



October 30, 2015

SENT VIA EMAIL (bdcpcomments@icfi.com)

BDCP/WaterFix Comments
P.O. Box 1919
Sacramento, CA 95812

RE: Comments of Friends of Stone Lakes National Wildlife Refuge on Draft Bay Delta Conservation Plan/California WaterFix and Associated Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement

Dear Lead Agencies:

These comments are submitted in relation to the proposed Bay Delta Conservation Plan (“BDCP”)/California WaterFix (“Tunnels”, “project” or “Alt. 4A”) and associated public review Partially Recirculated/Supplemental Draft Environmental Impact Report/Statement (“RDEIR/S”) on behalf of the Friends of Stone Lakes National Wildlife Refuge, a California non-profit public benefit corporation (“FSL” – formerly known as the Stone Lakes National Wildlife Refuge Association). FSL is a volunteer organization dedicated to the conservation, protection, enhancement and promotion of the Stone Lakes National Wildlife Refuge (“Stone Lakes NWR” or “Refuge”) whose members have been actively engaged in reviewing the Project for the benefit of the Refuge for many years. The comments submitted herein are solely those of FSL and are independent of Stone Lakes NWR staff and the U.S. Fish and Wildlife Service (“USFWS”).

The Refuge is ground zero for this project. (See Exhibits 1 and 2, Surface Impacts Figures.) Stone Lakes NWR is adjacent to all three proposed Tunnel Intakes, and the Intermediate Forebay is located within the Refuge Boundaries. New power lines are proposed to cross the Refuge as well. Geotechnical exploration, construction equipment and associated traffic and noise will interfere with the Refuge for much of the fourteen-year construction period, and then industrial-scale water infrastructure will permanently dominate the landscape and the nearby Sacramento River. A place Congress specifically chose to save changed forever.

FSL submitted a letter dated July 25, 2014, commenting upon the 2013 Draft BDCP and Draft EIR/S.¹ FSL has not received responses to those comments. The state and federal lead agencies have now created new sub-alternatives, including the new Alt. 4A as the proposed preferred alternative. The comments in this letter thus focus on the analysis in the RDEIR/S pertaining to Alt. 4A. FSL notes, however, that its ability to effectively comment on the RDEIR/S was hampered by a number of factors, including: (1) receiving no responses on the FSL comments submitted in 2014; (2) the disjointed organization of analysis in the RDEIR/S; (3) lack of specific cross referencing between relevant portions of the RDEIR/S and the 2013 draft EIR/S and BDCP; (4) the confused manner in which the project that is actually being proposed is presented in the DSEIR/S; and (5) the Lead Agencies' failure to provide public access to other comments on the 2013 draft EIR/S. FSL's review was aided some by assistance from lead agency staff/consultants familiar with the preparation of these documents; FSL does not believe that an average member of the public would be able to discern the basic proposal or its impacts from the documents as presented.

In addition to responses to the comments contained in this letter, FSL requests responses to all of its comments in its prior letter. In an attempt to focus the comments in this letter on the impacts of Alt. 4A, FLS has purposely not repeated everything in its July 25, 2014 letter. Please assume that all of FSL's prior comments on the 2013 documents and the previously preferred alternative (Alt. 4) also pertain to Alt. 4A unless those comments refer to a project component that is no longer included in Alt. 4A. As discussed below, due to the inadequacies of the RDEIR/S project description and impact analyses, it is quite difficult to discern which aspects of Alt. 4 are still included in Alt. 4A, especially with respect to measures or actions carried over from the previously proposed BDCP HCP/NCCP.² Thus, the RDEIR/S lead agencies and consultants are in the best position to determine which of the previous comments also apply to Alt. 4A.

I. BACKGROUND ON FRIENDS OF STONE LAKES' ENGAGEMENT ON THE PROJECT

As explained in our prior comment letter, the Stone Lakes NWR and surrounding foraging acreage, especially those lands within the Refuges' legislatively approved

¹ FSL incorporates herein by reference its comment letter dated July 25, 2014, in its entirety, including all attachments thereto as additional comments on the RDEIR/S. References to Exhibits in this letter are to the Exhibits attached to the letter of FSL dated July 25, 2014.

² See, e.g., RDEIR/S, App. A, p. 15-11 (referring to mitigation of impacts on long term reduction of recreation opportunities at Stone Lakes NWR from habitat creation that is not part of 4A.)

Project Boundary, is “ground zero” for BDCP impacts. The primary proposed conveyance facility components, consisting of three massive pumping stations, the water conveyance tunnels, new transmission lines and an intermediate forebay, are all located either on or very close to the Refuge and have significant potential to degrade or threaten the Refuge’s resources and habitat. Wildlife, staff and visitors will all be substantially impacted by construction noise, lighting and extreme levels of truck traffic that will occur during the lengthy construction process.

Since the time FSL learned that the tunnels were proposed to traverse the Refuge, FSL has been engaged in the BDCP process, first expressing major concerns in Scoping comments submitted in May 2008. We advocated for and participated in Stone Lakes Technical Working Group process that subsequently began in June 2013, which met several times in 2013-2014. At these meetings, FSL worked diligently with BDCP planning staff, USFWS, California Department of Fish and Wildlife (“DFW”), and Department of Water Resources (“DWR”), among others to reduce impacts on the Refuge.

A fundamental underpinning of the investment in time by FSL in discussions of how to reduce impacts of the Project on the Refuge was that the Project included a component to meet conservation standards under the HCP and NCCP statutes. Thus, even if there were severe impacts on the Refuge, for instance, the overall impact of the Project could be beneficial over the BDCP plan period. It was on this basis that FSL and many others spent significant time and resources to work with the Project proponents to improve the Project with respect to impacts on Refuge resources. FSL is extremely concerned that not all of the mitigation, which was anticipated to occur in conjunction with an HCP/NCCP, will occur with Alt. 4A as a “stand-alone” construction project. FSL continues to be concerned that impacts to species within and near the Refuge that are proposed for direct and indirect impacts from the Project still have not been adequately addressed.

II. COMMENTS ON ALT. 4A AND RDEIR/S

A. The Project Is Inconsistent with Special Protections Afforded to National Wildlife Refuges under NEPA

Despite some design improvements since its inception, the Refuge continues to be ground zero for the Tunnels project. This is inconsistent with policies pertaining to the creation of the Refuge in the first place. The national policy to promote efforts, which will prevent or eliminate damage to the environment under NEPA (42 U.S.C. § 4321) is implicated when the environment that may be damaged is one that Congress has specially designated for federal protection. (See *Nat’l Audubon Soc’y v. Dep’t of the Navy* (4th

Cir. N.C. 2005) 422 F.3d 174, 187 (ordering Navy to complete a Supplemental EIS to address its failure to take a “hard look” at impacts on a new landing field on Pocosin Lakes National Wildlife Refuge) (*Navy*).) As emphasized in the *Navy* case, “particular care” must be taken in a federal environmental document when the federal agency’s actions will “affect the unique biological features” of “a congressional protected area,” such as a national wildlife refuge. (*Ibid.* at p. 187.)

The court in the *Navy* case explained that “the point of a wildlife refuge is not just to protect an area that is beautiful and valuable in its own right, but to remind us that an environment that is welcoming to wildlife will ultimately be one that is more hospitable to humankind.” (*Ibid.* at p. 187.) The “mission of the National Wildlife System is to administer a national network of lands and waters for the conservation, management and where appropriate, restoration of fish, wildlife and plant resources and their habitats.” (16 U.S.C. § 668dd(a)(2).)

Congress has expressly found that the overall goals of the Stone Lakes National Wildlife Refuge are to:

1. Preserve, enhance, and restore a diverse assemblage of native Central Valley plant communities and their associated fish, wildlife, and plant species;
2. Preserve, enhance, and restore habitat to maintain and assist in the recovery of rare, endangered, and threatened plants and animals;
3. Preserve, enhance, and restore wetlands and adjacent agricultural lands to provide foraging and sanctuary habitat needed to achieve the distribution and population levels of migratory waterfowl and other water birds consistent with the goals and objectives of the North American Waterfowl Management Plan and Central Valley Habitat Joint Venture;
4. Create linkages between Refuge habitats and habitats on adjacent lands to reverse past impacts of habitat fragmentation on wildlife and plant species;
5. Coordinate Refuge land acquisition and management activities with other agencies and organizations and to maximize the effectiveness of Refuge contributions to regional habitat needs;

6. Provide for environmental education, interpretation, and fish and wildlife-oriented recreation in an urban setting accessible to large populations; and

7. Manage riverine wetlands and adjacent floodplain lands in a manner consistent with local, State, and Federal flood management; sediment and erosion control; and water quality objectives.

(57 Fed.Reg. 33007 (July 24, 1992).) With major portions of the Project sited within and adjacent to the Refuge, the Project interferes significantly with the attainment of these goals. As described below, the Lead Agencies' attempt at a "hard look" fails to take particular care to evaluate how its actions will affect the unique biological features of Stone Lakes NWR, which is a congressionally protected area. Moreover, the mitigation that is provided for reducing impacts to the Refuge is uncertain and unenforceable. As a result, the RDEIR/S must be re-written and recirculated prior to Project approval.

B. The Description of the Project Is Misleading, Confusing and Inadequate

In order for the public to be able to comment meaningfully on a project, the description of the project must be clear and definite. After the close of the comment period on the BDCP and DEIR/DEIS, the Project proponents created several new sub-alternatives, including the new Alt. 4A, which is now the preferred alternative. If indeed Alt. 4A is the preferred alternative, and thus the proposed project for the purposes of the environmental review, the description of Alt. 4A is uncertain and incomplete, and fails to provide the public with a clear understanding of what environmental measures from the BDCP are actually incorporated into the Project or how they will be implemented.

Most confusingly, Alt. 4A now consists of what was previously called Conservation Measure 1 of the BDCP – the proposed water conveyance system – and a number of portions of some of what previously were referred to as "Conservation Measures" but have now been recharacterized as "Environmental Commitments". Nowhere in the RDEIR/S, however, is there a readily accessible and clear description of exactly which portions of the previous Conservation Measures ("CMs") have been incorporated into the new Environmental Commitments ("ECs"), or how they will be implemented. ECs are not included in the Executive Summary's Table of Mitigation Measures. (RDEIR, ES, Table ES-9.)

Of particular concern to FSL, is the amount of the proposed acreage for protection and restoration of natural communities that support migratory waterfowl. Though we have been assured that the CMs pertaining to creation of greater sandhill crane habitat

will be retained, is entirely uncertain as to how and when any such acreages will be acquired or managed. The RDEIR/S acknowledges on page 4.1-14 that only portions of the actions previously called CMs will be undertaken as part of Alt. 4A, and states that those will be at different levels. See Table 4.1-3, which constantly uses the qualifier of “Up to” a certain maximum of acreage to be protected or restored under ECs 3, 4 and 6-10. Yet the RDEIR continues to state that mitigation for impacts to these species will occur from the planned restoration acreages that were part of the Alt. 4 (BDCP). (See RDEIR/S, App. A, p. 15-10 (referring to habitat creation under BDCP as mitigating biological and recreational impacts); see also RDEIR/S, Section 12.3.3.9.)

Under the prior preferred alternative, Alt. 4, the environmental restorations were included in the overall HCP/NCCP and were proposed to be undertaken in accordance with the Implementation Schedule as established under the Implementation Agreement discussed in Chapter 6 of the BDCP as part of the HCP/NCCP. Alt 4A, however, does not propose a HCP/NCCP, and therefore the prior Implementation Agreement and Schedule is no longer applicable or relevant. There is nothing that can be readily located within the RDEIR/S or other Alt. 4A documentation that is proposed to replace the Implementation Agreement and Schedule, and therefore the new proposed ECs do not appear to have any implementation obligation or criteria. Because Alt 4A lacks any readily identifiable mechanism to incorporate the ECs into it, they cannot be considered part of the project description upon which the environmental analysis rests. As such, the project description is vague and indefinite and with the absence of any sort of implementation mechanism, the ECs cannot be considered as a material aspect of the project description for Alt. 4A.

C. The Mitigation Approach is Flawed in that It Does Not Assure That the Mitigations Will Be Implemented

FSL provided detailed comments in 2014 regarding concerns with the conservation and mitigation approach in the BDCP. These comments also apply to the much scaled back mitigation and conservation that would be required under section 7 of the ESA and section 2081 of the California Endangered Species Act (“CESA”). The RDEIR/S does not contain adequate description of the location and character of mitigation and replacement habitat to assess its effectiveness. Moreover, the Biological Assessments have not been provided for public review. This critical information would be necessary in order to comment on the effectiveness of the mitigation currently being proposed.

The RDEIR/S states that it considers the ECs to be environmental mitigations, which act as “de facto CEQA and NEPA mitigation measures for the construction and operations-related impacts of Alternative 4A” (RSEIR/S, page 4.1-14). While the

RDEIR/S refers to DWR including the ECs in the Mitigation Monitoring and Reporting Plan (“MMRP”), the same page states that the so called “Environmental Commitments” listed in Appendix 3B, will supposedly be enforced by a “[a]n environmental permitting coordinator.” (RDEIR/S, App. 3C, p. 3B-3.) The CEQA lead agency is responsible for implementing a MMRP.

The RDEIR/S approach to mitigation of the numerous significant effects of this Project does not meet the disclosure and enforceability requirements of CEQA. (CEQA Guidelines, § 15126.6, subd. (a)(2).) It is unclear why these ECs, if necessary to reduce significant Project impacts, would not be included as mitigation measures in the RDEIR/S. The information provided in Table 3B-1 is not a substitute for the required analysis and mitigation of project impacts. A clear implementation mechanism must be included in the RDEIR/S making these ECs subject to the required oversight and monitoring in the statutorily required mitigation monitoring and reporting plan. (See CEQA Guidelines, § 15097.)

A good example of the inadequacy of the implementation of the ECs is the case of the impacts of the forebay upon the Refuge. FSL believes that the location of the proposed forebay within the Refuge Project Boundary, together with the use of Zacharias Island to the west of the forebay as a tunnel muck storage area, when taken in conjunction with all of the cumulative effects of other aspects of the Project, necessitates the acquisition of all of Zacharias Island for wildlife habitat, and its permanent protection such as by incorporation into the Refuge, in order for there to be any type of a complete or adequate mitigation measure. This issue is discussed in great depth in FSL’s letter of July 25, 2014, and nothing in the RDEIR/S has changed any of FSL’s concerns in this regard.

FSL has worked collaboratively to develop AMM20 Greater Sandhill Crane to lessen impacts to greater sandhill crane, which was part of the BDCP Alt. 4. Now, it is not clear what the exact wording of AMM20 is with respect to Alt. 4A, if it applies at all. According to Appendix D, which includes redline modifications to Alt. 4, AMM20 was extensively revised. (RDEIR/S, App. D, p. D.3-108.) Yet it is unclear whether this AMM applies to Alt. 4A. While some discussion of AMM20 is in Appendix 3B (at p. B-39), it is unclear whether this important AMM relates to Alt. 4A or to Alt. 4 (or both). (See Appendix 3B, p. 3B-77 (referring to the AMMs applying to the DSEIR/S, not the RDEIR/S).) Further causing confusion is the fact that the Alt. 4 discussion in Appendix D, states that no take of greater sandhill crane will occur; yet the BDCP previously attempted to calculate the number of bird strike deaths in Appendix 5.J.C. (See discussion below for further concerns about take of this state Fully Protected Species.)

Even the best designed ECs, AMMs and more rigorous mitigation measures are effective only if there is assurance that they will be fully implemented and enforced. Mitigation obligations, which are adopted and then ignored, are not mitigation obligations at all. The Plan does not provide assurances that the mitigation obligations, will be funded or implemented

Mitigation obligations that cannot be implemented because of lack of funding are not mitigation measures either. No finance plan has been set forth for the project. To the extent the ECs depend on future funding authorizations by the state and federal governments as well as General Obligation bond funding from the State, they cannot be assumed to be certain. The sources of the funding and the costs to mitigate the direct impacts to the Stone Lakes NWR should be specifically delineated in the cost. Sources of secure funding to pay for all of the mitigation obligations relating to Alt. 4A must be identified and included in the documents. Bonding and endowments are feasible means to ensure mitigation and conservation commitments are upheld, and must be included in the Project.

Under Alt. 4 (the BDCP), a group such as FSL could have potentially participated in the oversight process through the Stakeholder Council, which included seats for three conservation groups for the entirety of the Plan Area. Now, Alt. 4A includes no process or structure whatsoever for affected stakeholders during construction or project operations to participate in project implementation or to seek redress from severe impacts on the local wildlife and human communities. Such an important detail cannot be left to determine later, especially when water export agencies, through the Design Construction Enterprise, are vying to become the face of the project. Moreover, adequate funds for mitigation and compensation for damages caused by the project must be established, and oversight and public reporting of the implementation of all mitigation and other measures necessary to address the project's significant impacts must be provided.

D. Power Transmission Lines Will Still Have Major Unmitigated Impacts on Birds within and Near the Refuge

The location and design of new transmission line corridors remains of great concern to the FSL. The construction of new power lines within the Stone Lakes NWR is incompatible with the Refuge Management Plan, and placement of new power lines within and near the Refuge impedes the Refuge's core mission: the protection of vulnerable wildlife species such as the greater sandhill crane. These species are already under threat from widespread habitat degradation and existing power lines. Adding more power lines to this area would be highly damaging, and would certainly "take" or kill greater sandhill cranes and other birds.

As recognized previously in the DEIR/S and more recently by the Delta Independent Science Board, construction of new transmission lines to power construction and operation of the project will lead to bird strike deaths. (September 30, 2015, DISB Letter, pp. 3, 17.) The Lead Agencies previously estimated that there would be 138 deaths per year, which is estimated to be reduced to 48 deaths per year if the power lines are marked. (See 2013 Draft BDCP, Appendix 5.J.C, p. 18 and Table 2, attached as Exhibit 3.)³ The reduction in bird strikes was attributed to according to a Colorado study indicating that a 66% reduction in bird strikes could be attained through marking. (2013 Draft BDCP, Appendix 5.J.C, p. 18.) This lack of proper maintenance of bird diverters also diminishes their effectiveness. (See Exhibit 4, Broken Bird Diverters.)

Cranes, kite and rail are fully protected species under California law. (Fish & G. Code, § 3511.) While it was potentially possible to permit “take” (Fish & G. Code, § 86) in the context of a NCCP (Fish & G. Code, § 2835), that is not possible for a project subject to the typical CESA 2081 take permitting process, as is now occurring under Alt. 4A. Thus, no take of sandhill crane, black rail or white tailed kite can be permitted.

While the DSEIR/S now claims there will be no “take,” no credible analysis has been conducted to estimate bird strike deaths from the current transmission line configuration, which is substantially similar to that described in 2013. (See Exhibit 5, RDEIR/S Figure 24-6, Electrical Transmission Lines; see also, Exhibit 6, CA WaterFix Impacts to Waters of U.S.) Nonetheless, the RDEIR/S, in various locations, now claims that the transmission lines are somehow temporary and can be assumed to be taken down. (See, e.g., RDEIR/S, pp. 4.3.8-45, 62, 72, 113, 116, 135, 139-140; see also App. A, p. 15-11.) For instance, the RDEIR/S claims that the proposed 230 kV “9-mile segment extending east and west between the intermediate forebay and the SMUD/WAPA substation,” for instance, is temporary, indicating it will be removed after the 14-year construction period. (RDEIR/S, p. 4.3.8-140.)

Yet, in other parts, the RDEIR/S continues to characterize the transmission lines as permanent. For instance in Appendix 17E, which relates to aesthetic impacts, the transmission lines are depicted as permanent features. (RDEIR/S, Appendix 17E, p. 17E-55(Aesthetics); see also p. 15-8 (Recreation).) Additionally, the Construction Assumptions portion of the RDEIR/S makes no mention of the supposed temporary character of the transmission lines or includes the timing of their removal. (RDEIR/S, App. 3C-14.) Moreover, no requirement, mechanism or funding for the eventual removal

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Available at:

http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Public_Draft_BDCP_Appendix_5J_-_Effects_on_Natural_Communities_Wildlife_and_Plants.sflb.ashx

of the transmission lines now labelled as “temporary” is included in the RDEIR/S. In our research with the utilities (and relying on common sense), we learned that the removal of such a large line is very unusual given the cost of construction.

In any case, with construction slated at 14 years, the prior BDCP analysis, which likely underestimated bird deaths as described in FSL’s prior comment letter, clearly indicates that birds would die on the electrical transmission lines each year. Even if the lines were “only” up for 14 years for instance, using the 2013 draft BDCP take numbers in Appendix 5.J.C, 672 sandhill crane deaths would be caused by the project.

Nonetheless, the RDEIR/S now claims that by following AMM20, “there would be no take of greater sandhill crane from the project per Section 86 of the California Fish and Game Code” (RDEIR/S, p. 4.3.8-140), despite the earlier findings by the project’s own crane expert (Gary Ivey) that there would be 48 deaths per year even after mitigation. (2013 Draft BDCP, Appendix 5.J.C, p. 18 and Table 2). Notably AMM20 is not listed as an enforceable mitigation measure for impacts to cranes from the transmission lines (see, e.g., RDEIR, ES-68 (Impact BIO-70), and is instead only included in the now rejected Alt. 4 (RDEIR/S, App. D, p. D.3-108).

Undergrounding the new transmission lines would eliminate the potential for take, yet the RDEIR/S does not include undergrounding as a requirement, and simply mentions it as a possibility. Remarkably, where AMM20 standard in the draft BDCP provided only that there be **no net increase** in bird strike hazard to greater sandhill cranes, the revisions now purport to provide that there will be **no take** of sandhill cranes associated with the construction and operation of the conveyance facilities! (RDEIR/S, Appendix 3, p. D.3-109.) FSL believes this assertion is totally unrealistic and unsupported in the document. FSL continues to have concerns regarding the conclusions of the analysis with respect to greater sandhill crane, to wit:

- Zero is not a realistic bird strike number;
- Other bird strikes besides greater sandhill cranes should have been analyzed;
- The effectiveness of marking transmission lines with bird diverters is likely overstated and lacks a credible basis, especially given known failures to maintain the devices properly;
- The RDEIR/S fails to address how other project impacts, such as light/sound/vibration/traffic and habitat fragmentation, could exacerbate the potential for bird strike deaths;
- While undergrounding now appears to have been given some recognition as important, there is still no requirement that the lines be undergrounded, despite the fact that undergrounding is the only truly effective means to eliminate bird strikes;

- Despite the fact that there are inferences to the effect that certain transmission lines are intended to be temporary and not permanent, there is no firm, enforceable commitment or funding for their removal.

The minimization and mitigation for transmission line bird strike deaths is simply inadequate. One of the fundamental purposes of conducting an environmental review of a project is to identify potential mitigation measures, which lessen the impacts of the project. (Pub. Resources Code, § 21002.1, subd. (b).) There is no dispute over the fact that the introduction of a large new transmission line through the heart of the Stone Lakes NWR and adjacent habitat areas will result in additional bird strikes, and particularly the loss of greater sandhill cranes. (See 2013 Draft BDCP, Appendix 5.J.C, Figure 5.J.C-2 (Risk-Collision Index for Greater Sandhill Crane).) Stone Lakes' population of greater sandhill cranes is smaller, more recently established, and more vulnerable to disruptive impacts. We also believe that other birds besides cranes will die as a result of the new transmission lines.

Additionally, proposed procedures to verify no take are wholly unsatisfactory. There is no provision, for instance, to include remote monitoring or other information gathering devices on the new power lines. Rather, the project apparently intends to rely on bird surveys conducted every 5 years to determine whether there has been a reduction in numbers of greater sandhill cranes. (See 2013 BDCP, Appendix 5.J.C, p. 17.) By the time a population level effect is found in bird counts, it will be too late. Such a lackadaisical approach to monitoring effectiveness of the AMM does not meet minimum standards under the CESA in particular, since the greater sandhill crane is a fully protected, state-listed species.

There is little dispute that the most effective way to prevent birds strikes from occurring with the development of new transmission line facilities is to eliminate the conflict – i.e., underground the lines. Taking into account the inability to permit take of fully protected species, undergrounding is a now an absolute necessity. While undergrounding is now more prominent in the discussion of AMM20 (RDEIR/S, p. D.3-109), it is still not required as a mitigation measure, nor is it described as part of the project. If the project proponents wish to conclude that no take will occur, undergrounding must clearly be part of the project or required as a mitigation measure.

The RDEIR/S also still fails to analyze the growth inducing effects of constructing transmission lines. Pumps at intakes and at tunnel head works will require new transmission lines. Any new power generation facilities that are brought on line to supply the power demands of the BDCP are by their very nature growth inducing because they bring power to areas that were previously unserved. The impacts of bringing the

additional power generation capacity to supply the Tunnels' power requirements should have also been disclosed as an impact of the project.

The failure to adequately describe the transmission line portion of the project also constitutes impermissible piecemealing, as described in FSL's previous comments. Unfortunately, besides placing the word "temporary" in front of the word transmission, and providing yet another "conceptual rendering" of the location of the transmission lines, the RDEIR/S does nothing to remedy this project description deficiency.

There are already a significant number of transmission lines within and near the Refuge. The addition of more large above ground transmission lines will unquestionably cause higher bird mortality and will compromise the ability of the Refuge to complete its boundaries by introducing new wildlife risks into the area. Unfortunately, a full and good faith analysis of means to reduce impacts associated with these new structures has not yet been adequately undertaken. Moreover, the new claims in the RDEIR/S regarding the ability of a combination of making certain transmission lines temporary, installing bird diverters, and "considering" undergrounding, will not prevent the take of fully protected species. Should the project wish to legitimately claim that no bird strike deaths will occur as a result of the project, all new transmission lines must be undergrounded or co-located with existing transmission lines in such a way to avoid any increase in bird strikes.

E. Traffic Impacts on Hood Franklin, Lambert and Twin Cities Road are Still Not Adequately Addressed

As noted on the FSL comment letter of July 25, 2014, the traffic demands from construction of the intake structures, tunnels and forebay will significantly increase traffic on roads serving the Stone Lakes NWR and significantly impact the Refuge. The key road segments serving the Refuge are Hood Franklin Road between River Road (Highway 160) and Interstate 5, and Lambert Road from Herzog Road to Franklin Boulevard. Hood Franklin Road is the main access to the Refuge Visitor Center and Blue Heron Trails public use area. Like the DEIR/S, the RDEIR/S fails to acknowledge the Visitor Center or Blue Heron Trails, or consider transportation or recreation impacts to these public facilities, which have been open since 2011. (RDEIR/S, App. A, p. 15-11.) Lambert Road is the access point for refuge staff and hunters to the South Stone Lakes unit of the Refuge.

The RDEIR/S has modified the projected increase in traffic volume on roads in the vicinity of the tunnel project during construction. While the revised data projects the hourly traffic volumes as less than in the DEIR/S, to 620 vehicles per hour, this is still a significant amount of traffic, amounting to over 10 trucks a minute or on average (or one

truck every 6 seconds). Table 19-5 for Alternative 4 in the DEIR/S includes graphs, which show that traffic volumes will remain flat throughout the day with minimal peak hour highs, which suggests that almost all of the trips will be generated by truck traffic hauling supplies and waste material. There appears to be no comparable table in the RDEIR/S and assume that the graphs of daily traffic volume by hour remain the same for Alt. 4A.

FSL's prior comment letter identified several omissions and deficiencies in the DEIR/S, which have not been addressed in the RDEIR/S. Project traffic will negatively affect: (1) wildlife populations, (2) visitor experience, and (3) safety of staff, cooperators and visitors on roads, as explained below. These impacts, which relate to Transportation and Recreation impacts, are not adequately addressed in the RDEIR, despite FSL's prior comments on the DEIR/S.

Wildlife Impacts

Roads and high traffic volumes reduce landscape connectivity, which effect wildlife populations in the following ways:

- Roads and traffic limit the regular movement of animals to different habitats (e.g., wetland to grassland) to meet daily, seasonal, and basic biological needs such as reproduction, feeding and sheltering.
- Roads and traffic affect use of habitats adjacent to roadways with some species having a higher degree of aversion to traffic and associated noise.
- Roads and traffic limit the ability for areas to be recolonized, and ability of young to find and establish new territories.
- Roads and traffic increase wildlife mortality due to collisions, which can affect reproduction success. At sufficiently high rates of mortality, areas become population sinks, which can then affect regional populations.

Impacts to landscape connectivity are evident along the east side of the Refuge, which is bordered by Interstate 5. The increase in volume of traffic since its construction in the late 1970's has affected a wide variety of animal species, which is evident by the number of carcasses Refuge staff observes on a weekly basis along the roadway. For example, barn owls are regularly found dead from collisions along the roadway. The number of collisions has been increasing over the years, as habitat conditions improve for the species and the birds that fly across Interstate 5 to access foraging areas. Additional species killed along Hood-Franklin and Lambert Road includes: gopher, garter and king snakes, western meadowlark, red winged blackbird, western pond turtle, barn owl, rabbit, opossum, striped skunk, coyote, American coot and unidentified ducks. River otter are

another species that have been killed along roadways as individuals follow drainages from lakes to seasonal water bodies.

The harmful effects of an increase in traffic underscore the need to maintain and restore essential movements of wildlife across roads to maintain population movements and genetic interchange. This is particularly important on roads with high traffic volumes that can be complete barriers to movement. Numerous studies show that high-volume and high-speed roads tend to be the greatest barriers and most effective in disrupting animal movements and population interchange. Therefore, mitigation measures must be put in place to offset the increase in traffic on roads bisecting the Refuge as part of the Project.

We suggest that the following feasible mitigation measures be included in the RDEIR/S to reduce traffic impacts on the Refuge:

- Avoid and/or reduce use of Hood-Franklin and Lambert Roads between Franklin Road and River Road.
- Purchase land or easements in strategic locations adjacent to the Refuge with no barriers to connectivity to offset losses of habitat and connectivity.
- Limit travel times to avoid dusk and dawn when some species are most active.
- Expand AMM20 3.C.2.20.1.4 Measures to Avoid and Minimize Potential Effects from Lighting and Visual Disturbance to restrict project related traffic on Hood Franklin Road one hour before sunset and one hour after sunrise to limit disturbance to greater sandhill crane roost site.
- Establish and enforce a lower speed limit (<45 mph).
- Construct wildlife crossing tunnels and fence barriers.
- Place wildlife crossing signage along Hood Franklin and Lambert Roads.

Visitor Experience

In 2011, the USFWS opened a visitor station behind the office on Hood Franklin Road, which includes a parking area, restrooms, a series of universally accessible trails, informational kiosks, a playscape and an amphitheater for the visiting public. This area is now used by over 30,000 visitors annually that come for a quiet experience to explore the restored wetlands, riparian and grassland habitats and associated wildlife. Over 2,000 school children also visit this area to experience nature and take part in the Refuge's environmental education programs with hands on learning. FSL provides funding for school groups. The site also hosts a variety of events each year with surges of attendance that fill the primary and alternate parking lots, including an environmental competition for grade school children from throughout the area, entitled "Nature Bowl".

The visitor experience will be impacted by the increase in traffic and noise on Hood Franklin Road. Therefore, mitigation measures must be in place to ensure the continued use of the valuable resource. The following mitigation measures must be included:

- Construction of additional turn pocket at the main entrance to the Headquarters Unit on Hood Franklin Road.
- Establish and enforce lower speed limits near the Refuge Headquarters Unit.
- Prohibit project-related truck traffic on Hood Franklin Road Friday through Sunday.
- Implement a litter control program.
- Educate drivers and project personnel to not use facilities at Refuge Headquarters.
- Implement noise reduction program.
- Plant vegetation screen along road visible to public at least one year prior to beginning of construction.
- Cover open haul trucks or otherwise control dust and debris that may escape from truck trailers.

In 2005, a waterfowl hunting program was established at the Sun River Unit of the Refuge. Hunters enter the Sun River Unit from Lambert Road, arriving between 4 and 5 a.m. and leaving between 11 and 2 p.m. on Wednesdays and Saturdays during the months of November through January. The entrance road has poor visibility in both directions. An increase in traffic associated with the Project will increase the ingress and egress hazards. Therefore, mitigation measures must be put in place to offset the increase in traffic.

The following mitigation measures must be included for Lambert Road:

- Design and build new entrance to Sun River Unit.
- Design and build turn pockets on Lambert Road at the entrance to the Sun River Unit.
- Prohibit project-related truck traffic on Lambert Road on Wednesday and Saturdays.
- Signage indicating side road access hazard.

Safety

Refuge staff, volunteers, partners and cooperators utilize roads to travel between Refuge management units and move equipment such as tractors, boats, cattle trucks, etc. A significant increase in the volume of traffic on all roads will impact the ingress and egress onto service roads. Of particular concern are the more than 2,000 school children

that visit the Refuge during the school year. They arrive and return in school busses. The level of truck traffic increases significantly the chances of a school bus-haul truck collision with tragic consequences. This potential safety risk must be evaluated in the RDEIR/S.

In summary, the RDEIR/S is seriously deficient in detailing the significant impacts of tunnel construction traffic on both wildlife and visitors to the Stone Lakes NWR. The preparers of the document do not appear to have visualized the prospect of an average truck every 5 seconds throughout the day for extended periods of time over many days and months during the long construction period of the project, and how that will impact wildlife and people. Recommended mitigation measures are general, minimal and offer no assurance of any actual mitigation. The document fails to consider additional, more substantive yet feasible mitigation measures. The Stone Lakes NWR represents a significant investment of public resources to protect habitat and wildlife and provide public access at the edge of a major urban area and the project has an obligation to mitigate impacts to the Refuge and its visitors.

F. FSL Ongoing Concerns Regarding Tunnel Muck

FSL previously submitted detailed comments regarding its concerns regarding the disposal of tunnel muck in areas currently in use or planned for use as wildlife habitat, such as Zacharias Island, which is within the Refuge boundary. The project will generate a significant volume of tunnel muck (with now over 30 million cubic yards estimated from tunneling alone) that will need to be stored, used or disposed. Yet preliminary testing indicates that the muck may have high heavy metal content, making it unsuitable for use in areas exposed to wildlife and people.

The Project must account for the fact that the muck may not be reusable. Specific mitigation must be developed that accounts for the very real possibility that the muck cannot be reused. While there are several ECs that supposedly address impacts associated with tunnel muck (see RDSEIR/S, App. B, p. 3B-12, 3B-52 to 69), we continue to have concerns, as described above, regarding the enforceability of these so-called “commitments.”

G. Impacts of Dewatering for Construction of the Facilities on Groundwater and Surface Water Supplies within the Refuge are Not Adequately Disclosed

FSL continues to be concerned that the dewatering necessary for: (1) construction of the intakes (particularly the intake near Hood), (2) the forebay, and (3) tunnel construction may have adverse impacts on the Refuge’s water sources as well as trees and

vegetation within the Refuge that rely on relatively shallow groundwater. Though it is not entirely clear from the RDEIR/S, it appears that significant dewatering activities will be necessary for all three of these activities, which will occur within and near the Refuge. These dewatering activities would significantly alter groundwater levels in the vicinity of the Refuge. (See Exhibit 7, RDEIR, App. A, Figure 7-27 (showing groundwater levels diminished by 4 feet within the Refuge).) The RDEIR/S does not describe dewatering activities with sufficient particularity to disclose the potential impacts to Refuge water supplies.

The Refuge uses the SP Cut Waterway as a water source and is concerned that this surface water diversion and other wells within the Refuge will be adversely impacted during, and potentially after, construction. It appears that the locations and construction details for existing production wells in the vicinity of the project are still unknown. A good faith effort at full analysis would include having a detailed project description of the intended actions to construct the Tunnel facilities, analyzing all groundwater impacts, and proposing adequate mitigation.

In addition, mitigation for water supply impacts remains inadequate. Mitigation Measure GW-1 must be modified to include replacement of water supplies for wildlife and habitat uses, in addition to replacement of interrupted domestic and agricultural water supplies. This previously requested change to mitigate for disruption of wildlife and habitat water supplies has not yet been made, despite other changes to the mitigation measure. (RDEIR/S, App. A, pp. 7-4 to 7-5.)

H. Concrete Batch Plant Impacts are Not Disclosed

The BDCP includes three approximately 40 acre concrete batch plant and 2 acre fuel stations near each of the three intake sites, all of which are immediately west of the Refuge boundary. (RDEIR/S, p. 4.1-22, Map book, Figure M3-4, Sheets 2 and 3.) Due to the proximity of the Refuge to these activities, we are concerned about potential impacts on the Refuge and habitat in the surrounding vicinity. These impacts do not appear to have been disclosed in the RDEIR/S.

Batch plants are a significant source of noise, dust and traffic. The content of the dust would likely be hazardous to humans, wildlife and vegetation. Dust generated by batch plants can contain asbestiform particles and crystalline silica, which are hazardous to the human respiratory system. The pH of many of these dusts may also be dangerous to vegetation and animals. The RDEIR/S has not, but must, analyze these potential impacts, and specifically the impacts of placing a batch plant so close to sensitive biological resources. At a minimum, mitigation in the form of noise screens, limiting truck drum speeds, lining hoppers with a resilient surface, and routing trucks to avoid

sensitive receptors should be required. (See 2013 DEIR/S FSL Comment Letter, Exhibit K, Report on Noise Levels from Proposed Batching Plant, July 2008.)

I. Noise Impacts on the Refuge Have Not Been Addressed

Noise levels above 60 dBA, which are expected during construction, may interfere with communication among birds and other wildlife. A baseline of 40 dBA is used to describe the existing ambient noise level in the study area. (RDEIR/S, App. A p. 23-7.) The thresholds for construction indicate that, where existing ambient noise level is less than 60 dBA, impacts would be significant where construction noise levels are predicted to exceed the DWR standard of 60 dBA (50 dBA during nighttime hours). (RDEIR/S, App. A p. 23-8.) There is no analysis in the RDEIR/S relating to the impacts of this noise on wildlife.

Construction noise above background noise levels (greater than 50 dBA) could extend 1900 to 5250 feet from the edge of construction activities. (2013 BDCP, Appendix 5.J, Attachment 5J.D, Indirect Effects of the Construction of the BDCP Conveyance Facility on Sandhill Crane, Table 4; see also BDCP, p. 12-1834.) Impacts may be similar among other bird species likely to be present in the area, which should also be analyzed in the RDEIR/S.⁴

We also continue to be concerned that the 2013 BDCP, Appendix 5.J.C treats the indirect effects on greater sandhill crane of noise from all construction activity and pile driving separately. The two types of noise should be aggregated so that the full impact on cranes is disclosed. It does not appear that this previously stated concern has been addressed at all in the RDEIR/S.

⁴ See BDCP, p. 12-1546 (California Black Rail), 12-1557 (California Clapper Rail), 12-1568 (California Least Tern), 12- 1617 (Least Bell's Vireo and Yellow Warbler), 12-1627 (Suisun Song Sparrow and Saltmarsh Common Yellow Throat Sand), 12-1643 (Swainson's Hawk), 12-1659 (Tricolored blackbird), 12-1674 (Western Burrowing Owl), 12-1685 (Western Yellow-Billed Cuckoo), 12-1700 (White Tailed Kite), 12-1712 (Yellow Breasted Chat), 12-1722 Cooper's Hawk and Osprey), 12-1744 (Cormorants, Herons, and Egrets), 12-1758 (Short Eared Owl and Northern Harrier), 12-1769 (Mountain Plover), 12-1775 (Black Tern), 12-1787 (Grasshopper Sparrow and California Horned Lark), 12-1795 (Least Bittern and White Faced Ibis), 12-1808 (Loggerhead Shrike), 12-1818 (Modesto Song Sparrow), 12-1821 (Bank Swallow), and 12-1834 (Yellow Headed Blackbird).

J. Conservation Actions for Greater Sandhill Crane and Other Species of Concern are Still Incomplete

FSL still has concerns about the timing of crane conservation actions in general, which are exacerbated by the abandonment of the project as an HCP. There has been no specificity provided for when the two new roosting ponds, that will be created to connect the Cosumnes crane populations to those of the Refuge, will be constructed. Beyond the concerns already expressed about funding certainty and timing of mitigations in relation to impacts, it is imperative to have the timing for these conservation actions mapped out to ensure that the Refuge can incorporate the presence of these actions into its own conservation management and monitoring schedule, and so that the timing can be analyzed in the context of the impacts from the Tunnels. When the conservation actions will be done, this needs to be as fully explicated as what they will be. To that end, a monitoring and management plan needs to be in place before construction begins, and the framework for that plan needs to be included in Alt. 4A so that it can be analyzed for completeness and appropriateness.

Of equal concern to the timing of mitigations, is the timing of Alt. 4A construction activities. Narrower construction windows would limit the impact on cranes but the “to the extent practicable” language would seem to greatly diminish the likelihood that any restrictions would be adhered to, and that take would be avoided as now claimed in the RDEIR/S. We understand that there will be construction window limitations to protect greater sandhill crane populations on Staten Island, and request those same restrictions on construction in the vicinity of Stone Lakes NWR.

K. Effects of Additional Increased Water Transfers on Pacific Flyway Resources Unanalyzed

While the current Alt. 4 BDCP still refer to 1.3 million acre feet of water transfers (RDEIR/S, App. D, pp. D.3.83 to 85), it is unclear what amount of water transfers are contemplated under Alt. 4A. FSL is also concerned that the use of the Tunnels to facilitate additional transfers will threaten water supplies for other important Pacific Flyway habitat in the Sacramento Valley.

Over 90 percent of the wetlands in the Central Valley has been lost since the 1850s. Surveys in the Central Valley indicate that in the 1850s there were over four million acres of wetlands in the valley. These wetlands historically supported more than 4 million acres of wetland habitats, supporting an estimated 20 to 40 million waterfowl annually. Today, just over 205,000 acres of managed wetlands remain in the Central Valley, and of these, two thirds are in private ownership.

The Central Valley Joint Venture (“CVJV”) was created to address the need to conserve and restore wetland habitats in the Central Valley. Through legislative action to mandate a portion of Central Valley Project Improvement Act water for conservation, the CVJV has protected, restored and enhanced over 434,000 agricultural acres. But the water supplies for these wetlands are not secure, and the purchase of water is often not feasible given the increase in costs and the decrease of federal and state budgets. Furthermore, the search for additional municipal and industrial and agricultural water supplies continues, and water agencies have become very active in locating and acquiring water supply options, both north and south of the Sacramento San Joaquin River Delta (“Delta”), to help meet demands for its service area. Typically, urban water users can pay prices that are an order of magnitude greater than can be afforded by government agencies, conservation organizations, and private landowners, resulting in the unintended consequence of “out-bidding” wetland managers.

The Tunnels, once built, will facilitate the transfer of water from the Sacramento Valley and the Delta to Southern California, essentially building a “water transfer pipeline.” As California moves towards a drier climate, these increases in water transfers will result in major shifts in agriculture away from crops that now support hundreds of thousands of waterfowl and waterbirds that depend on these habitats during the winter and migration. We have already lost over 95% of wetlands in the state, and the Project as it is now envisioned with its ability to move water and facilitate water transfers could potentially erase the gains made by the CVJV and other federal and state efforts to restore and protect habitat.

If the Tunnels will be used to transfer water, the RDEIR/S should have clearly analyzed the impacts of those transfers on Pacific Flyway resources. As a result of this omission of information regarding the Project and its likely impacts, the RDEIR/S is deficient.

III. CONCLUSION

The Friends of Stone Lakes National Wildlife Refuge has appreciated the opportunity it has had to work with the Lead Agencies to explore solutions to the impacts the Project will have on the Refuge. Nonetheless, as explained above FSL has significant remaining concerns that the Project continues to have enormous impacts on the Refuge that have not yet been properly identified, analyzed or avoided/mitigated. FSL remains

ready and available to continue the dialogue to ensure that, should the Project be approved and constructed, that its impacts on the Refuge are fully mitigated.

Sincerely,



Dale Claypoole
President, Friends of Stone Lakes
National Wildlife Refuge

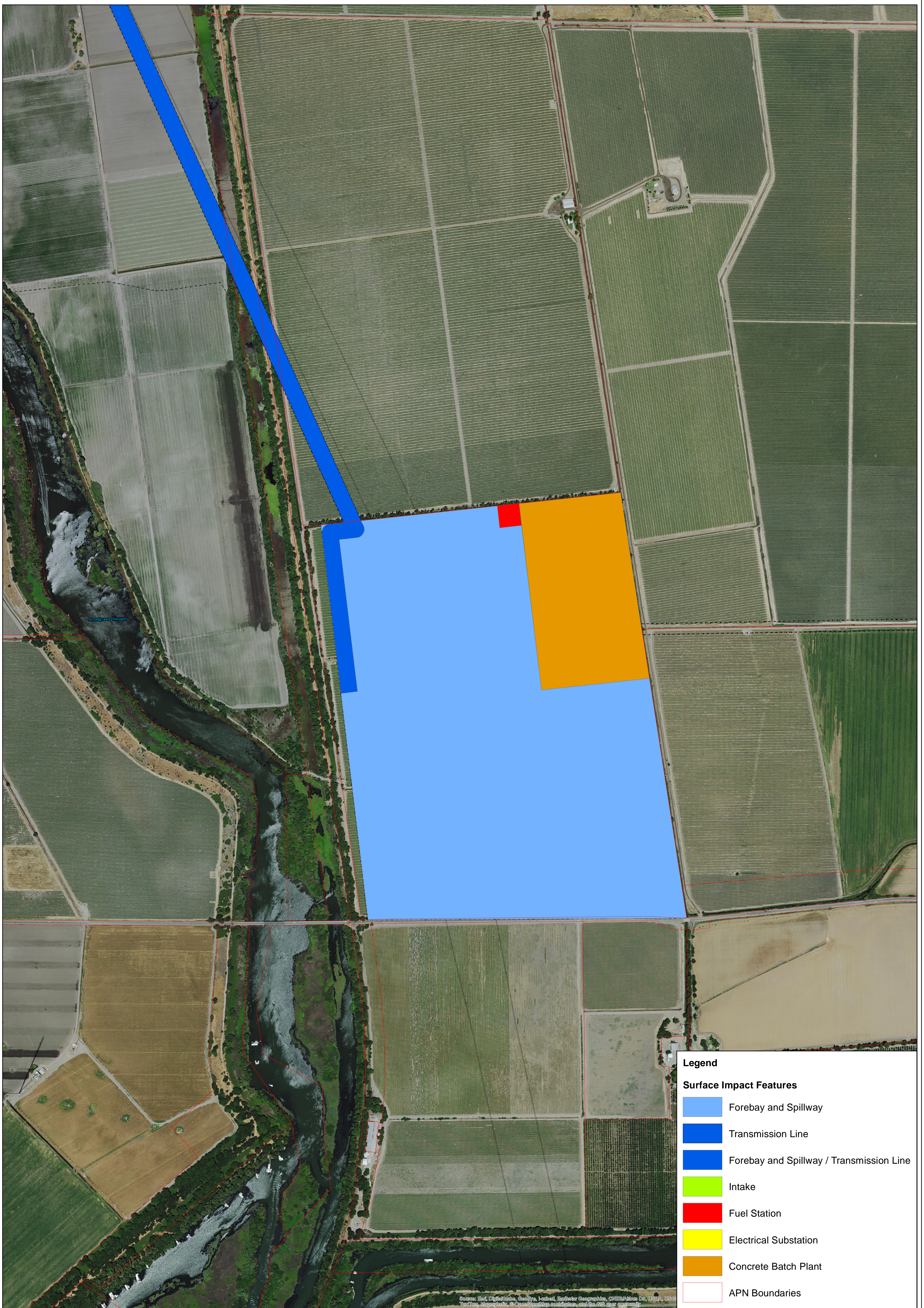
cc: David Murillo, Regional Director, Mid Pacific Region, U.S. Bureau of Reclamation (dmurillo@usbr.gov)
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Attachments:

- Exhibit 1, Permanent Surface Impacts, BDCP Fix Alternative 4A, Figure A
- Exhibit 2, Permanent Surface Impacts, Proposed Forebay Area BDCP Fix Alternative 4A, Figure B
- Exhibit 3, 2013 Draft BDCP, Appendix 5.J.C, p. 18 and Table 2
- Exhibit 4, Broken Bird Diverters
- Exhibit 5, RDEIR/S Figure 24-6, Electrical Transmission Lines
- Exhibit 6, CA WaterFix Impacts to Waters of U.S. (Index)
- Exhibit 7, RDEIR, Appendix A, Figure 7-27, Reduced Groundwater Levels

EXHIBIT 1

EXHIBIT 2



Permanent Surface Impacts
 Proposed Forebay Area
 BDCP Fix Alternative 4A
 Figure B

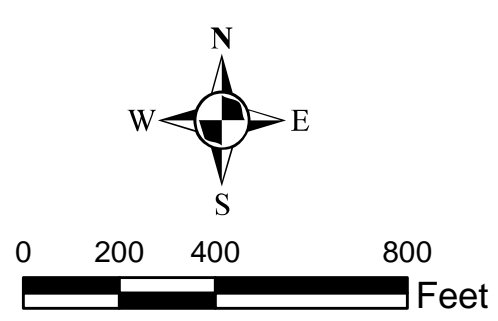


EXHIBIT 3

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Attachment 5J.C
**Analysis of Potential Bird Collisions at
Proposed BDCP Powerlines**



Date:	September 3, 2013
To:	Laura King Moon, Project Manager, BDCP California Department of Water Resources
Cc:	
From:	Paola Bernazzani Senior Conservation Biologist, ICF International Gary L. Ivey Research Associate, International Crane Foundation
Subject:	Analysis of Potential Bird Collisions at Proposed BDCP Powerlines

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This memo describes the potential risk to avian species from collision with electrical powerlines that would be installed as part of the Bay Delta Conservation Plan (BDCP) and provides additional analysis of risk and mitigation for the greater sandhill crane (*Grus canadensis tabida*). The following specific factors are addressed.

- Assessment of vulnerability for covered birds.
- Mortality estimates and population-level effects for greater sandhill crane.
- Minimization and mitigation measures for greater sandhill crane based on anticipated levels of take.

10 1.0 Introduction

11 1.1 Definitions

12 Powerlines are rated and categorized by the voltage carried and the purpose served (Avian Power
13 Line Interaction Committee 2006). Because voltages carried by powerlines are typically large,
14 voltage is specified by the kilovolt (kV).

- 15 • **Distribution lines:** Electrical lines that are energized at lower voltages (60 kV or below). Up to
16 3.3 miles of temporary, 34.5-kV distribution lines would be installed under the BDCP; additional
17 distribution lines could be used for mitigation. Typically, distribution lines range in height from
18 35 to 40 feet (11 to 12 meters) (Figure 1) (Avian Power Line Interaction Committee 2006).
- 19 • **Transmission lines:** Electrical lines that are energized at higher voltages (60 kV or above).
20 Under the BDCP, 69-kV and 230-kV transmission lines would be installed. Typically, the higher-
21 voltage (230-kV) lines vary in height from 90 to 110 feet (27 to 34 meters), while the “sub”

1 length of line crossing them, to estimate the number of cranes expected to cross those lines on a
2 daily basis.

3 Using this approach, an average population size was determined for each line segment, which was
4 then multiplied by 130 days (the mean number of days that greater sandhill crane spend in the Delta
5 wintering area) and by four flights per day (birds going between foraging areas and roost sites twice
6 a day, crossing the lines twice in the morning and twice in the evening). Based on the assumption
7 that the probability of flying out of the roost in a given cardinal direction is 25%, this number was
8 then divided by four, resulting in a crossing estimate for each segment and for the total line (Table
9 2.). The number of crossings was then multiplied by collision mortality rates that were calculated for
10 greater sandhill crane in the Rocky Mountains of Colorado (Brown and Drewien 1995). These data
11 were used because local or regional data are not available. Brown and Drewien (1995) estimated
12 that annual collision mortality of greater sandhill crane at unmarked lines was between 2.5×10^{-5}
13 (low estimate) and 30.4×10^{-5} collisions per crossing (high estimate). For the purposes of this
14 analysis, the high estimate was used to ensure that all potential impacts were captured.

15 Because lack of visibility is one of the most commonly implicated causes of collision mortality, live
16 or ground wires can be marked to increase their visibility. While it hasn't been studied, the efficacy
17 of bird flight diverters are likely diminished with reduced visibility associated with the new moon or
18 fog. However, it is reasonable to assume that bird flight diverters still reduce mortality. Other
19 markers also include dampers, hanging plates, and spheres. Marking lines has been shown to
20 decrease collision risk substantially. Brown and Drewien (1995) estimated that annual collision
21 mortality rates of birds at marked lines were reduced by 62 and 66% for two types of markers, and
22 it is likely that birds found dead in these studies were also flying at night. Morkill and Anderson
23 (1991) indicated a 54% reduction in crane mortality at marked lines. In addition to the risk map
24 derived above, collision risk and mortality in the Plan Area were estimated relative to the proposed
25 powerline locations. This was done for both marked and unmarked lines.

26 Absent line marking, which increases visibility and reduces collision risk (i.e., without minimization
27 measures), the potential annual take of greater sandhill crane is estimated at 18 per year at
28 permanent lines and 120 per year at temporary lines. Assuming a reduction of 66% (Brown and
29 Drewien 1995), potential mortality at marked lines is estimated at 7 per year at permanent lines and
30 41 per year at temporary lines.

1 **Table 2. Estimated Collision Mortality of Greater Sandhill Crane at BDCP Marked and Unmarked**
 2 **Powerlines**

Powerline Type	Crossings/Year ^a	Deaths/Year ^b (unrounded)	
		Unmarked Lines	Marked Lines ^c
69-kV line (permanent)	749,949	16 (15.18)	6 (5.16)
230-kV line (permanent)	6,586	2 (2.00)	1 (0.68)
230-kV line (temporary)	321,120	96 (95.89)	33 (32.60)
34.5-kV line (temporary)	76,862	24 (23.37)	8 (7.95)

^a Baseline mortality = 30.4 x 10⁻⁵ x crossings/year.
^b Values have been rounded up to the nearest integer unless otherwise specified.
^c 66% reduction based on Brown and Drewien (1995) for sandhill cranes in Colorado.

3
 4 Based on the analysis above, the cumulative mortality associated with marked temporary lines is
 5 estimated to be 410 birds over a 10-year period. While it is possible to calculate cumulative impacts
 6 from permanent lines over the permit term, mortality will continue at these lines as long as they are
 7 present. Therefore, deaths per year is a better metric for describing mortality at permanent lines.
 8 Note that mitigation is also calculated on an annual, ongoing basis.

9 **4.0 Population Impacts**

10 Greater sandhill cranes that winter in the Plan Area are designated as the Central Valley population
 11 (Pacific Flyway Council 1997). Although there is no current estimate for the Central Valley
 12 population, recent counts of summering cranes in California, Oregon, and Washington total
 13 approximately 4,200 (Ivey and Herziger 2000, 2001), and a recent estimate of summering cranes in
 14 interior British Columbia totaled an additional 4,000 (Breault pers. comm.). These birds are all
 15 within the same regional population; resulting in a total population of approximately 8,200 birds
 16 (also see Littlefield 2002).

17 Assuming a population of 500 birds in 1945 (based on literature reporting less than 200 pairs in
 18 Oregon and California) (Gabrielson and Jewett 1940; Walkinshaw 1949) and 8,200 birds in 2012
 19 (Littlefield 2002), the overall annual rate of increase is 1.4% per year. Because cranes are long-lived
 20 with relatively low recruitment rates and high annual survival rates (usually greater than 90%)
 21 (Tacha et al. 1992; Drewien et al. 1995), additional mortality is unlikely to be compensated by
 22 population growth, and losses could directly affect population dynamics. Also, greater sandhill
 23 cranes are highly faithful to wintering sites and are primarily sedentary during winter, so birds that
 24 roost close to proposed powerlines are particularly vulnerable. Note that the current rate of growth
 25 accounts for existing sources of mortality for greater sandhill crane, such as collision at existing

EXHIBIT 4

Bird Diverters on Staten and Woodbridge Island Jan. 2015

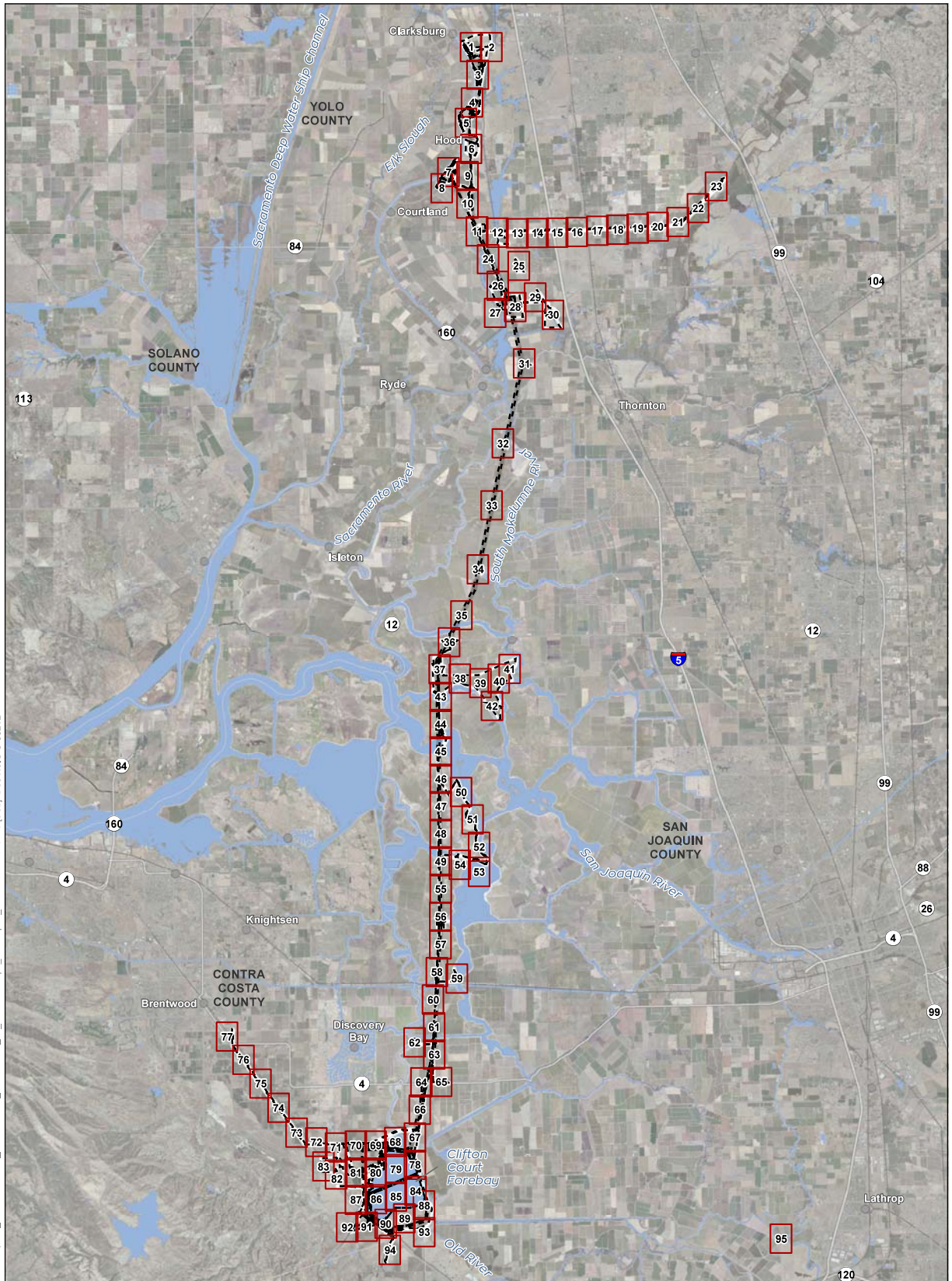


Bird Diverters on Staten and Woodbridge Island Jan. 2015



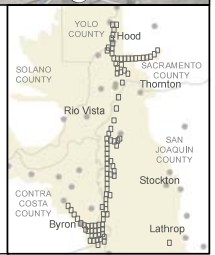
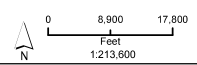
EXHIBIT 5

EXHIBIT 6



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|--------------------|----------------------|
| Interstate | Project Area |
| State Highway/Road | Study Area |
| Railroad | Conveyance Footprint |
| Mapbook Frame | Surface Impact |
| | Subsurface Impact |



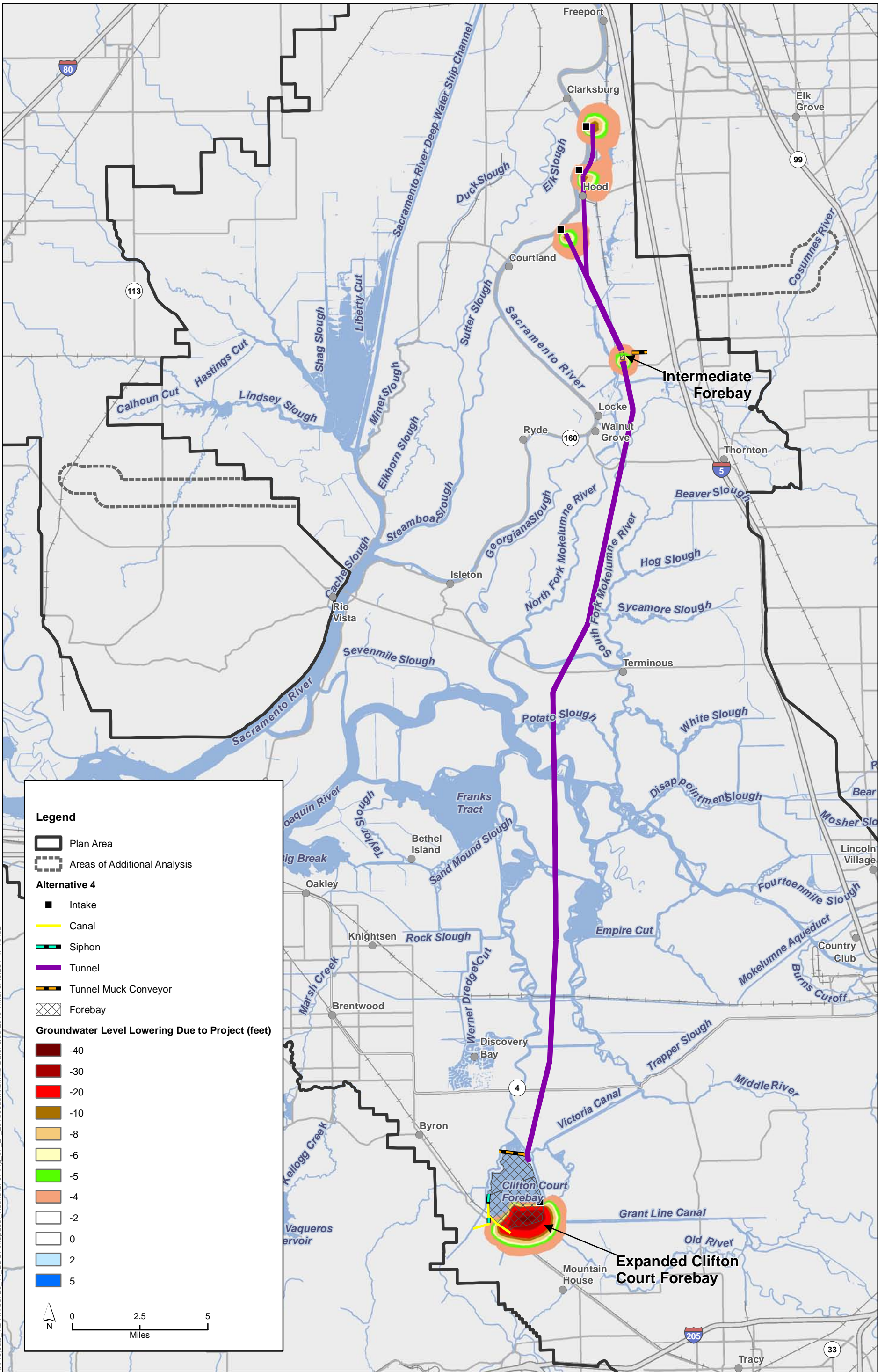
Sources: Conveyance Planning Area rev5a (DWR 2015); Wetlands (DWR 20150621); NAIP 2014

Prepared by:
 Division of Environmental Services
 Department of Water Resources
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 West Sacramento, CA 95691



Index
California Water Fix
Impacts to Waters of US
Wetland Delineation v.2

EXHIBIT 7



Sources: Plan Area, ICF 2012; Area of Additional Analysis, ICF 2012; Constructability (Rev 5a), DHCCP DWR 2015; Groundwater-level Impacts, CH2M Hill 2015.

Figure 7-27
Forecasted Groundwater Level Lowering From
Construction Dewatering for Alternative 4