitat, and decreased avian crowding.
12 (Exhibit GWD-6, pp. 50, 62.)

13 The spring and summer irrigation of moist-soil native wetland plants increases
14 food and habitat for birds. After irrigation, the plants grow robustly, providing cover for
15 resident birds to nest and breed, and then decay in the fall and winter, creating ideal
16 conditions for the production of avian food supplies. The food supplies come from two
17 processes: the release of plant seeds and the growth of invertebrates. In addition to aiding
18 in plant decay and invertebrate growth, the shallow flooding of managed wetlands in the
19 fall and winter provides ideal habitat conditions that attract and hold migratory birds
20 throughout the winter. A large flooded wetland “footprint” also decreases avian crowding
21 by distributing migratory birds across the landscape when they arrive in large numbers.

22 There are four resulting benefits for wildlife: improved energetics, increased
23 survival, decreased disease, and increased or stable populations over time. Birds with
24 sufficient food supplies travel shorter distances in search of food, and they store more
25 energy. With increased energy their body condition improves and they are more likely to
26 survive long migrations along the Pacific flyway, which stretches from Alaska to Central
27 America. When birds are not overcrowded in wetlands, there is a measurable reduction in
outbreaks of fatal diseases such as avian cholera and avian botulism. These benefits result

1 in increased or stabilized populations of migratory birds on a larger scale throughout
2 North America over time. The Central Valley currently provides habitat for 20% of the
3 migratory waterfowl in North America, and 60% of the Pacific Flyway population.

4 **Migratory Patterns of the Pacific Flyway**



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17 The delivery of reliable water supplies to refuges after the passage of the CVPIA
18 reversed the downward trend of migratory bird populations in the Central Valley. Food
19 production increased significantly, bird energetics and body condition improved, and the
20 survival rate increased. Overall populations of waterfowl, shorebirds, and local breeding
21 birds increased and stabilized, although many populations remain depressed. Deliveries
22 of CVP water to refuges south of the Delta also helps maintain the pattern and southward
23 extent of the Pacific Flyway. Today, water delivered from the Delta to these refuges, in
24 conformance with the quantity and delivery schedules first set forth in the Report on
25 Refuge Water Supply Investigations and incorporated into the CVJV Implementation
26 Plan and the CVPIA, are critical for the health and survival of hundreds of avian wildlife
27 species and millions of individual birds every year.

1 **IV. POTENTIAL IMPACTS OF THE CALIFORNIA WATER FIX**

2 The proposed WaterFix Project would change the water right permits held by the
3 Bureau of Reclamation for the CVP and the permits held by the Department of Water
4 Resources for the State Water Project (SWP). These changes would allow CVP and SWP
5 water to be diverted through new water intakes and delivered through an isolated
6 conveyance system to water users south of the Delta. Without appropriate conditions put
7 in place to protect the quantity and timing of refuge water deliveries, operations of the
8 WaterFix Project could decrease the supply, timing, and reliability of water to CVPIA
9 refuges and cause significant adverse effects on wildlife.

10 The Report on Refuge Water Supply Investigations, which formed the basis for
11 the water supply objectives stated in the both the CVJV Implementation Plan and the
12 CVPIA, established a “Dependable Water Supply Needs” table listing the volume of
13 water required by each refuge on a month-by-month timeline. (E.g. Exhibit GWD-6, p.
14 235.) The Bureau of Reclamation delivers water in accordance with the refuges’ Level 2
15 water needs, on a priority basis. Shortages of up to 25% are imposed in critically dry
16 years. Accordingly, refuges are among the last CVP water users who receive water from
17 the Delta to have their CVP water supplies reduced. The WaterFix Project was modeled
18 and proposed in a way that would maintain these priority CVP water deliveries.
19 However, an operational plan for the Project has not been agreed upon, and much
20 uncertainty exists whether CVP supplies could be reprioritized for other purposes.

21 The recent drought provided a short-term example of the kind of longer-term
22 impacts that would occur if CVPIA refuges do not continue to receive CVP water on a
23 priority basis and in accordance with their water delivery schedules. In 2014 and 2015,
24 for the first time, the Bureau of Reclamation reduced Level 2 refuge water deliveries
25 from the Delta to 65% and 75% (accordingly) and restricted the schedule of refuge water
26 deliveries. (Exhibit GWD-8, pp. 2-3.) Irrigations of wetland plants on south-of-Delta
27 refuges fell by 60% to 70%, and the footprint of fall-flooded wetland habitat decreased

1 by 30% to 40%. The production of wetland food supplies diminished by 50%, causing a
2 lack of adequate food supply and a decrease in waterfowl, shorebirds, and resident birds.

3 It is my professional opinion that without conditions to protect the priority of CVP
4 refuge water supplies, including refuge water delivery schedules, the WaterFix Project
5 could result in habitat decline and significant avian wildlife impacts caused by reduced
6 moist-soil plant production, reduced food supply and flooded habitat, and increased avian
7 crowding. These factors would create adverse impacts including diminished avian
8 energetics and body condition, decreased survival and reproductive rates, increased
9 instances of fatal avian disease outbreaks, and decreased or unstable avian populations
10 over time.

11 I additionally believe that if refuge water supplies are deprioritized, there is a
12 likelihood that certain avian species may decline over the long term, to the point where
13 they would be candidates for listing as special-status, threatened or endangered species.
14 These include the White-faced Ibis, Sandhill Crane, Black-necked Stilt, Peregrine Falcon,
15 Loggerhead Shrike, and Tri-colored Blackbird.

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18 Executed on November 28, 2017 in

19 Vancouver, WA



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Mark

Petrie