42 N. Sutter Street, Suite 506
Stockton, CA 95202
(209) 475-9550
www.restorethedelta.org

P.O. Box 188911
Sacramento CA 95818-8911
ejcw.org

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Transmitted via email: deltaplanNOP@deltacouncil.ca.gov

Cassandra Enos-Nobriga
Deputy Executive Officer, Planning
Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, CA 95814

Subject: **Comments from Restore the Delta and Environmental Justice Coalition for Water concerning 1) the Council's lack of compliance with State of California environmental justice and human right to water policy requirements; 2) proposed conveyance, storage and operations amendments to the Delta Plan; 3) proposed performance measure amendments to the Delta Plan; 4) proposed Delta levees investment and risk reduction program; and 5) Comments on the Notice of Preparation for CEQA Scoping a Delta Plan Amendments Program Environmental Impact Report.**

Dear Ms. Enos-Nobriga:

Restore the Delta advocates for local Delta stakeholders to ensure that they have a direct impact on water management decisions affecting the water quality and well-being of their communities, and water sustainability policies for all Californians. We work through public education and outreach so that all Californians recognize the Sacramento-San Joaquin Delta as part of California's natural heritage, deserving of restoration. We fight for a Delta whose waters are fishable, swimmable, drinkable, and farmable, supporting the health of the San Francisco Bay-Delta Estuary, and the ocean beyond. Our coalition envisions the Sacramento-San Joaquin Delta as a place where a vibrant local economy, tourism, recreation, farming, wildlife, and fisheries thrive as a result of resident efforts to protect our waterway commons.

The Environmental Justice Coalition for Water (EJCW) works within a Community-to-Capital framework, connecting the most pressing needs of our disadvantaged community partners to our network of partners and agencies statewide. Since 1999, EJCW's work has been rooted in communities most affected by environmental injustice. Issues and solutions are identified through regional chapters and statewide work groups. EJCW is positioned in the state capital to connect communities with state agencies to bring about change multilaterally through advocacy, education, training, litigation, community organizing, and capacity-building. and by providing technical assistance. EJCW aims to effectively influence the intersections of water justice and environmental justice, community health, and human rights issues from community to global levels.

This letter conveys to the Delta Stewardship Council (DSC) our comments on the above three subjects: state environmental justice policy requirements and their omissions from Delta Plan amendments, the character of environmental justice communities, and their concerns with Delta water supply and quality; proposed surface storage, conveyance, and "operation of both" amendments to the Delta Plan; Delta levee investment priorities amendments; proposed performance measure amendments to the Delta Plan; and the Notice of Preparation on the DSC's Delta Plan amendments program environmental impact report.

1. The Council's proposed Delta Plan amendments are planning activities, yet they take no account of State of California environmental justice, human right to water, and anti-discrimination policy requirements.

State of California environmental justice, human right to water, and anti-discrimination policy requirements apply to planning activities and decisions by all state agencies. We searched planning and scientific documents prepared by the Delta Stewardship Council (DSC) concerning Delta Plan amendments (DPAs) for performance measures and conveyance, storage and operations.[1] We used the terms "environmental justice",

[1] Delta Stewardship Council documents reviewed for this letter include:

- Agenda Item 12, February 23-24, 2017:
  - ✓ Staff Report: "Consideration of Draft Delta Plan Amendment for Water Conveyance, System Storage, and the Operation of Both."
  - ✓ "19 Principles of Water Conveyance in the Delta, Storage Systems, and for the Operation of Both to Achieve the Coequal Goals."
  - ✓ "Delta Plan Summary and New Scientific Findings for Delta Plan Update Concerning storage, Conveyance, and Operation
  - ✓ "Updated Scientific Findings for Delta Plan Amendment Concerning Storage, Conveyance, and Operation."
- Delta Plan Performance Measures Amendment Workshop
  - ✓ Staff Report, December 18, 2014: "Delta Plan Performance Measures"
  - ✓ Staff Presentation, March 9, 2016: "Delta Plan Performance Measures Public Workshop."
  - ✓ Appendix E: Performance Measures for the Delta Plan," approved by DSC, February 2016.
  - ✓ Matrix of Proposed Changes to Delta Plan Performance Measures, redline version, March 7, 2017.
- Delta Levee Investment Priorities amendment documents at the DSC web site, including two memoranda by Arcadis addressing ability to pay and comparing DRMS and DLIS levee needs.

"human right to water", and various permutations of "anti-discrimination". None of these terms are found in the DSC planning and scientific documents reviewed for this letter.

The DSC has to date failed to address these concerns in each of these proposed DPAs. The DSC should bridge this gap immediately, starting with outreach to and education efforts about its proposed Delta Plan amendments in Delta environmental justice communities.

See Attachment 1 to this letter for additional detail on environmental justice, human right to water, and anti-discrimination policies.

In addition, many Delta residents are people of color; low-income and impoverished (among all races and ethnicities); and may face isolating language barriers. Recent American Community Survey data from the U.S. Census Bureau summarize and quantify these populations cited in Attachment 2 to this letter.

Delta region environmental justice communities face economic and social distress, contributing to their vulnerability to disproportionate environmental risks and injustices they face concerning Delta water supply and water quality. Using the Distressed Community Index, Economic Innovations Group found that Stockton is the sixth-most distressed large city in the United States, and the most distressed large California city. Attachment 3 to this letter details seven different recent indicators of economic and social distress in the Delta region.

An additional indicator of distress in the Delta region is the presence of sizable food deserts. We provide in Attachment 4 to this letter maps and data obtained from the U.S. Department of Agriculture's Economic Research Service in 2016 illustrating different of food insecurity in the Delta region.

While the detailed attachments relate explicitly to the California WaterFix project, they are relevant to the DSC's consideration of its conveyance language, and its lack of merit in light of environmental justice principles, and since the DSC rather slavishly accepts the seeming-mandate to "promote" conveyance options. The treatment of the city of Stockton, its municipal water supplies, and its environmental justice communities provide additional case study insights into the serious, and as yet unaddressed, effects of California WaterFix on Delta environmental justice communities. This treatment, and potential environmental justice and environmental effects of California WaterFix on Stockton communities, is described in Attachment 5 to this letter. The DSC ought to consider the ***merits*** of promoting conveyance (or storage, or operational) options, not simply take options as given and place them unwashed into the Delta Plan.

2. Comments on proposed Delta Plan Amendments (DPAs) concerning conveyance, storage, and operation of both.

As the DSC knows, the Delta Plan is currently in litigation over the efficacy of its current formulation of implementing policies and performance measures for this legislative

mandate. Beginning in July 2015 (Item 10), the DSC and staff developed, a lengthy list of "principles" by which new Delta Plan policies concerning "conveyance and storage"—more commonly known as "canals" (or tunnels and pipelines) and "reservoirs"—would be developed. As we have indicated in part 1 of this letter, the documents comprising the Delta Plan amendment process and substance for surface storage, conveyance, and operational concerns failed to address any potential environmental justice concerns. We have other comments on the amendment proposal, summarized here.

The 19 principles approved by DSC fail to assess and balance the mandate to "promote options" for improved conveyance and storage with the other provisions of the Delta Reform Act (DRA).

When it comes to conveyance and storage, the adopted 2013 Delta Plan stated just four policies of its own concerning improved conveyance and storage:

- "Complete Bay Delta Conservation Plan." (Policy WR P12, p. 106.)
- Complete water surface storage studies.
- Identify near-term opportunities for storage, use and water transfer projects.
- Improve water transfer procedures.

Current Delta Plan conveyance and storage policies are thus no match for evaluating the Tunnels Project as a covered action. A holistic reading of the DRA by the DSC would ensure that key DRA and state water policies[2] would govern the DSC's approach to regulating conveyance and storage covered actions.

The problem with "promoting conveyance-related infrastructure"

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[2] The Delta Reform Act contains key policies that:

- Define the coequal goals as combining a more reliable water supply for California with "protecting, restoring, and enhancing the Delta ecosystem." (Water Code Section 85054.)
- Reduce reliance on the Delta for California's future water supply needs. (Water Code Section 85021.)
- Define "a more reliable water supply" as involving "water use efficiency and conservation projects, wastewater reclamation projects, desalination, and new and improved infrastructure, including water storage and Delta conveyance facilities." (Water Code Section 85004(b))
- Call for improving "the water conveyance system and expand statewide water storage." (Water Code Section 85020(f))
- Reaffirm the Public Trust Doctrine and reasonable use of water as forming "the foundation of California's water management policy and are particularly applicable to the Delta." (Water Code Section 85023.)

Because the DSC tends to avoid reading its enabling legislation holistically, policy criteria establishing the findings and justification for "improved conveyance" in the Delta need to be established through amendment of the Delta Plan. The amendment before the DSC would establish some criteria by which any conveyance covered action proposal should be evaluated.

The new Delta Plan amendment for conveyance, storage and operation seeks narrowly to fulfill Water Code Section 85304.[3] Like other California water agencies, the DSC prefers as narrow as possible a path to complying with this DRA provision, to the point of not placing this directive in the context of other key policies that make up the California water policy framework.

There is one passage our organizations support. The public trust doctrine is applied (echoing Water Code Section 85320(a)(2)(A), without calling it such) on page 6 of the DPA in I.B.1.a, where the DPA calls for identifying what flows fish need "and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions…" before saying "which will identify the remaining water available for export and other beneficial uses." (This is apparently transferred over from the old BDCP requirements for incorporation into the DP pre-WaterFix.) Without the DSC's stated, explicit commitment to balancing the various components of California's water policy framework, this laudable passage remains a slim reed on which to rest our trust in DSC's good faith.

But by its silence in the proposed Delta Plan amendment "promoting" conveyance and storage options, the DSC condones passive acceptance of the California WaterFix's presentation and poor justification of "need" for the project. Approval by the DSC of this DPA would be prejudicial to WaterFix consideration by the DSC when it arrives as a proposed covered action.

The verb "promote" in this section of the DRA is thus problematic. The DSC failed to grapple with its meaning in relation to broader goals and objectives of the Act. "To promote" is to "further the progress of something (especially a a cause, venture or aim); to support or actively encourage."

What does it mean on one hand to "promote" options for improved conveyance when such options may come before the DSC as covered actions asserting conformance with the Delta Plan? This is the essence of a looming conflict of interest for the DSC, in our view. The DSC neither recognizes nor confronts this conflict of interest embedded in its legislative charge. The DSC should confront the concept of "promotion" of these options by drafting a policy in the DPA that limits the notion of "promotion" to one of recognition of potential options while distinguishing recognition of options from consideration of covered actions. Rather than promoting

[3] Water Code Section 85304 states, "The Delta Plan shall promote options for new and improved infrastructure relating to conveyance in the Delta, storage systems, and for the operation of both to achieve the coequal goals."

conveyance options, the DSC should instead draft criteria for evaluating proposals intending to "improve conveyance" in the Delta. The criteria in the DRA intended for BDCP could be readily adapted and applied through the Delta Plan for evaluating conveyance proposals, such as California WaterFix.[4]

The DSC should distance itself from encouraging or promoting any particular option so as to preserve its impartiality when considering conveyance- or storage-related covered actions. Its statutory mandates to use best available science, reduce Delta reliance, and achieve the coequal goals, among others, must still be applied to the review and evaluation of such covered actions under the DRA. These mandates conflict with the statutory language of promoting storage and conveyance options.

The DSC is charged ultimately with solving water reliability and environmental problems in the Delta and its watershed. But with this present DPA, treatment of specific conveyance proposals like California WaterFix in light of the problematic concept of "promotion" is detrimental to the public interest and contrary to the framework of California and Delta water policy in the DRA. To continue down this path will undermine DSC authority for balanced consideration of the proposed project when it arrives before the DSC as a covered action.

Assess Need for Conveyance and Storage Projects Honestly and Transparently

Besides the DRA BDCP criteria we suggested be applied to California WaterFix in the Delta Plan, the need for such projects must be assessed in covered action review by the DSC.

There still has been no genuine needs assessment and economic water supply justification for new conveyance and new storage, let alone whether such new conveyance and storage systems would represent "improvement." The lack of such needs assessments, like benefit-cost analysis taking account of ecosystem services and non-market contingent economic values in society, contribute to the longevity if not the merits of California WaterFix and most of the CalFED Surface Storage proposals, and their egregious environmental justice effects. The DSC is uniquely positioned to undertake and implement results of such a study.

In recent environmental documents for California WaterFix the alleged "need" is simply restated as meeting contractual entitlements and increase storage and conveyance capacity across the Delta to do so. This does not qualify as a needs assessment for improved conveyance—it essentially justifies need for the California WaterFix project as "because we've always done it this way." The 19 principles follow in these footsteps, not those of DRA policies. ***Contracts may be solemn documents, but they are never***

[4] The portions of the Delta Reform Act that call for "promotion" of conveyance or infrastructure options are anomalous with respect to the rest of the Act's regulatory provisions, and could be struck down without doing violence to the overall mission, goals, and objectives of the Act and of the Delta Stewardship Council.

immutable. When it comes to conveyance and storage proposals there should be no assumption by any party that water service contracts served by new conveyance and storage facilities would be left unchanged. Indeed, until it was suspended early in 2015, DWR and the state water contractors had briefly embarked on a publicly accessible contract negotiation process to arrive at financing structure acceptable to all parties for the tunnels facilities in Conservation Measure 1 of the Bay Delta Conservation Plan—before the project became California WaterFix.

The alleged "need" for "improved conveyance" in the Delta must confront and account for the reality that Californians have responded to a fifth year of drought by surpassing water conservation goals established by Governor Brown. On April 4th this year, the State Water Resources Control Board (SWRCB) announced that urban Californians' monthly water conservation was 25.1 percent in February, more than double the 11.9 percent savings in February 2016, when state-mandated conservation targets were in place. Cumulative statewide savings from June 2015 through February 2017 was 22.5 percent compared with the same months in 2013. Since June 2015, the SWRCB reported that 2.6 million acre-feet of water was saved by Californians heeding the call for conservation. This was "enough water to supply more than 13 million people—exceeding a third of the state's population—for a year," the Board stated.[5]

Moreover, statewide residential gallons per capita per day (R-GPCD) for February 2017 was 57.5. Among regions dependent on the Delta, the Sacramento River (63.9 R-GPCD) and San Joaquin River (60.4 R-GPCD) hydrologic regions exceeded this statewide average only somewhat, while the San Francisco Bay (50.0), Central Coast (48.6), and South Coast (56.1) hydrologic regions outperformed the statewide average for residential water consumption. These are but beginning building blocks for constructing an assessment of true need for "improved conveyance" and increased storage in California.

Making water conservation a way of life will be increasingly important as drought recurs throughout California under rising greenhouse gas emissions and climate change conditions.[6] None of this is disclosed or analyzed in determining the need for the Tunnels Project, and the Delta Stewardship Council's DPA activity fails to define a policy process that will address this.

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[5] State Water Resources Control Board Media Release, "Statewide Water Savings Exceed 25 Percent in February: Conservation to Remain a California Way of Life," April 4, 2017. Accessible at http://www.swrcb.ca.gov/water_issues/programs/conservation_portal/docs/2017apr/pr040417_february_conservation.pdf.

[6] And we applaud the State of California's multi-agency efforts to "make conservation a California way of life," even in the midst of the second wettest hydrologic year in state history in Water Year 2017. See "Making Water Conservation a California Way of Life: Implementing Executive Order B-37-16," Final Report, April 2017, accessible at http://www.water.ca.gov/wateruseefficiency/conservation/docs/20170407_EO_B-37-16_Final_Report.pdf.

DSC should strengthen its Delta Plan policies and regulations to implement Water Code Section 85021, actually reducing reliance on Delta imports by south of Delta water project customers. It can only do this by, for example, identifying reduction targets timed to match SGMA Groundwater Sustainability Plan timelines and taking a leadership role in promoting options for adapting California's water needs and demands to the new Delta and groundwater policy realities.

Other criteria from state policy for evaluating conveyance and storage: Environmental Justice

The DSC should address some related considerations concerning conveyance promotion:

- Exactly how does DSC promotion of more exports via California WaterFix represent consistency with environmental justice and anti-discrimination policies? The principles embodied in the DPA need to be made consistent with these statewide policies.

- The DSC appears to have ignored the Human Right to Water policy as well, which all state agencies are supposed to consider when they do planning, which this DPA is an example of. The DPA must also address the relationship of the storage, conveyance and operating principles to the state's "human right to water" planning requirements.

- California's overall water policy framework should explicitly shape this DPA. (i.e., reasonable use; prohibition on waste, unreasonable use, and method of diversion; public trust resource protection; area of origin water rights priorities, including the Delta Protection Act of 1959; state and federal clean water acts; and endangered species acts.) The criteria DSC deploys in this DPA are almost entirely matters of engineering new conveyance, new storage, and new operations. The DSC improperly fails to balance the wide range of DRA policy concerns in the service of flagrantly "promoting" options.

The format of the DPA does not disclose whether its conveyance, storage and operations options are to be treated as policies or recommendations in the Delta Plan. This is inconsistent with how the DSC formulated and framed policies and recommendations in the Delta Plan as adopted in May 2013. Neither the proposed amendment nor the supporting staff report nor scientific attachments clarify this. Exactly what is the status of this language in the DPA? Would it become a new chapter in the Delta Plan? Would it be placed within "water supply reliability" or some other chapter deemed appropriate? Without answers to such basic questions, the purpose and use of the DPA is opaque to the public, not transparent.

The DPA is also plagued by agent-less language. Nowhere does it say anything about who does what except under Part I.A.1 (where it is DWR and USBR doing the Tunnels project, DPA pages 5-6). All the other DPA sections get highly speculative as to who

does what with DSC's "promotion" of options. This goes back partly to the status of these proposed amendments: If they are policies, on whom will they be applied by the DSC? If recommendations, to whom will the DSC give them?

The DPA blithely narrates these promoted options despite the fact that a ***massive*** EIR/EIS has been reviewed by the public on California WaterFix and many weeks' testimony and evidence taken by SWRCB concerning the California WaterFix water rights change petition. This body of evidence clearly shows that the Tunnels spell doom for achieving coequal goals in the Delta. The tunnels would privilege water supply reliability of a sort over ecosystem restoration (let alone fish species' recovery). Given this preponderance of evidence accepted into the Board's record on the change petition for California WaterFix, why would the DSC merely "promote" this conveyance option? Is the DSC not paying attention?

The DPA Attachment A provides "performance measures relevant to Delta Plan amendments for conveyance, storage and operations." (page 16 of the DPA file) The outcome performance measures continue to have no numeric targets by which the DSC can meaningfully assess performance toward meeting coequal goals that would be made by contributions from this DPA.[7]

Nearly all of these proposed performance measures contained in the conveyance DPA fail to provide meaningful targets to perform to, which is the point of performance measures. The one exception is PM 4.6 (page 18) stating that one measure of success toward the coequal goals would be to achieve the salmon doubling goal under state and federal law, as measured in data from state and federal fishery agencies. Our organizations support adoption and implementation of this performance measure as a meaningful outcome measure, *post haste*.

The DPA's Attachment B map presents data on "soil agricultural groundwater banking index identifying potential areas for banking on ag lands." This is a curious attachment. DPA page 11 states in II.C.2 that DWR should develop a model ordinance for groundwater recharge that urges cities and counties to incorporate groundwater recharge and storage into land-use planning and zoning, and to protect areas with the highest potential for groundwater recharge from incompatible uses. This is a good policy. It's just that Attachment B does not appear to offer a lot of areas where soils are good enough for such water spreading to work well on agricultural land. We urge that the DSC work closely with the map's authors to devise a more fine-grained mapping system to help implement such a policy, and collaborate with DWR SGMA staff and the California Water Commission toward that end.

There are many areas of the Central Valley where the Attachment B map shows poor or very poor soil conditions for surface recharge. If this is indeed the case, why is so much

[7] While RTD is a litigant against the DP, we look for more of the same unless DSC acts to apply numeric targets for reduced Delta reliance, decreased Delta exports and measured increases in natural functional flows, etc. called for in Attachment A.

attention given to conjunctive use as a "system storage" strategy? Neither the scientific attachments nor the staff report address this. It appears to us to undermine or at least overstate the utility of conjunctive use as a storage solution in the Central Valley. We urge the DSC to address this problem before it embarks on a storage policy that may not offer much toward solving California's future water supply needs. The DPA should at a minimum recommend additional study by the Delta Independent Science Board of the feasibility of conjunctive use as a meaningful strategy contributing to greater water storage in California's Central Valley.

Staff Report questions for Council consideration (Item 12, p. 9):

We also urge that DSC members consider our concerns with staff report questions from the February 2017 staff report on this DPA.

- *Q. Does this discussion adequately address the 19 principles adopted in 2015?*

The 19 principles were devoid of reference to the water policy framework context, so we respectfully suggest that DSC members answer "no" to this question.

- *Q. Are there additional recommendations the Council would like to see added to the discussion draft?*

There are no "recommendations" at present, since the language of the DPA contains neither policies or recommendations. Yet these are "options" that the Council is supposed to promote under Water Code Section 85304, by law. While it is appropriate that a range of options for conveyance and storage are presented in the DPA, DSC should clarify that it is not authorized by Water Code Section 85304 to "recommend" any of them, and clarify further that conveyance and storage projects must come before it as covered actions.

Our organizations recommend a new Delta Plan policy that ***no conveyance or storage alternative or option may be presented to the DSC as a certifiable covered action without first having obtained water rights permits and a 401 certification from the State Water Board, and applicable 404 permits from the U.S. Army Corps of Engineers.*** In the case of new hydroelectric dam projects, they would also need a FERC license prior to the entity seeking a covered action certification from the DSC.

We also recommend that the DSC should establish as criteria of consistency with the Delta Plan that any conveyance or storage project ***must*** have project bonding that guarantees all necessary maintenance activities be documented and funded before any covered action certification be approved by the DSC. The California Coastal Commission has required bonding of permittees for sea walls and other coastal protective structures to ensure compliance with terms of coastal permit approval, and to ensure that projects actually have the funding they need to complete construction. Presently, we note, the California WaterFix project, after ten and a half years of planning, still has no financing plan on which such bonding could rely.

- *Q. Are there any aspects of the discussion draft the Council wants to expand on?*

The DSC should expand the DPA's discussion of where the respective sets of known conveyance and storage projects (i.e., WaterFix and CalFED storage projects) are in their respective processes as of some date certain like a month before the Council adopts the DPA. To "promote options" in the absence of describing what options are actually out there under consideration (including storage projects before the California Water Commission or conveyance proposals under consideration among south of Delta water agencies) is non-transparent. The Delta Plan is supposed to be updated every five years, and none of these California WaterFix or CalFED storage projects have funding, authorization, permits and so on. The DSC should name, not hide, what's under consideration among these options so that the Delta Plan may be a more or less transparent and relevant document that is useful to the public.

- *Q. Are there specific questions about the draft that Council would like staff to raise at the public workshop?*

This question seems strange, since this is like asking staff to raise questions about their own proposal. Instead, we urge that DSC members ask questions of staff as to what "promotion" of conveyance and storage means in the larger framework of DRA and state water policies, and what promotion of conveyance and storage projects in the Delta Plan means for careful DSC review of such selfsame covered actions.

Scientific Findings

Attachment 4 of the DPA materials from February 22-23 include "updated scientific findings for DPA concerning storage, conveyance, and operation." This attachment is an annotated bibliography of articles from various scientific and engineering journals. However, the annotations do not tie back into exactly how the updated science relates to Delta Plan Amendment policies or recommendations. Mostly, they appear just to reproduce research paper abstracts as annotations. Specific connections of scientific findings to proposed policies and recommendations (however flawed and such as they are) are missing.

Consequently, we urge DSC members not to construe the scientific findings attachment as scientific justification for the proposed DPA on storage, conveyance, and operations.

Conclusions on the Conveyance, Storage, and Operations DPA:

In sum, the DSC should reject environmental review and adoption of the present conveyance, storage, and operational options for promotion now before it. Instead, the DSC should develop criteria and required covered action conditions derived from Water Code Sections 85021, 85320, and from environmental justice, human right to water, and anti-discrimination policies, and use them systematically to require each conveyance covered action undergo a comprehensive and quantified needs assessment. The needs assessment should take into account project feasibility, economics, ecosystem services

protected or the cost of restoring them elsewhere if the covered action is approved, and water supply and demand, and the reliability of each. An improved Delta Plan amendment addressing conveyance, storage, and operations should meet findings that derive from the criteria that would be placed by the DSC into the Delta Plan. At present, the DSC has no such proposal before it.

3. Proposed Delta Levee Amendments

The DSC's approach to Delta levees has improved greatly in recent years. It had been our perception that the DSC's Delta Levee Investment Strategy initiative was striving to rid the Delta of seeming low-value islands and encourage a lot of ecosystem restoration actions through attrition of human island usage in the wake of potential flood damage.

We find much in the DSC's Delta levees DPA to support and appreciate. We understand it is necessary to prioritize levee investments in light of constrained funding sources from all levels of government and the private sector. Overall, we support the DSC's strong statements supporting the California Department of Water Resources continuing its Delta levee maintenance subvention program. As DSC states, "The record of declining flooding damage and testimony to the Council reflect these programs' value. These programs should be continued with adequate funding to provide State matching funds for addressing Delta flood risk."[8] We also concur with the DSC's proposal that the 75 percent state cost share be extended indefinitely. Adjustment of the Delta Levees Maintenance Subventions Program deductible to account for inflation seems reasonable to us as well. This would help the levee maintenance keep pace with the cost of materials and labor over time, ensuring flood protection and risk reduction for the long haul.[9]

However, the DSC's analysis of the ability to pay of reclamation districts to pay for their fair share of levee maintenance (as part of participation in the DWR subvention program) should be rethought. The Arcadis study of ability to pay fails to indicate just how few reclamation districts show a "very low" ability to pay.[10] This study sorts the dataset of reclamation districts into quartiles rather arbitrarily, rather than developing and applying criteria quantifying low compared with high ability to pay (ATP) for levee maintenance expenses. This approach to sorting the data masks the findings that of the 14 districts with "very low" ability to pay, 9 have an ATP exceeding 50 percent of their income, while 6 of them have an ATP exceeding 70 percent. This means that fully 47 of the 55 districts in the Arcadis study have an ability to pay of over 70 percent, and of these 47, 41 of them have an ability to pay that exceeds 88 percent of income. This means that the vast majority of Delta reclamation districts, by Arcadis' analysis, has a

[8] Delta Levee DPA, Agenda Item 10, Attachment 1, p. 52:29-31.

[9] *Ibid.*, p. 54:2-10.

[10] Memo from George F. McMahon, P.E., PhD., Arcadis, to Dan Ray, Delta Stewardship Council, January 27, 2017 (Revised), "Ability to Pay (ATP) Analysis, Delta levees Investment Strategy," 9 pages.

strong ability to continue paying their share of levee maintenance costs under the subvention program.

The DSC goes on to suggest, however, a "simplified approach to the consideration of a local levee agency's ability to pay for the cost of levee maintenance or improvement… so that reclamation districts with little ability to pay receive the full 75 percent State cost share recommended above, with reduced State cost shares for reclamation districts that are able to pay more to maintain and improve their levees."[11] Actually, the suggested approach is more complicated than the present levee subvention program approach. Instead, it is a misguided attempt to help the State shirk its commitment to the Delta levee maintenance subvention program. This proposal ignores the DSC's other policy proposal of having a "beneficiary pays" approach to supplement the Delta levee maintenance subvention program. It will be analytically very difficult to determine with precision what, say, the Tulare Lake Water Storage District's fee for Delta levee maintenance should be based on its receipt of south-of-Delta water exports via the State Water Project.

Politically it will be very difficult to get beneficiaries like water contractors to accept application of a beneficiary pays principle to the long-term protection of Delta levees.

It should be obvious that it is already a simplified approach to have DWR conduct a levee maintenance subvention program wherein each reclamation district receives 75 percent payment of its levee maintenance costs from the state. These state funds are paid for by all California taxpayers, and the program thus recognizes the state's interest in benefits that all Californians realize from protection and maintenance of Delta levees. ***We urge the DSC to eliminate subsection C from RR R3.***

There are other things to like in the Delta Levees DPA. In particular, we agree that CalTrans should be given authority by the Legislature to enter into agreements with local levee districts to fund improvement and maintenance of levees adjoining interstates and highways "when that is the least cost approach to reducing flood risks to those roads." This last clause seems to make a distinction without a difference: when levees adjacent to highways protect the highways from flooding, why wouldn't maintaining or improving the levee be the least cost alternative? If the DSC must keep that clause, we think it doesn't add or subtract much.

RR R13 requiring "an adequate level of flood insurance" strikes us in two ways: First, what is "adequate"? Second, this section's problem statement alludes to a DWR 2005 paper that advocated that the state "reduce its liability by requiring that all homes and businesses in areas at risk of flooding, regardless of the level of protection, have some form of flood insurance similar to the National Flood Insurance Program, yet more comprehensive." The idea here is to engage all property owners and residents who would pay for insurance (even as renters) to buy into the reality of flooding potential and invest in protecting themselves from injury, death, damage and loss due to flooding.

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[11] *Ibid.*, p. 54:14-19.

This is actually a good idea, but the DSC's RR R13 fails to take up this task, and it consequently languishes, implying that anyone who cannot afford flood insurance in the Delta should strongly consider relocating if the State will not be the safety net. Such an implication of this Delta Plan recommendation would have strong environmental justice impacts on minority and poor residents, as well as those facing language barriers who may struggle to understand the risk, liability, and flooding issues involved.

Which leads us to insist that the major gap with the DSC's Delta Levees DPA is the lack of consideration and analysis of environmental justice issues pertaining to flooding potential, shouldering of disproportionate risks from flood hazards and levee protection and maintenance costs. One analytic task that should be performed is to overlay the DLIS priorities map (e.g., p. 48 of the Delta Levees DPA, or Figure 2 of the NOP), and the reclamation district ability to pay map (e.g., Figure 1 of the Arcadis ATP study) with various maps generated for the legal Delta by the University of California at Davis's Center for Regional Change study of Delta regional opportunities.[12] The latter's maps show opportunities for a number of social and economic indicators, including education, employment and income, housing, civic life, and health/environment. The maps of the Economic Innovations Group's Distressed Communities Index for Delta region zip codes (cited in Attachment 3 to this letter) should also be compared with levee-related maps to ensure that the social and economic needs of the Delta region's most vulnerable environmental justice populations are accounted for in the DSC's Delta levee priorities amendments to the Delta Plan.

4. DPA Performance Measures Comments

The Delta Plan was litigated almost immediately upon its adoption by the DSC in May 2013. Superior Court Judge Michael Kenny ruled in 2016 that the Delta Plan failed to put forward legally enforceable and quantified performance measures. The measures that he found lacked "quantified or otherwise measurable targets" included:

- Reduced reliance on the Delta for California's future water supply needs.
- Reduced risk of take and harm from nonnative invasive species.
- Restoration of more natural flow into and through the Delta.
- Increased water supply reliability.
- Promotion of options for new and improved infrastructure relating to water conveyance in the Delta to achieve the coequal goals.

[12] Chris Benner, *Delta Regional Opportunity Analysis*, UC Davis, Center for Regional Change, with Cassie Hartzog and Sara Watterson.

Under Judge Kenny's decision, the Delta Plan is vacated until such time as these performance measures are brought into compliance with the DRA requirement that the Plan be enforceable. We understand that the case is presently on appeal.

Our comments concerning performance measures center on outcome-related performance measures proposed by the DSC in its "Delta Plan Performance Measures" matrix, dated March 7, 2017.

Ref #3.4: Measurable reduction in reliance on the Delta in each hydrologic region.

This proposed outcome performance measure attempts to implement the statewide policy of Water Code Section 85021. It fails, however. While the matrix identifies what may be an appropriate baseline for determining reductions of the "average of 1998-2010 Delta water supplies" and the average volume of total water use met by water originating in the Delta watershed by hydrologic region over the same period, the performance measure proposed is highly incremental, the tiniest of steps in the direction of reducing reliance on the Delta by other regions for California's future water needs: all of a whopping one percent (1%): "1% reduction in average volume of total water supply met by water originating in the Delta watershed, by hydrologic region" by 2020. For the five hydrologic regions established in the baselines as subject to this performance measure (San Francisco Bay, Central Coast, South Coast, Tulare Lake, and South Lahontan), this one percent reduction would result in a whopping savings of 72,000 acre-feet by 2020.

Its alternative ("or") target is expressed as "Reduction in average percent of total water supply met by water originating in the Delta watershed, by hydrologic region, equal to at least the reduction that would be achieved through SB X7-7 goals and holding baseline supplies and imports constant." This performance measure is impossible to understand for lay readers not familiar with this terminology. What *are* the relevant SB X7-7 goals and why are they suddenly relevant to reduced Delta reliance as a performance measure? If this is referring to the 20 percent conservation goals by 2020, why not so state it? The language of this draft target is opaque, unnecessarily so. It should either be related back to the baseline measures suggested in the draft performance measure in as clear a manner as possible—or dropped with no further consideration. It would be far simpler for the public to grasp to state percentage reductions targeted for specific points in time.

But the larger problem with this proposed "reduced Delta reliance" measure is that it is bereft of the larger context that led to so much Delta deterioration in recent years: the special legislative session at the end of the 2007-2009 drought period that led to passage of the Delta Reform Act; the finding in the Act that the Delta is in crisis; the Act's policies that so clearly aim to improve Delta ecosystems while stabilizing water supply reliability; and the Act's "early actions" that required, among other things, that the State Water Board develop, and the DSC apply in its Delta Plan work, information on Delta flows that would protect public trust resources. The draft Ref. 3.4 performance measure has no analytic basis in these historical and ecological realities that it

desperately needs. It appears as a number pulled from the air by DSC staff and put forward as ostensibly a politically safe number that will not anger water contractors and the Department of Water Resources because it is likely to be ineffectual.

The Environmental Water Caucus, and more recently Restore the Delta, has argued since the time of the drafting of the Delta Plan that a safer and more reliable level of exports from the Delta is for an average of about 3 million acre-feet annually. However, this may be perceived as an arbitrary number like the present 1 percent suggested by the DSC for Delta export reductions.

To save this performance measure from being found arbitrary and/or capricious, an analysis should be performed by DSC that relates the findings of the Delta Flow Criteria report (authorized by the DRA and approved by the State Water Board in 2010 since it identifies flows that would be protective of fish) to regional self-sufficiency targets for each hydrologic region based on the categories of supply alternatives described in the second sentence of Water Code Section 85021. They address the means by which reduced reliance on the Delta is to be translated as a matter of state policy into local self-sufficiency and reliance—and hence, greater local water supply reliability. This way, responsibility for water supply reliability is spread throughout the five Delta-dependent regions and can become priorities for local water infrastructure investments. And, as we discussed earlier in this letter, local water conservation efforts and behaviors by all Californians must also be factored into the real need for reliance on the Delta, and a more realistic potential for reduced Delta reliance is likely to be emerge from such an analysis. This analysis resolves to being the same type of needs assessment that should be performed on conveyance and storage options of the conveyance, storage, and operations DPA, and should be standard DSC professional methodology.

Making conservation a California way of life has to become part of the definition, analysis, and implementation of the reduced Delta reliance policy by the DSC. So far, the DSC avoids the analytical hoist for taking account of Delta flow needs, effective citizen conservation behavior, technological potential for non-Delta and local self-reliant water supply methods, to arrive at both what local self-sufficiency targets and reduced Delta reliance targets could be. By doing such analysis, the DSC will make these performance measures in the Delta Plan enforceable because they will demonstrate the legal and practical nexus between the policy to be achieved and the target derived to enforce the policy in the Plan. And it will avoid the problem of being arbitrary and capricious—of attempting to apply to reduced Delta reliance and increased local self-sufficiency numbers that are pulled from the air. Most of all, it will make the DSC a highly relevant state agency in Delta and statewide water policy.

Ref. # 3.8: Responsible State and local agencies complete the mandates of the 2014 Sustainable Groundwater Management Act.

This outcome performance measure is likely quite appropriate for the DSC to incorporate, but to become “enforceable” it must break out exactly what those SGMA mandates are and specify them as targets to be met. The California Department of

Water Resources has provided a timeline for Key SGMA Milestones in its Groundwater Sustainability Draft Strategic Plan.[13]

Certain SGMA mandates are likely to be more relevant to DSC policy goals like water supply reliability and ecosystem restoration than are others. For instance, increased water supply reliability as an outcome of state water policy is met most directly by Groundwater Sustainability Agencies completing and adopting legally adequate Groundwater Sustainability Plans that do not require intervention by the State Water Resources Control Board in the 2020s. The DSC should be primarily concerned with mandates in SGMA that directly relate to SGMA "desired outcomes" because these will improve and increase overall water supply reliability for local self-sufficiency. And this can readily feed back into the analysis of reduced Delta reliance and local self-sufficiency as well, discussed in our comments on Ref # 3.4 above.

Ref. # 3.9: Decrease in Delta exports during critically dry years and an increase in Delta exports during wet years.

This performance measure should be immediately withdrawn.

This is the standard talking point of the Department of Water Resources in which they propose that the way to increase reliability and new supplies is to skim more of the flood flows in wet years so the state and federal water projects may take less water (with presumably less pain to their water contractors) during critically dry years. Trouble is, this strategy incorrectly and unwisely assumes that reservoir storage gained by the "big gulp" during wet years will be managed wisely—that supplies during non-crisis drought years will be harbored in such a way that long-term drought experiences will result in larger carryover.

Recent experiences in 2008, 2014, and 2015 all attest to the crucial storage assumption behind this so-called strategy. In those years, the Department of Water Resources and the Bureau of Reclamation came before the State Water Board to seek "temporary urgency changes" to their water rights that would release them from specific water quality objective compliance in the Delta so that they could harbor meager stored water supplies that remained. Prior to submitting the TUCPs, the Department and the Bureau had drawn down their supplies for their customers leaving less for carryover storage into the next, possibly drier or critically dry year to come, and too little with which they could also meet Delta water quality standards.

The big gulp strategy suggested for this performance measure does not improve on this recent reality. Moreover, it implies the presence and operation of the Tunnels Project of California WaterFix as the site and vehicle of the "big gulp." Its presence as a performance measure is nowhere supported by other Delta Plan policies, certainly not

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[13] California Department of Water Resources, 2015. *Groundwater Sustainability Program Draft Strategic Plan*. March 9, pp. 22-23, accessible at http://www.water.ca.gov/groundwater/sgm/pdfs/DWR_GSP_DraftStrategicPlanMarch2015.pdf.

those in place as of May 2013. This performance measure assumes what has yet to be demonstrated after nearly 11 years of conveyance planning in the Delta: not only that the big-gulp strategy would improve on recent practice, but that it will not have serious hydrologic, water quality, and ecosystem consequences for fish, planktonic species and food webs, and Delta region environmental justice communities.

Consider too that this strategy is naive about the future. If, under expected climate change scenarios of more frequent and longer dry periods and less frequent but more extreme wet periods, would this strategy even be able to boost water supply reliability? The DSC fails to justify why this performance measure is included. As we have urged, it should be withdrawn.

It is because of proposals like this one that we urge the DSC to face squarely and honestly the various meanings of "water supply reliability." Without engaging the various meanings of this phrase, genuine progress by the DSC toward real supply reliability (as it concerns the Delta) that achieves the coequal goals and reduces reliance by other hydrologic regions on Delta exports will remain elusive and controversial.

At a minimum, "water supply reliability" represents a statistical probability, a likelihood of attaining a certain level of supply consistently a large percentage of the time. Under assumption of stationarity[14], probability of exceedance curves are a useful tool for grasping such a reliability concept. But the term "reliability" in this phrase also connotes a relationship of supply to demand: Demand is what populations who need water do when they use water. If demand can be reduced over the long term, then water supplies can be stretched farther for the same population, or even for a growing population using more water in ways that are increasingly efficient. In economic terms, the productivity of water usage can increase, without overall supplies necessarily having to increase.

Similarly, the sources of supply can be diversified to reduce reliance on supplies that may be vulnerable to drought. Delta exports dependent on conveyance projects like California WaterFix do not ready meet this criterion.

But the DSC's incorporation of this outcome performance measure signifies that the DSC has not done the necessary analysis to figure out how to increase water supply reliability by reducing Delta reliance and increasing local self-reliance, as we stated earlier. The DSC's inattention to this is hydrologic malpractice, and, again, we urge the DSC to withdraw this outcome performance measure, and address water supply reliability through a forthright and comprehensive needs assessment, from which a more suitable measure could emerge.

Ref. #4.2: Restoring a healthier estuary using more natural functional flows, including in-Delta flows and tributary input flows to support ecological floodplain processes.

[14] Stationarity—the idea that future conditions will be similar to those of the known past—is problematic, since climate change undermines the relationship between the past and the future.

This proposed outcome performance measure has a great deal going on with it. It attempts to encapsulate within its provisions the relationship of functional flows to ecological productivity via floodplain inundation. We have seen the research indicating that floodplain inundation causes blooms in populations of lower aquatic trophic levels that are consumed by fish species as Sacramento splittail and juvenile Chinook salmon. We agree that the benefits can be compelling, and that the potential growth benefits of this source of food for desired fish is significant.

The proposed measure targets allowance for greater than 17,000 acres of Yolo Bypass inundation for three weeks or more in the winter "in at least two out of three years." It also calls for "at least one spring flow event 5 times winter base flow each year in the Sacramento River" and "not to exceed daily drops in flow >10% per day during spring flow recession." Finally, its target states "the downward long-term trend in the ratio of outflow to inflow is reversed." (Matrix, p. 6, March 7, 2017 draft.)

This measure has historically been associated with "notching" of the Fremont Weir (as was proposed in 2013 through the Bay Delta Conservation Plan). This outcome performance measure should indicate whether a notched Fremont Weir or other source of increase inundation flows is assumed for this measure.

The proposed measure fails to acknowledge the tension, even the contradiction, between the first target for inundating Yolo Bypass acreage and reversing the "downward long-term trend in the ratio of outflow to inflow". Floodplain inundation benefits not just the fish that are the objects of study, such as splittail and juvenile salmon and steelhead. Those same ecosystem benefits also attract predators to the Yolo Bypass and other inundated wetlands where splittail and young salmonids can become prey for black bass, largemouth bass, and striped bass.

The alternative benefit of limiting floodplain inundation is that Sacramento River flows, instead of spilling into Yolo Bypass at an increased rate, would continue on down the mainstem of the River into the Delta, where juvenile fish, benefiting from a closed Delta Cross Channel, are better able to escape predators as smolts and reach the Golden Gate. Put another way, floodplain inundation would reduce flows in the mainstem, so productivity gains for some fish in the Yolo Bypass could well be offset by predation losses in a mainstem subjected to lower flows, less turbidity, and greater predator advantages along that route.

Our point here is not that floodplain inundation should not be done. We agree it is important. We think that the DSC has not adequately made the case in this performance measure that notching Fremont Weir is a good idea and that it would bring net benefits in abundance, survival to the ocean, and enhanced life changes from adequate feeding to at-risk fish species—advantages not now available to them otherwise.

As to increasing the ratio of Delta outflow relative to inflow, this target needs to consider during which seasons this is desirable, and so state it.

We also question why it is necessary to inundate Yolo Bypass in two of every three years when sediments in key parts of Yolo Bypass are contaminated with mercury. Frequent wetting and drying of such sediments will increase methylation of mercury by bacteria in sediments, increasing the risk of contaminating fish and human populations as an undesired public health and environmental justice consequence. The DSC needs to give careful consideration, with abundant public outreach, education, and participation, to this facet of this proposed outcome performance measure before adopting and implementing it.

Ref. #4.6: Salmon doubling goal.

As we stated above in our comments on the storage, conveyance and operations amendment, we support this outcome performance measure for doubling salmon populations. However, we urge the DSC to track this performance measure annually, not just every five years, especially since the life histories of Chinook salmon races comprise just three years.

Ref. #4.10: Prevention and management of key nonnative terrestrial and aquatic invasive species, including fish, invertebrates, and plants, in the delta over the next decade.

The phrase “over the next decade” should be dropped since there is no approval date to form its baseline, and the phrase seems entirely arbitrary. Nonnative invasive species are extremely difficult to eradicate, let alone control, and it seems inappropriate to limit the span of this proposed outcome performance measure to just ten years, regardless of when the clock starts.

The proposed measure should identify which fish, invertebrates, and plants would be subjected to monitoring. Its “target” omits invertebrates without explanation. We urge the DSC to include two key invertebrates that are nonnative invasives are *Potamocorbula amurensis*, the Asian clam, and *Corbicula fluminea,* the overbite clam. The former is more adapted to low salinity environments (such as those found just downstream of the region of X2, the low salinity zone of the Bay-Delta Estuary), while the latter is more adapted to fresher water, and tends to be found upstream of X2. They both consume tremendous quantities of planktonic and other floating food in the water column of the Delta and outcompete. The Asian clam has the additional disadvantage of being a ready bio-accumulator of selenium in large amounts. This makes it more actively harmful to upper trophic levels in the Bay-Delta aquatic food webs, since this clam is prey for bottom-feeding fish like sturgeon and deep-diving water birds like surf scoters.

Potamocorbula also colonizes upstream readily when salty tidal flows dominate Delta river channels and bays, primarily during drier seasons and drought years. They migrate upstream and when combined with low flows containing selenium, a perfect hydrologic storm is created for contamination of the food web if selenium levels are not adequately

managed. As a benthic resident, *Potamocorbula* may also bioaccumulate methyl-mercury from consumption of nutrients and prey in or near sediment.

Fortunately, the scientific literature has demonstrated that while *Potamocorbula* expands its benthic geographic range upstream in to Delta channels in drier years when a saltier flow regime prevails, wetter years or seasons with regular higher flows push *Potamocorbula* further downstream in the Bay-Delta Estuary system, shrinking its impact on Delta food webs. Conversely, *Corbicula*'s range shrinks during drier saltier flows, but expands when seasons or years are wetter.

Functional flows, in the context of nonnative invasive species, should be harnessed to contribute to management of these nonnative invasive species, to reduce the food web effects they have on at-risk native aquatic species in the Delta, both resident and migratory, and to prevent their harmful food web problems with contaminants. We urge the DSC to link these two outcome measures so that outcomes of both native resident and migratory species can be managed simultaneously with management of nonnative invasive species.

Ref. #5.3: Prevent further Delta rural farmland loss to urban development in areas designated for agricultural use in Delta Plan regulations. Track conversion of farmland to habitat restoration areas.

The *Delta Economic Sustainability Plan*, mandated in the Delta water legislative package from which the Delta Reform Act is drawn, demonstrated quantitatively in 2011 that farmland conversion in the rural agricultural districts of the Delta is subject (particularly in the south Delta) to the quality of water available for irrigation, as well as proximity to urban land pressures.

Unfortunately, this proposed outcome performance measure ignores the role irrigation water quality may play in the decision by any given Delta farmer to continue cultivating or sell (perhaps for urban conversion purposes). Improved water quality throughout the Delta (but especially in the south Delta) will have great impact on the sustainability of Delta lands in agriculture over the long term. As drafted, this proposed outcome performance measure would fail to track water quality as an indicator of economic health in the Delta for agriculture. We urge the DSC to rethink this outcome performance measure to take account of the key role of irrigation water quality in sustaining agriculture in the Delta, and link this performance measure to its other water quality-related outcome performance measures.

Ref. #6.1: Water quality in the Delta and Suisun Marsh meets the standards of the Clean Water Act.

Like other proposed outcome performance measures by DSC (SGMA for one), this proposed measure lacks sufficient specificity to be useful or meaningful. Meeting "the standards of the Clean Water Act" is of course laudable, but the metric for the measure fails completely to specify which contaminants are most important for DSC's

performance measure to track, measure and achieve. Mercury, methyl mercury, selenium and its various chemical species, boron, and arsenic all come to mind as specific contaminants the DSC should track.

But meeting "the standards of the Clean Water Act" should also involve other water quality objectives like salinity, which responds to flow changes on multiple time scales: hourly all the way up to inter-annually.

This outcome performance measure as drafted also suffers from an inability to cope with the effects of temporary urgency change petitions by the Department and the Bureau which seek and obtain waivers from salinity and flow objectives that are set under both the Clean Water Act and the state's Porter-Cologne Water Quality Control Act. We urge first that this proposed performance measure be amended to include not only the federal Clean Water Act, but the Porter-Cologne law as well for water quality control compliance.

Second, we urge that the proposed measure address salinity and flow as well, so that violations of these water quality objectives are reduced even in dry or critically dry years, regardless of whether a TUCP was in effect.

Ref. #6.2: Monitor salinity in the Delta, utilizing extensive existing electrical conductivity and chloride concentration (D-1641) and X2 measurement data that correspond to SWRCB objectives.

While this dovetails with our comments about Ref. #6.1, we support this proposed outcome performance measure. However, the DSC should recognize that it should focus not just on salinity objectives enforced by the State Water Board, but also the Board's upcoming in-stream flow objectives as well as outflow and inflow objectives under consideration.

Ref. #6.5: Consistently meeting applicable dissolved oxygen standards in the Delta by 2020.

We support this outcome performance measure, but urge that the DSC drop the word "consistently." and state instead "Meet all applicable dissolved oxygen standards in the Delta by 2020," the same way that the DSC also targets meeting "all other State Water Resources Control Board salinity objectives for urban and agricultural beneficial use[s] an average of at least 99% of the time" in Ref. #6.2 above.

Ref. #6.9: Measurable reduction in positive toxicity tests using standard methods from pesticides and other pollutants in Delta water by 2025.

As with our comments on Ref. #6.1 above, this proposed outcome performance measure should be more specific about the scope of toxic substances covered in tracking this measure. This proposed measure should specify particular nonnative

invasive species like *Potamocorbula amurensis* for monitoring, reporting and evaluation of bioaccumulable toxins like selenium.

There should also be a target date for when the DSC reports and evaluates the achievement of this measure and its various targets.

Ref. #6.10: Spatial coverage of harmful algal blooms in the Delta.

We appreciate that the DSC includes harmful algal blooms (HABs) in Delta waters as an outcome performance measure to be tracked and abated. The DSC's proposed measure needs greater specificity as to data sources for areal distribution of HABs in the Delta (aerial photos? riparian bank surveys?). In addition, the measure needs a quantified target reduction (e.g., 20% reduction in the surface acreage and/or toxicity of HABs during dry years relative to the 1999-2000 baselines) so that the DSC can actually measure success where achieved.

In addition, the proposed measure's "reductions in toxicity" needs to specify with respect to what types of organisms toxicity is evaluated: humans? domestic dogs? in-channel resident, introduced, and migratory fish? This measure must be more fine-grained in its coverage of toxic effects of HABs in order that the DSC and the public is apprised of the public health and environmental justice implications of allowing HABs to increase in the future. Humans are likely potential users of water that may be contaminated with HABs, and may consume fish caught in channels where toxins from HABs may have been released and taken up by fish.

Ref. #7.2: No increase in loss of life in the Delta as a result of flood emergencies, and decrease in expected annual fatalities and expected annual property damages.

We certainly support targets of zero lives lost from floods, and large reductions in expected annual fatalities and damage (EAF and EAD) for the Delta. However, with regard to EAF and EAD reductions, the proposed measure's baselines for these measures do not provide actual numbers, instead referring readers to the Delta Levees Investment Strategy final report. This is neither acceptable nor transparent for the public as to what the DSC's baseline is for these indicators of flood deaths and property damage. This is an instance where the quantified targets lack a quantified baseline, thereby thwarting a quantified measure of performance for this subject. We urge the DSC to correct the baseline so that it discloses quantified EAF and EAD figures so that the public understands what the measure of success will look like.

Ref. #7.5: Water deliver[y] interruptions by floods or earthquakes in the Delta.

We urge the DSC to incorporate into this proposed outcome performance measure the experience with this wet water year 2017 the relative lack of flood experience attained by levees throughout the Delta. The DSC has long maintained a default stance of fear about Delta levee failure, when levee failures have decreased in recent decades on the

strength of state subventions to Delta reclamation districts that are routinely invested in levee maintenance, monitoring, and protection. Since 2004, there have been no flood events involving Delta islands that have interrupted state or federal water project Delta exports. Neither the DSC nor the Department of Water Resources have done a systematic study of the effects of the 2014 Napa earthquake (magnitude 6.0) on Delta levees. To our knowledge, there were no effects, though Napa is about 55 miles from the town of Walnut Grove in the central Delta.

This is a negative outcome performance measure: Without a complementary measure that represents progress in strengthening Delta levees, this measure suggests that the DSC ghoulishly anticipates Delta exports will be interrupted due to earthquakes affecting Delta levees. It suggests the DSC would avoid its own responsibility for gathering the state of California's resources for investing in Delta levees to ensure that this performance measure is negligible over the long term.

We respectfully urge that the proposed outcome performance measure language be amended to add the phrase, "attributable to Delta levee failure" at the end. The seismic and flooding fear is less about earthquakes originating within the Delta, since there are no known active seismic faults in the region, than about large-magnitude quakes on adjacent active faults like Hayward, Calaveras, Greenville, San Andreas and other faults in central and northern California.

We also respectfully urge that the DSC add a new outcome performance measure that uses as a metric the investment of taxpayer funds into Delta levee improvements that bring them up to federal flood protection standards, or greater, since the Delta is not only a nexus for water exports, but a transportation, electricity, and agricultural nexus for all of California. The baseline may be of the DSC's choosing, but the targets should be for something like "100 miles of levee rebuilt to federal flood protection standards every five years in perpetuity." This will have the long-term benefits of protecting against loss of life and property damage as well as water export interruptions.

5. Comments Specific to the Notice of Preparation

Our letter incorporates by reference the letter from the Environmental Water Caucus, Friends of the River, California Sportfishing Protection Alliance, California Water Impact Network, Planning and Conservation League, AquAlliance, Sierra Club California, Center for Biological Diversity, Restore the Delta, and Environmental Justice Coalition for Water, et al, concerning their comments on the Notice of Preparation.

The comments herein on each of the three sets of Delta Plan amendments should also be construed by the DSC as comments on this Notice of Preparation.

Regarding alternatives to be considered in the program environmental impact report, we urge the DSC to include a reduced exports alternative that reflects the mandate to reduce reliance on the Delta for California's future water needs and which would build

on a strong funding and institutional commitment to strong regional/local water self-sufficiency programs as suggested in the Delta Reform Act (e.g., Water Code Sections 85021 and 85004(b). In relation to Delta conveyance, there should be a “no isolated conveyance” alternative in which through-Delta conveyance in open Delta channels is continued into the foreseeable future.

Regarding the scope of potential effects of the proposed Delta Plan amendments, we urge that the DSC include in the EIR contents chapters that deal with environmental justice and public health. The environmental justice chapter should connect the disproportionate burdens that may be placed on these communities by provisions of the Delta Plan amendments under consideration with hydrology/water quality, air quality, climate change and sea level rise, land use and planning, noise, public health, growth inducement, recreation, population/housing/employment, transportation, utilities and public services, and cultural resources. Accordingly, we also recommend a separate public health chapter that addresses the potential for conveyance alternatives to contribute to flow stagnation, increased residence time of water, and the potential for increased deposition of chemical contaminants like selenium and mercury and increase of harmful algal blooms during summer and early fall seasons. Both environmental justice and public health chapters were included in the Bay Delta Conservation Plan/ California WaterFix EIR/EIS; such chapters should be included here too.

Conclusion

These are our comments concerning the DSC’s proposed Delta Plan amendments for storage, conveyance, operations; Delta levee investment priorities; and performance measures. The DSC has completely overlooked and omitted its statutory planning obligations to take account of environmental justice, human right to water, and anti-discrimination policies. We have provided five attachments that can help the DSC correct and augment its administrative record on environmental justice matters. In addition to these omissions, the DSC also ignores the state’s water policy framework in favor of a more narrow, arbitrary and capricious formulation of these amendments in light of a holistic reading of Delta Reform Act policies and mandates. Finally, we have provided numerous constructive suggestions and rationales for improving these amendments for the DSC to consider as it proceeds.

We appreciate the opportunity to comment on and participate in the DSC’s deliberations on these proposed amendments to the Delta Plan and on the Notice of Preparation. If you have questions concerning our comments, do not hesitate to contact us.

Sincerely,

Barbara Barrigan-Parrilla
Executive Director
Restore the Delta
barbara@restorethedelta.org

Tim Stroshane
Policy Analyst
Restore the Delta
tim@restorethedelta.org

Colin Bailey
Executive Director
Environmental Justice Coalition for Water

Randy Reck
Environmental Justice Coalition for Water

Attachments;

1. State and Federal Environmental Justice, Human Right to Water, and Anti-Discrimination Policies

2. American Community Survey Data on Delta Region Environmental Justice Populations

3. Delta Region Distressed Community Index Scores and Narrative

4. Delta Region Food Deserts Narrative and Maps

5. Stockton Retail Water Sources and Related Drinking Water Quality Description

Cc: Jessica Pearson, Executive Director, Delta Stewardship Council
Randy Fiorini, Chair
Susan Tatayon, Vice-Chair
Frank C. Damrell, Jr., Council Member
Mike Gatto, Council Member
Patrick Johnston, Council Member
Skip Thomson, Council Member
Ken Weinberg, Council Member
Mayor Michael Tubbs, City of Stockton
Kurt O. Wilson, City Manager, City of Stockton
Robert Granberg, City of Stockton Municipal Utilities Department
John Luebberke, City Attorney, City of Stockton
Kelley Taber, Somach, Simmons & Dunn

Trent Orr, Earthjustice
Yana Garcia, Earthjustice
E. Robert Wright, Senior Counsel, Friends of the River
Osha Meserve, Soluri Meserve
Thomas H. Keeling, Freeman Firm
Doug Obegi, Natural Resources Defense Council
Gary Bobker, The Bay Institute
Jon Rosenfield, The Bay Institute
Carolee Krieger, California Water Impact Network
Bill Jennings, California Sportfishing Protection Alliance
Barbara Vlamis, AquAlliance
Kathryn Phillips, Sierra Club California
Kyle Jones, Sierra Club California
Jonas Minton, Planning and Conservation League
Conner Everts, Environmental Water Caucus
Jeff Miller, Center for Biological Diversity
John Buse, Center for Biological Diversity
Adam Keats, Center for Food Safety
Michael A. Brodsky, Save the California Delta Alliance
John Herrick, South Delta Water Agency
Dante Nomellini, Central Delta Water Agency
Noah Oppenheim, PCFFA and Institute for Fisheries Resources
John McManus, Golden Gate Salmon Association

Attachment 1
State and Federal Environmental Justice, Human Right to Water, and Anti-Discrimination Policies

Environmental justice—the potential for public decisions to avoid or mitigate disproportionate or discriminatory environmental impacts (including water-related impacts) to minority and low-income people and populations—is a solemn and vital consideration in the deliberations of state and federal agencies. They must simultaneously consider environmental justice concerns in the framework of the public interest, "the greatest public benefits," and protection of public trust resources.

The California Water Code provides that the people of California have a paramount interest in the use of all the water of the State and that the State shall determine what water, either surface or ground water, can be converted to public use or controlled for public protection. (California Water Code [C.W.C.] Sec. 104). In California's Water Code, protection of the public interest is of vital concern in the development of the water resources of the State, and the State is authorized to determine in what way all the water of the State should be developed for the greatest public benefit. (C.W.C. Sec. 105)

While neither "public interest" nor "the greatest public benefit" are defined in the water code, the code designates domestic use of water for drinking, bathing, cooking and cleaning as the highest use of water in California. (C.W.C. Sec. 106) Recently, a "human right to water" was added to the water code, stating that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." (C.W.C. Sec. 106.3(a))

Federal and state laws require their agencies to consider environmental justice and to prohibit discrimination in their decision making processes. Title VI of the Civil Rights Act of 1964 and related statutes require that there be no discrimination in Federally assisted programs on the basis of race, color, national origin, age, sex, or disability (religion is a protected category under the Fair Housing Act of 1968), and that, "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participating in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

Federal Executive Order (EO) 12898 (1994) requires Federal agencies, including the United States Bureau of Reclamation, to make environmental justice part of their mission and to develop environmental justice strategies.[15] This Order further requires that each Federal agency may, whenever practicable and appropriate, translate crucial public documents, notices, and hearings relating to human health or the environment for

[15] Executive Order 12898 of February 11, 1994, *Federal Actions to Address Environmental Justice in Minority {Populations and Low-Income Populations,* Federal Register 59(32): February 16, 1994, Section 2-2. Accessible at https://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/FHLaws/EXO12898.

limited English speaking populations.[16] As important, the Order also states that "Each Federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public."[17]

The Bureau of Reclamation takes US Department of the Interior goals as its own. The Interior Department's 1995 Goal 1 states that "The Department will involve minority and low-income communities as we make environmental decisions and assure public access to our environmental information."[18]

For its 2012-2017 Environmental Justice Strategic Plan, the Interior Department added as a new goal to its environmental justice commitments that it will "identify and address environmental impacts that may result in disproportionately high and adverse human health or environmental effects on minority, low-income, or tribal populations."[19]

California Anti-Discrimination and Environmental Justice Policy

The State of California defines "environmental justice" as: "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." (Cal. Gov. Code Sec. 65040.12, subd. (e).) The State Attorney General's office states that "fairness in this context means that the benefits of a healthy environment should be available to everyone, and the burdens of pollution should not be focused on sensitive populations or on communities that already are experience its adverse effects." The State Attorney General adds, "environmental justice requires an ongoing commitment to identifying existing and potential problems, and to finding and applying solutions, both in approving specific projects and planning for future development."[20]

California's anti-discrimination policy states:

> No person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, genetic information, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state.

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[16] *Ibid.*, Section 5-5(b).

[17] *Ibid.*, Section 5-5(c).

[18] U.S, Department of the Interior, Environmental Justice Strategic Plan, 2012-2017, p. 13.

[19] *Ibid.*, p. 14, pp. 18-21.

[20] California Department of Justice, Fact Sheet: Environmental Justice at the Local and Regional Level, Legal Background, updated 7/10/2012, p. 1.

(California Government Code [C.G.C.] Sec. 11135(a).)

The State Attorney General's office states that this policy does not expressly include the phrase "environmental justice," but in certain circumstances it can require agencies to undertake the same consideration of fairness in the distribution of environmental benefits and burdens called for in the state's definition of environmental justice. In addition, the State Attorney General's office notes that agencies "should evaluate whether regulations governing 'equal opportunity to participate' and requiring 'alternative communication services' (e.g., translations) apply. (See Cal.Code Regs., tit.22, secs. 9801, 98211.)"[21]

Presence of EJ populations and communities in the Delta region

Low income communities and communities of color comprise a significant number of residents throughout Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Although distributed throughout the Delta, many of these communities are more densely represented in northern, eastern and southern census blocks.[22] Within these counties, the most significant concentrations of non-white populations occur in Antioch (45 percent), Pittsburg (60 percent), Fairfield (47 percent), Suisun City (59 percent), Lathrop (44 percent), Manteca (25 percent), Sacramento (45 percent), Stockton (50 percent), Tracy (33 percent), and West Sacramento (30 percent).[23]

Even in smaller communities throughout the Delta region, non-white residents make up substantial portions of the rural populations of Freeport (40 percent), Hood (33 percent), Courtland (43 percent), and Isleton (24 percent).[24]

Low-income and impoverished communities

Impoverished communities of all races and ethnicities are vulnerable to environmental injustices in the Delta region. The western, northern, central, and southern parts of the Delta in particular are home to high concentrations of low-income residents.[25] The most significant concentrations of people and families whose incomes in 2014 were below the

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[21] *Ibid.*, p. 2.

[22] Bay Delta Conservation Plan (BDCP) Draft Environmental Impact Report/Statement (DEIR/S), Chapter 28, Figure 28-1.

[23] Environmental Justice Communities in the Delta - American Community Survey 2014 data on population by race and Hispanic or Latino Ethnicity (of any race), accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_205.pdf.

[24] *Ibid.*

[25] BDCP DEIR/S, Figure 28-2.

federally-recognized poverty level occur in Antioch, Pittsburg, Clarksburg, Sacramento, Stockton, and West Sacramento.[26]

Delta region residents face isolating language barriers

There is a significant concentration of linguistically isolated residents who experience daily language barriers in Antioch, Pittsburg, Lathrop, Fairfield, Tracy, Stockton, Sacramento, and West Sacramento.[27]

Delta region has vital subsistence fishing beneficial uses

Most of the Delta region's environmental justice communities are concentrated in its largest cities: Antioch and Pittsburg in the western Delta; Fairfield, Suisun City, West Sacramento, and Sacramento in the northern Delta; and Stockton in the southern Delta, where the most distressed environmental justice communities reside. Environmental justice residents of these cities drink water from the Delta and use it for food preparation and sanitation. Some have jobs that rely on Delta water to grow crops or process raw materials into finished commodities, some for sale to environmental justice communities in the Delta region. Some fish the Delta for sustenance. Restore the Delta testimony to the State Water Board regarding the proposed California WaterFix change petition provides examples of environmental justice community entrepreneurship and other businesses expanding access to local agriculture with linkages to other sectors that provide jobs and healthful affordable food to poor and minority residents in the Stockton area. (See Attachment 5 to this letter.) Relative to their respective counties and to the United States, environmental justice communities are disproportionately represented in the Delta region's population.

Established Beneficial Uses Pertain to Environmental Justice Communities

The State Water Resources Control Board's 2006 Water Quality Control Plan established numerous beneficial uses to be protected by water quality objectives. They directly pertain to and reflect common linkages of environmental justice communities with employment, business, non-profit, and leisure pursuits. These beneficial uses include municipal and domestic supply; agricultural supply; groundwater recharge; navigation; contact water recreation; non-contact water recreation; shellfish harvesting; commercial and sport fishing; warm freshwater habitat ; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development of

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[26] Environmental Justice Communities in the Delta - American Community Survey 2014 Data on Percentage of Families and People Whose Income in the Past 12 Months is Below the Poverty Level, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_206.pdf.

[27] Environmental Justice Communities in the Delta - American Community Survey 2014 Data on Language Spoken at Home, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_207.pdf.

aquatic organisms; estuarine habitat; wildlife habitat; and rare, threatened, or endangered species.[28]

Beneficial Uses Now Under Consideration by the State Water Board

The Board is also presently considering designation of beneficial uses for tribal traditional and cultural purposes, tribal subsistence fishing, and subsistence fishing uses of water.[29] In so doing, the State Water Board acknowledges that "tribes have cultural practices and ways of life that they wish to preserve and pass on to future generations."[30] Degradation of state waters, along with new sources of contamination and pollution to those waters, creates "distinctive changes to the tribes and their members….Providing beneficial use categories and descriptions designed to protect Native American uses of waters is an important step in ensuring that tribes have the opportunity to continue to practice their culture."[31]

Subsistence fishing, the Board also acknowledges, is practiced by both Native American and other cultures and individuals throughout California.[32] For many non-native cultural communities, subsistence fishing is also an integral cultural tradition preserved when these communities emigrated to the United States. Many are from Southeast Asia. They and other individuals and families may engage in subsistence fishing to provide food when low incomes make buying fish unaffordable. Many such subsistence fishers may also face language barriers, as the American Community Survey suggests.[33] The Board acknowledges that "in areas where bioaccumulatives have built up in fish tissue to unsafe levels to support subsistence fishing, most of the public is unaware of the dangers associated with consuming large amounts of fish and steps are not being taken to either reduce the contaminants in the fish or to educate the public."[34]

No state agency has yet conducted quantitative or qualitative surveys of subsistence fishing within the Delta.

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[28] State Water Resources Control Board, *Beneficial Uses Development: Tribal Traditional and Cultural, Tribal Subsistence Fishing, and Subsistence Fishing Beneficial uses, Stakeholder Outreach Document,* June 2016, pp. 8-9.

[29] *Ibid.*, pp. 3-4.

[30] *Ibid.*, p. 4.

[31] *Ibid.*

[32] *Ibid.*

[33] *Ibid.*; see also Attachment 2, regarding Delta region language barriers.

[34] *Ibid.*

Attachment 2
American Community Survey Data on
Delta Region Environmental Justice Populations

Non-White Populations in the Delta Region

The presence of Black or African-American residents, for example, is significant in some notable Delta cities, like Antioch (21 percent), Pittsburg (21 percent), Sacramento (16 percent), Stockton (14 percent), Fairfield (18 percent), and Suisun City (25 percent) ; exceeding both county-wide and national population levels.[35]

American Indian and Native Alaskan populations throughout the Delta region are also significantly larger than their corresponding county-wide and national averages in Antioch (2.1 percent), Pittsburg (2.1 percent), Bethel Island (3.3 percent), Oakley (4 percent), Discovery Bay (1.9 percent), Sacramento (2.5 percent), Hood (28.6 percent), Isleton (1.9 percent), Lathrop (3.2 percent), Manteca (2.2 percent), Stockton (3.3 percent), Tracy (3.1 percent), Fairfield (1.8 percent), Rio Vista (2 percent), Suisun City (2.2 percent), Clarksburg (2.5 percent), and West Sacramento (3.4 percent).[36]

The concentration of Asian residents exceeds county-wide and national averages as well in the cities of Antioch (14.5 percent), Pittsburg (19.3 percent), Brentwood (11.6 percent), Oakley (10.9 percent), Discovery Bay (6.6 percent), Sacramento (21.5 percent), Walnut Grove (8.1 percent), Isleton (5.9 percent), Lathrop (23.3 percent), Manteca (9.8 percent), Stockton (24.4 percent), Tracy (18.8 percent), Fairfield (19.4 percent), Rio Vista (8.5 percent), Suisun City (24 percent), and in West Sacramento (13.7 percent).[37]

Native Hawaiian and Other Pacific Islander populations are larger relative to their share of either county population or that of the United States in Antioch (2.1 percent), Pittsburg (2.9 percent), Brentwood (0.8 percent), Oakley (0.8 percent), Discovery Bay (1.4 percent), Sacramento (2.3 percent), Walnut Grove (0.3 percent), Lathrop (2.2 percent), Manteca (1.5 percent), Stockton (1.4 percent), Tracy (2.5 percent), Fairfield (2.3 percent), Suisun City (2.9 percent), and West Sacramento (3.2 percent).[38]

Delta-area residents self-identify as “Some Other Race” in census tract data at rates higher than the national average in Antioch (14.2 percent), Pittsburg (21.8 percent),

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[35] Environmental Justice Communities in the Delta - American Community Survey 2014 data on population by race and Hispanic or Latino Ethnicity (of any race), accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_205.pdf.

[36] *Ibid.*

[37] *Ibid.*

[38] *Ibid.*

Brentwood (6.2 percent), Oakley (9.4 percent), Sacramento (9.7 percent), Freeport (39.7 percent), Courtland (37.1 percent), Hood (22.5 percent), Isleton (18.3 percent), Lathrop (14 percent), Manteca (13.5 percent), Stockton (14.5 percent), Fairfield (14.3 percent), Suisun City (14.2 percent), and West Sacramento (12.9 percent).[39]

Finally, the Hispanic or Latino community, comprised of residents of any race, is significantly higher than the corresponding county or national averages in Antioch (34 percent), Pittsburg (40.2 percent), Brentwood (25.8 percent), Byron (41.9 percent), Oakley (36.9 percent), Sacramento (27.6 percent), Freeport (39.7 percent), Courtland (39 percent), Hood (65 percent), Walnut Grove (29.8 percent), Isleton (34.6 percent), Lathrop (43.1 percent), Manteca (39.9 percent), Stockton (41.3 percent), Fairfield (27.3 percent), Suisun City (25.1 percent), Clarksburg (18 percent), and West Sacramento (31.9 percent).[40]

Impoverished Communities in the Delta Region

In Contra Costa County, the poverty rates for families, children (persons under 18 years), adults (18 years and over), and seniors (65 and over) are below the national rate. The poverty rate among all people in the county is 10.7 percent, about two-thirds the 15.6 poverty rate for the U.S.[41] In Antioch, about 10.5 percent of all families, 21 percent of those under 18 years, and 12.4 percent of those 18 years and over are considered impoverished. Poverty rates among Antioch seniors 65 years and over was 7.9 percent, exceeding the County's senior poverty rate of [ ] percent. In Pittsburg, about 14.6 percent of all families, 26.9 percent of all children, and 15 percent of all adults 18 years and over were considered impoverished. Poverty among Pittsburg seniors was 9.4 percent, also exceeding the County's senior poverty rate and equaling the nation's. In Oakley, about 10.1 percent of all adults and 13 percent of all seniors are considered impoverished.[42]

In Sacramento County, poverty rates for families, children, adults, and seniors exceed the national poverty rate. The County's poverty rate among all people in the county is 19.4 percent, compared with 15.6 percent for the U.S.[43] In the city of Sacramento, about 17.7 percent of all families, 31.7 percent of all children, 19.3 percent of all adults, and 11.7 percent of all seniors are considered impoverished. In Courtland, 30.3 percent of all adults, and 52.7 percent of all seniors are considered impoverished. In Isleton, 17.9

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[39] *Ibid.*

[40] *Ibid.*

[41] Environmental Justice Communities in the Delta - American Community Survey 2014 Data on Percentage of Families and People Whose Income in the Past 12 Months is Below the Poverty Level, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_206.pdf.

[42] *Ibid.*

[43] *Ibid.*

percent of all families, 48 percent of children, and 18.7 percent of adults are considered impoverished. In Walnut Grove, 14.1 percent of adults and 13.6 of seniors are considered impoverished.[44]

In San Joaquin County, poverty rates for families, children, adults, and seniors exceed the nation's. County-wide, poverty is concentrated in the city of Stockton, where about 21.4 percent of families, 35.3 percent of children, 21.8 percent of adults, and 12.9 percent of seniors are considered impoverished.[45]

In Solano County, poverty rates for families, children, adults, and seniors are below the nation's. In Rio Vista, poverty rates exceed county and national levels for related children under 5 years of age, and adults 18 to 64 years. In Suisun City, 19.4 percent of children under 18 years are considered impoverished, exceeding both the county's and nation's poverty rates.[46]

In Yolo County, poverty rates for families and children under 18 are below the national poverty rates. (RTD-206.) However, Yolo County's poverty rates for adults 18 years and over and seniors exceed the nation's. In West Sacramento, 15.6 percent of all families, 29.1 percent of children under 18, 17.8 percent of adults, and 14 percent of seniors are considered impoverished. In Clarksburg, 11.5 percent of families, nearly half (49.2 percent) of children under 18, 13.8 percent of adults and 11.2 percent of seniors are considered impoverished.[47]

Delta Region Populations Facing Isolation from Language Barriers

In Contra Costa County, the 33.5 percent of the population 5 years and older that speaks languages other than English (categorized in the American Community Survey as Spanish; other Indo-European; Asian and Pacific Islander; and "other" languages), exceeds that of the nation's population (20.1 percent). Of the non-English language speakers in the county, the share of those people 5 years or older speaking English less than "very well" exceeds the national average of 8.7 percent. Delta region populations of those speaking a language other than English and that speak English less than "very well" that exceed the national rate occur in Antioch, Pittsburg, Byron, and Oakley. Delta region populations of those speaking English less than "very well" that exceed both the national and county rates occur only in Byron.[48]

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[44] *Ibid.*

[45] *Ibid.*

[46] *Ibid.*

[47] *Ibid.*

[48] Environmental Justice Communities in the Delta - American Community Survey 2014 Data on Language Spoken at Home, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_207.pdf.

In Sacramento County, 31.3 percent of the population 5 years and up speak languages other than English, exceeding the national average. Of the non-English language speakers in the county, the share of those people 5 years or older speaking English less than "very well" exceeds that of the nation by more than 50 percent (13.6 to 8.7 percent). Residents of the cities of Hood, Isleton, Sacramento, and Walnut Grove, in particular, report speaking a language other than English, and indicate that they speak English less than "very well," in numbers that also significantly exceed national and county average rates.[49]

In San Joaquin County, 40 percent of the population 5 years and up speak languages other than English, exceeding the national rate. Of the non-English language speakers in the county, the share of those people 5 years or older speaking English less than "very well" exceeds that of the nation by nearly 200 percent (40 to 20.1 percent). Delta region residents that speak a language other than English, that speak English less than "very well," and that exceed the national rate occur in Manteca and Tracy. Delta region populations of those speaking a language other than English and that speak English less than "very well" and meet or exceed the national and county rates occur in Lathrop (18.1 percent) and Stockton (21.5 percent).[50]

In Solano County, 29.5 percent of its population 5 years and up speak languages other than English, exceeding the national rate. Of the non-English language speakers in the county, the share of those people 5 years or older speaking English less than "very well" exceeds that of the nation (11.2 to 8.7 percent). Delta region populations that speak a language other than English, that speak English less than "very well," and that exceed the national rate occur in Suisun City (9.8 percent). Delta region residents of those speaking a language other than English and that speak English less than "very well" and meet or exceed the national and county rates occur in Fairfield (13.2 percent).[51]

In Yolo County, 35 percent of its population 5 years and up speak languages other than English, exceeding the national rate. Of the non-English language speakers in the county, the share of those people 5 years or older speaking English less than "very well" exceeds that of the nation by nearly double (15.1 to 8.7 percent). Delta region populations of those that speak a language other than English, that speak English less than "very well," and that meet or exceed the national and county rates occur in West Sacramento (18.2 percent) and Clarksburg (16.4 percent).[52]

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[49] *Ibid.*, showing that residents in Hood report at a rate of 33.3 percent; residents of Isleton report at a rate of 22.8 percent; and Sacramento and Walnut Grove residents report at a rate of 16.1 percent and 16 percent respectively.

[50] *Ibid.*

[51] *Ibid.*

[52] *Ibid.*

Within specific language categories of the American Community Survey, there are numerous Delta region cities and communities where the percentage of non-English speakers that speak English less than “very well” exceeds the national and county rates.[53]

[53] *Ibid.*

Attachment 3
Delta Region Distressed Community Index Scores and Narrative

Delta region residents of color and low income residents, including those with language barriers, live in quantifiably distressed areas

The presence of environmental justice communities does not tell the full story of the economic and public health challenges some of the most vulnerable Delta-area residents face. To help fill in that story, a recent study uses a "Distressed Communities Index" (DCI) that combines indicators of educational attainment (i.e., no high school degree), housing vacancy rate, adults not working, poverty rate, median income ratio (i.e., the ratio of community median income to that of the state), and changes in employment and business establishments between 2010 and 2013.[54] The DCI draws from seven indices of social and economic conditions using currently available data from the American Community Survey of the United States Census Bureau and other government data. They were chosen, according to this study, because:

> Distress manifests itself in a lack of residential investment, in shuttering businesses, and in disappearing job opportunities; prosperity the inverse. A high school diploma is the entry-level ticket to opportunity in the economy, and they remain scarce in many struggling neighborhoods.
>
> Low rates of adult employment identify communities where connections to the labor market have frayed; prospering communities, on the other hand, draw people back into the labor market with job opportunities. Poverty rates differentiate well-off from struggling communities too. And neighborhood median income relative to state median income sizes [i.e., measures] earnings differentials while controlling for differences in cost of living across the country.
>
> …The DCI does not surmount…inherent challenges [of the indicators used], but the index approach does mitigate their individual biases.[55]

1. Distress Scores

Distress scores are calculated, according to the study, "based on a geography's rank on each of the seven equally weighted variables. The ranks are then averaged and normalized to be equivalent to percentiles, resulting in distress scores between 0 and 100. The higher the distress score, the greater the distress."[56]

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[54] Economic Innovations Group, The 2016 Distressed Communities Index: An Analysis of Community Well-Being Across the United States, p. 5. Accessible at http://eig.org/wp-content/uploads/2016/02/2016-Distressed-Communities-Index-Report.pdf.

[55] *Ibid.*, pp. 6-7.

[56] *Ibid.*, p. 7.

The study used states, counties, cities with populations of 50,000 or more, and zip codes as its geographic units. The City of Stockton ranked sixth nationally among the most distressed large cities with a distress score of 95.2; 70.2 percent of the city's population lives in distressed zip codes.[57]

Among Delta region counties, Contra Costa County has the lowest distress score of 8.1, while San Joaquin County has the highest distress score at 58.5 (out of a possible 100). The study estimated that 43 percent of San Joaquin County's population resides in distressed zip codes.[58] Four of Stockton's zip codes had distress scores exceeding 90 (95202, 95203, 95205, and 95210), and three more had distress scores exceeding 80 (95204, 95206, and 95207). The zip code for French Camp, adjacent to Stockton, had a distress score of 95.4.[59]

Of the Delta cities measured in the study, Stockton had the highest distress score (95.2), while Sacramento had a distress score of 77.5. The study also included Antioch (distress score of 77.0) and Pittsburg (67.6).[60]

2. Adults with no high school degree

California's overall rate of adults without a high school degree is 19 percent. San Joaquin County exceeds this rate, at 22 percent, and a number of Delta communities significantly exceed, or at best, match the state-wide rate. Twenty-five percent of Stockton's adult population has no high school degree, compared with 23 percent in Pittsburg (zip code 94565), 17 percent in Sacramento, and 16 percent in Antioch (94509). Stockton-related zip codes have much higher rates: 47 percent in East Stockton (95205), 39 percent in the South Delta (95206), 37 percent in downtown Stockton (95202), 29 percent in East Hammer (95210), 28 percent in the Port/West Downtown (95203), 19 percent in the Country Club area (95204), and 43 percent in more rural French Camp ((95231).[61]

Zip code communities of central and southern Sacramento that also have very high rates of adults without high school degrees include: 40 percent in Parkway-South Sacramento (95824), 32 percent in Discovery Park area (95815), 27 percent in Florin (95828), 26 percent in Parkway (95823), 21 percent in the Sacramento City College

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[57] *Ibid.*, p. 26, Figure 16.

[58] Summary of Delta Region Distressed Community Index Scores, with supporting data from Economic Innovations Group, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_212.pdf.

[59] *Ibid.*, PDF p. 2, Distress Score Column.

[60] *Ibid.*

[61] *Ibid.*, PDF p. 3, No High School column.

area (95822), 18 percent in North Oak Park (95817), and 17 percent in downtown Sacramento (95814).[62]

Other Delta zip codes have high rates of adults with no high school degree, including 31 percent in Freeport/Meadowview (95832), 24 percent in Northwest Sacramento (95605), and 20 percent in the Isleton area (95641).[63]

3. Housing vacancy rates

California had a 2014 housing vacancy rate of 6 percent state-wide, while Delta counties had vacancy rates ranging between 5 (Contra Costa) and 7 percent (Sacramento, San Joaquin, and Solano) overall, with many Delta region zip codes far exceeding these state and county-wide rates. In 2014, downtown Stockton's housing vacancy rate was 31 percent (zip code 95202). The Locke/Walnut Grove area experienced a housing vacancy rate of 22 percent in the same year; (zip code 95690), while Courtland experienced a 21 percent vacancy rate (zip code 95615). Downtown Sacramento had a housing vacancy rate of 15 percent (zip code 95814), and the Isleton area also had 15 percent vacancy rate (zip code 95641).[64]

4. Adults not working

Forty-four (44) percent of California adults were not working in 2014. Except for Contra Costa County at 41 percent, the other Delta counties ranged from the state's rate (Yolo County), up to 48 percent of adults not working in San Joaquin County. Forty-nine (49) percent of adults were not working in Stockton, while 45 percent were not working in Sacramento, 46 percent in Antioch, and 43 percent in Pittsburg. Zip code communities with the largest shares of adults not working include French Camp (73 percent), downtown Stockton (69), east Stockton (53), south Delta, Port/West Downtown Stockton, Lincoln Village, East Hammer (each 52), and Country Club area (49).[65]

Among Sacramento zip code distressed communities, all exceeded 50 percent of adults not working, ranging from 51 percent (Florin and Parkway) to 56 percent (Parkway-South Sacramento).[66]

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[62] *Ibid.*

[63] *Ibid.*

[64] *Ibid.*, PDF p. 4, Housing Vacancy Rate column.

[65] *Ibid.*, PDF p. 5, Adults Not Working column.

[66] *Ibid.*

Other Delta zip code communities exceeded the state's rate of non-working adults, ranging from 47 percent (Courtland) to 56 percent (Isleton area) of their adult populations, except for the Locke/Walnut Grove area (42 percent).[67]

5. Median income ratio

Among Delta counties, Contra Costa had the highest median income ratio (county median income:state median income, 130 percent) and San Joaquin the lowest (87 percent). Among Delta cities, Stockton had the lowest median income ratio at 74 percent, followed by Sacramento (81), Antioch (88), and Pittsburg (91). Among zip code communities, downtown Stockton had the lowest median income ratio at 24 percent, followed by seventeen zip code communities whose median income ratios ranged from 46 percent (Parkway-South Sacramento) to 74 percent (Florin). Only two interior Delta zip codes exceeded 90 percent of the state median income: Locke/Walnut Grove (91 percent) and the Courtland area (96 percent).[68] (RTD-212, PDF p. 7, Median Income Ratio column.)

6. Employment growth

California saw growth in employment of 6.8 percent between 2010 and 2013. Among Delta counties, only Contra Costa exceeded this rate at 6.9 percent, while Sacramento saw 6 percent, Solano and Yolo each 5.6 percent, and San Joaquin just 3.5 percent growth in employment among its residents. Among Delta region cities, employment growth was negative for Pittsburg (-4.7 percent) and Antioch (-3.4), and only slightly positive for Stockton (2.7 percent) and Sacramento (2.4).[69] Among Delta zip code communities, three saw double-digit decreases in employment among their residents (Isleton area [-13.6 percent], East Hammer [-12.6] and Port/West Downtown [-11] in Stockton). Another seven zip codes saw single-digit employment declines or no employment growth, ranging from 0 percent for Courtland area to -8 percent for French Camp, with northwest Sacramento, downtown Sacramento, Country Club in Stockton, Locke/Walnut Grove, and Parkway-South Sacramento areas seeing intermediate declines. Zip code communities with positive employment growth ranged from 2.8 percent (Sacramento City College area) to 16.4 percent (downtown Stockton) with eight other zip code communities filling out this range.[70]

7. Growth in business establishments

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[67] *Ibid.*

[68] *Ibid.*, PDF p. 7, Median Income Ratio column.

[69] *Ibid.*, PDF p. 8, Percent Change in Employment column.

[70] *Ibid.*

California saw a 2.9 percent growth in business establishments between 2010 and 2013.[71] Among Delta counties, Contra Costa, Yolo, and Sacramento saw positive growth below the California rate (2, 1.9 and 1.4 percent respectively), while Solano and San Joaquin counties lost businesses (-1 and -1.5 percent respectively). Among Delta cities, only Sacramento saw positive growth in business establishments of 1.3 percent during this period, while Antioch (-7.5 percent), Stockton (-4.3), and Pittsburg (-0.1) all saw declines. Among Delta zip code communities, only one zip code nearest the legal Delta saw positive growth of businesses, Freeport/Meadowview (95832, 21.2 percent). Generally, most Delta zip code communities saw declines in business establishments. Stockton zip codes were among those hardest hit, ranging from a -10.1 percent decrease for downtown Stockton to -2.9 percent for the south Delta area (95206). Sacramento area zip codes saw decreases in business establishment of -9.3 for downtown Sacramento to -0.2 percent for the Sacramento City College area. Hardest hit among Delta zip codes included Locke/Walnut Grove (-14.1 percent) and the Isleton area.[72]

[71] *Ibid.*, PDF p. 9, Percent Change in Businesses column.

[72] *Ibid.*

Attachment 4
Delta Region Food Deserts: Narrative and Maps

Food deserts add to economic distress and unhealthy outcomes in the Delta region, including the Stockton Area

The economic distress faced by environmental justice communities in the Stockton region includes food insecurity and "food deserts," where entire districts and neighborhoods are no longer served by grocery stores making available healthy, fresh food choices to residents at easily accessible locations. (Delta region food deserts are mapped in Attachment 4 to this letter.)

Low income neighborhoods are at high risk of low access to grocery stores selling fresh, healthful foods. United States Department of Agriculture Economic Research Service maps illustrate the presence of census tract neighborhoods in the Delta region that face low access to healthy food options. The standard "food desert" definition is the absence of a grocery store within a 1-mile radius of residents in an urban census tract and a 10-mile radius for rural census tracts.

Many of the neighborhoods overlap with zip code neighborhoods that exhibit economic distress.[73] Significant portions of Stockton, Manteca, Lodi, Pittsburg, Antioch, Delta islands in Contra Costa County (south side of the San Joaquin River), Suisun City, Fairfield, Vacaville, Davis, and south Sacramento have low income census tracts whose residents have low access to grocery stores.[74]

Fifty-four percent of the five Delta counties' census tracts are low income and have low access to grocery stores serving healthful fresh food.[75] Over half of Sacramento and San Joaquin counties' census tracts are low income and low access.[76] Solano County has the highest share (17.1 percent) of census tracts in the Delta region meeting these characteristics, followed by Contra Costa and Sacramento counties.[77] However, urban census tracts in Delta counties face a severe shortage of grocery stores, to the point where there are fewer and fewer within even a half mile of residents, which is measured

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[73] Summary of Delta Region Distressed Community Index Scores, with supporting data from Economic Innovations Group, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_212.pdf.

[74] United States Department of Agriculture, Economic Research Service, Food Access Maps and documentation, accessed July 24, 2016, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_238.pdf.

[75] Delta Food Access summary data from United States Department of Agriculture, Economic Research Service, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_239.pdf.

[76] *Ibid.*

[77] *Ibid.*

in US Department of Agriculture food access data. In the Delta, 58 percent of low income and low-access census tracts lack grocery stores within one-half of a mile in urban census tracts and 10 miles in rural, led by Yolo County (74 percent), San Joaquin County (65 percent), and Sacramento County (57 percent).[78] Across the Delta, about one-sixth of census tracts have sizable low-income and low food access populations without vehicle access to facilitate grocery shopping.[79]

The lack of affordable healthy food choices that are also accessible can contribute to poor health outcomes in low-income environmental justice communities. A 2013 San Joaquin County health assessment found that 10 county zip codes had obesity rates exceeding the state average (24.8 percent). Three zip codes were found to have food deserts meeting the federal definition in which at least 500 people and/or 33 percent of the population live more than one mile (urban) or 10 miles (rural) from a supermarket or large grocery store.[80] None of the 10 zip codes had a farmers' market located within the zip code boundary at the time.[81] The County-wide adult obesity rate in 2016 was 29.1 percent, compared with the state average of 22.3 percent.[82]

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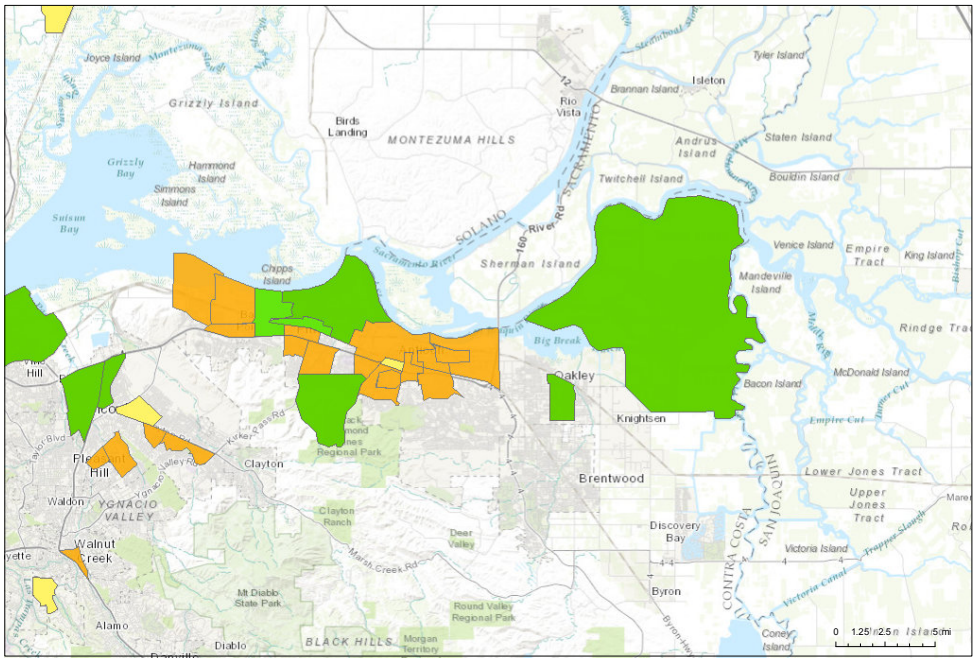
[78] *Ibid.*

[79] *Ibid.*

[80] Valley Vision, Inc., A Community Health Needs Assessment of San Joaquin County, conducted on behalf of San Joaqui County Community Health Assessment Collaborative, March 2013, pp. 34-35, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_240.pdf.

[81] *Ibid.*

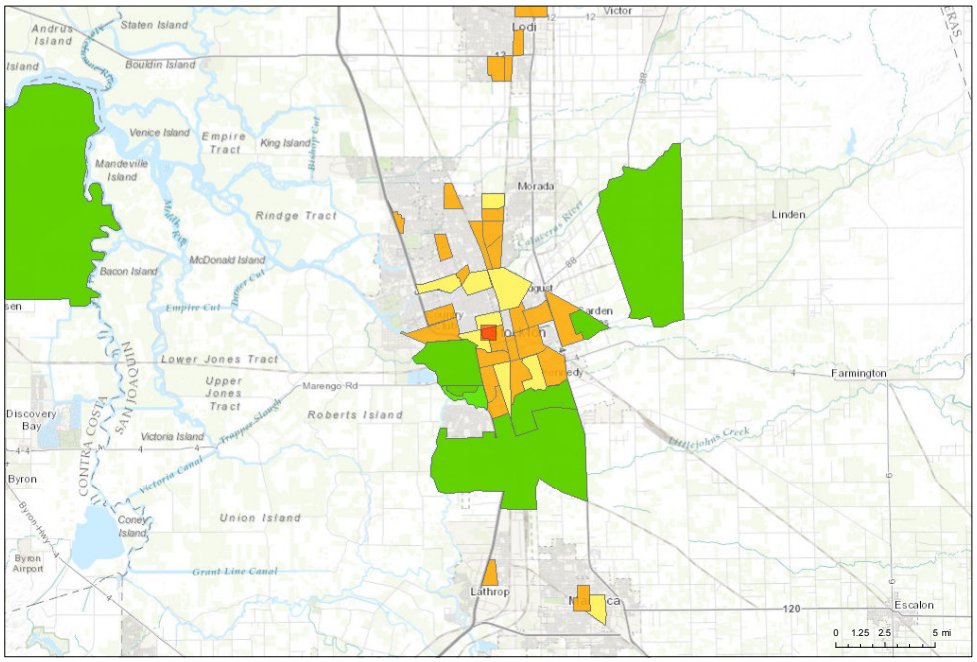
[82] San Joaquin County 2016 Community Health Needs Assessment, p. 15, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_246.pdf.



Central Western Delta Food Access Map

LILATracts_1And10Gen LILATracts_VehicleGen LILATracts_1And20Gen LILATracts_halfAnd10Gen
LILA at 1 and 10 | LILA using Vehicle Access | LILA at 1 and 20 | LILA at 1/2 and 10

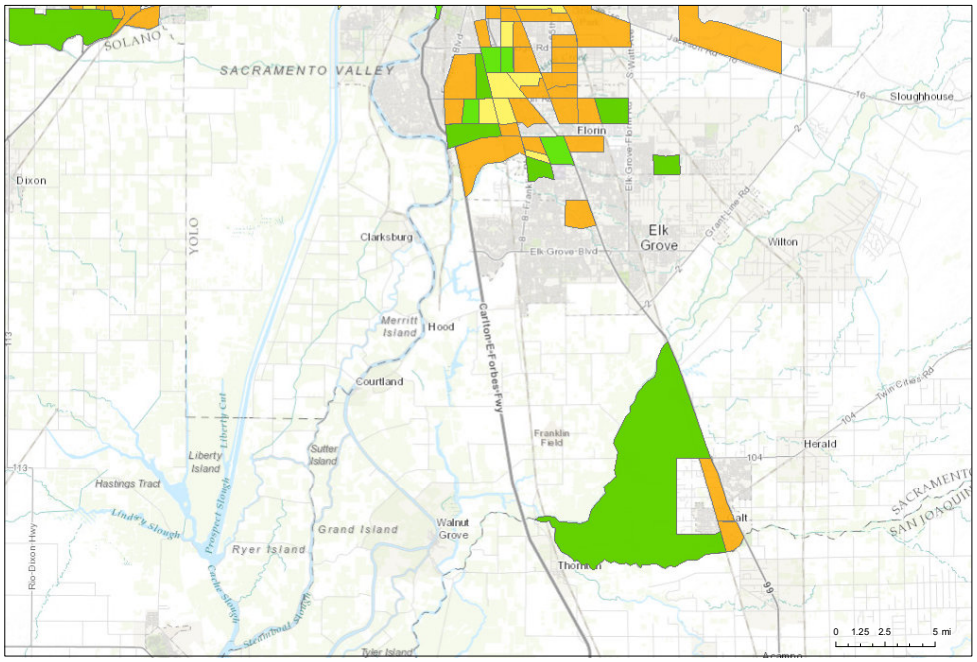
Date: 7/22/2016 Source: USDA Economic Research Service, ESRI. For more information: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx



Stockton Low Income and Low Access Map

LILATracts_1And10Gen LILATracts_VehicleGen LILATracts_1And20Gen LILATracts_halfAnd10Gen
LILA at 1 and 10 | LILA using Vehicle Access | LILA at 1 and 20 | LILA at 1/2 and 10

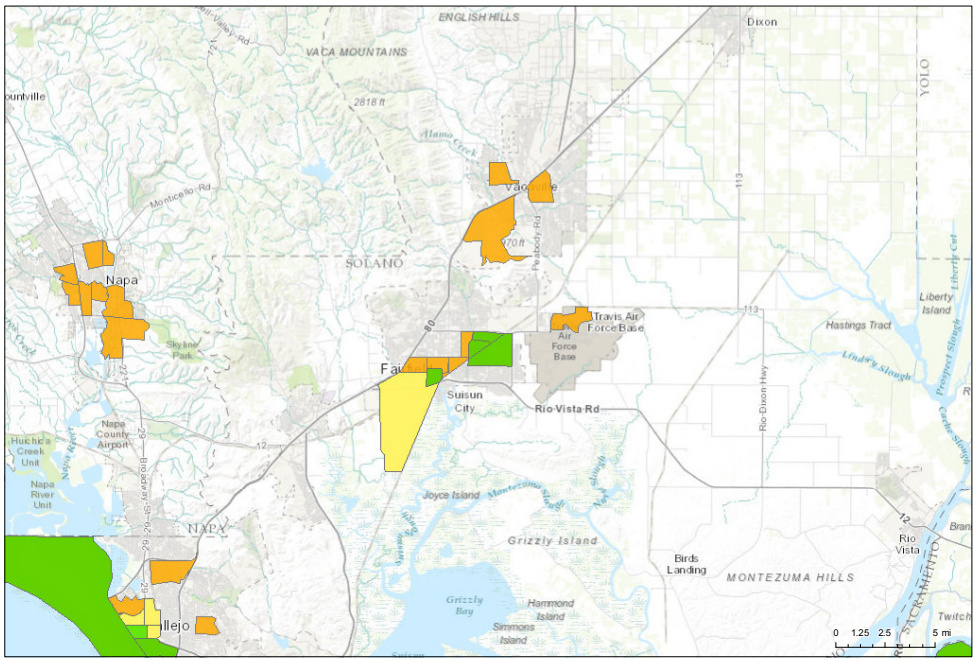
Date: 7/22/2016 Source: USDA Economic Research Service, ESRI. For more information: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx



North Delta Food Access Map

LILATracts_1And10Gen LILA at 1 and 10 | LILATracts_VehicleGen LILA using Vehicle Access | LILATracts_1And20Gen LILA at 1 and 20 | LILATracts_halfAnd10Gen LILA at 1/2 and 10

Date: 7/22/2016 Source: USDA Economic Research Service, ESRI. For more information: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx



Solano Area Food Access Map

LILATracts_1And10Gen LILA at 1 and 10 | LILATracts_VehicleGen LILA using Vehicle Access | LILATracts_1And20Gen LILA at 1 and 20 | LILATracts_halfAnd10Gen LILA at 1/2 and 10

Date: 7/22/2016 Source: USDA Economic Research Service, ESRI. For more information: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx

Attachment 5
Stockton Retail Water Sources and Related Drinking Water Quality Description

The City of Stockton is a majority minority city, and is the largest city closest to the legal Delta. The city and its environmental justice communities faces an array of threats to its fresh water supply and water quality. This attachment summarizes these threats, and the City of Stockton's efforts to address them.

"Under natural conditions," stated civil engineer and Delta expert Thomas Means in 1928, "the boundary between salt and fresh water was Carquinez Straits. In late summer, Suisun Bay became brackish, but salt water penetrated as far as Antioch only rarely and then for but a few days' time."[83] With "no large increase of cultivated land in the delta region," the increasingly salty waters in the Delta threatened agriculture and industry in the region. Their incursion was due to upstream diversions of fresh water in the Sacramento Valley reducing flow entering the Delta "to a small fraction of the flow under natural conditions."[84] The quality of water was found crucial to the economic, agricultural, and industrial development and vitality of the San Francisco Bay estuary. Means described four relationships between Delta water quality and local economic development:

> First, [increased salinity] renders questionable the irrigation of permanent crops, particularly such crops as are sensitive to salt; second, it has a tendency through the percolation beneath the levees of sub-irrigating the adjoining land with saline water; third, it reduces the value of lands through the fear of salinity; and fourth, it adds expense and uncertainty to the question of domestic supply, for on most of the delta the river is a source of domestic water.[85]

The factors Means identified are no less true today. The City of Stockton draws water from the Delta for domestic and municipal use. The City of Stockton obtained water right permit 21176 (Application 30531A) from the State Water Resources Control Board on December 20, 2005, to divert a flow not to exceed 317 cubic feet per second and 33,600 acre-feet per year from the San Joaquin River at the southwest tip of Empire Tract.[86] This permit required the City to complete its point of diversion, raw water and treated water transmission pipelines, and its 30 million-gallon-per-day (MGD) water

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[83] Thomas H. Means, Salt Water Problem, San Francisco Bay and Delta of Sacramento and San Joaquin Rivers, April 1928, p. 17. Accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_213.pdf.

[84] *Ibid.*, p. 21.

[85] *Ibid.*

[86] Stockton Retail Water Sources, 2015, accessible at the end of Attachment 5 and at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_225.pdf.

treatment facility by December 31, 2015. Permit 21176 requires the City to complete application of water to its authorized uses by December 31, 2020.

The City received its water supply permit (01-10-15P-001 for public water system No. 3910012) on July 21, 2015, and is operating the diversion and treatment facility at this time to deliver water to its north and south Stockton customers.[87] The City's domestic water supply system diverts raw water at the Delta Water Supply Project (DWSP) under permit 21176 for treatment at the new Water Treatment Facility, pumps four (4) groundwater wells in south Stockton and 13 in north Stockton, and purchases treated water from Stockton East Water District and raw water from Woodbridge Irrigation District.[88] The City's permit for Delta water use constrains diversions between February 15 and June 15. During this period, the City's purchase contract with Woodbridge Irrigation District (WID) provides an alternative source during the City's Delta curtailment period in the period March 1 through July 30. From February 15 through March 15, Delta water pumping and Water Treatment production may not exceed 15 MGD.[89] From March 1 through March 15, WID water may be blended with Delta water or WID water used exclusively from the WID source. Between March 15 and May 21, no Delta water may be pumped, and the raw water needs of the plant must be met exclusively from the WID source. From May 21 to June 15, either Delta water or WID water may be used exclusively to meet the raw water needs of the plant up to its capacity of 30 MGD. From June 15 to July 30, either Delta water or WID water may be used exclusively to meet raw water needs of the plan up to its capacity of 30 MGD, or a blend of the two sources may be used. Between July 30 and February 15, the Delta water diversion may be used to meet the City's raw water needs up to the plant's capacity of 30 MGD.[90]

The City of Stockton started operation of its DWSP in 2012. The City may take delivery of up to 17,500 acre-feet per year through its purchase contract with Stockton East Water District (SEWD).[91] Currently, due to drought and a reduction in SEWD's supplies, the City takes much less, about 5,634 acre-feet in 2015, and expects to receive 6,000 acre-feet in 2016 from SEWD's reservoir supplies of Stanislaus and Tuolumne River sources. The City's urban water management plan states that Stockton will use approximately 6,000 acre-feet per year from SEWD.

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[87] State Water Resources Control Board, Transmittal of Water Supply Permit to City of Stockton, July 21, 2015, pp. 1-10; accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_220.pdf.

[88] *Ibid.*, p. 4, 11-12.

[89] *Ibid.*, p. 26, Section 4.2.

[90] *Ibid.*

[91] City of Stockton, Draft Urban Water Management Plan, 2015, May 2016, p. 5-1, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_218.pdf.

From WID, the City of Stockton executed an agreement in 2008 to purchase up to 6,500 acre-feet annually. This water originates from the Mokelumne River. Stockton anticipates that its WID purchases will double to 13,000 acre-feet by 2025.[92] In all, the City of Stockton's Municipal Utilities Department water supply portfolio supplied 24,843 acre-feet of water during 2015 to its 47,000 domestic, municipal, and industrial customers. The City claims as its total water rights or safe yield water supplies of up to 96,480 acre-feet, nearly four times its 2015 deliveries.[93] The City of Stockton projects it will increase its DWSP diversions to 50,000 acre-feet by 2035.[94]

The City of Stockton is concerned about the future reliability of water quality at its DWSP intake and potential water treatment cost increases if California WaterFix facilities are constructed and operated. The City of Stockton alleges that DWR and the Bureau have failed to use data collected near the City's Delta Water Supply Project (DWSP) for impact analysis of potential harm.[95] Instead, Petitioners relied on a DWR monitoring station at Buckley Cove, nearly 10 miles southeast of the City's DWSP diversion point. The City stated that "Buckley Cove cannot be considered representative of the water quality available at the City's intake."[96] The City informed Petitioners:

> The City has been collecting water quality data in the stretch of the San Joaquin River near its intake for over 30 years. Despite being on notice about the City's significant concerns about water quality effects in the area of its intake, the BDCP proponents did not obtain or use any of this data in preparing the DEIR/EIS. Moreover, DWR maintains a water quality station less than one-half mile from the City's intake. It was unreasonable for the DEIR/EIS to not have used data from that water quality station in order to more accurately evaluate impacts to the City's drinking water supply. It is not possible for the project proponents or the City to determine how the BDCP will affect water quality conditions at the City's intake until a Delta Simulation Model run is conducted for our intake site proximity.[97]

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[92] *Ibid.*, p. 5-12, Table 5-7; Projected Water Supplies for Stockton, 2020 to 2040, p. 1. See end of Attachment 5 to this letter.

[93] *Ibid.*, p. 5-11, Table 5-6.

[94] *Ibid.*

[95] City of Stockton, 2014 Bay Delta Conservation Plan comments, pp. 38-43.

[96] *Ibid.*, p. 38, 39.

[97] *Ibid.*, p. 38.

With enough time, whatever land saline water touches can turn salty, unless there is enough water to leach out salts.[98] Uses of water in the Delta depend largely on the quality of water available, rather than the quantity, but if quality degrades it may become unusable.[99] About one-quarter of Stockton's urban water supplies will rely on groundwater, a source that is connected to Delta surface water percolation.[100] The region is at risk of salinity incursion regionally from the west due to increased salinization of Delta channels.[101]

The Stockton region is poised for growth in the near future

While distressed, the Delta region has prospects for growth and sustainability in jobs and economic development, at least some of which depend on protecting and improving Delta region water quality. For example, water quality is important to agricultural and urban economic development in the Delta region.

The Delta region, and especially metropolitan Stockton, is poised for employment and income growth. According to the University of the Pacific Eberhardt School of Business May 2016 forecast:

> Recent years have seen substantial economic growth and recovery in the Stockton and Fresno MSAs [Metropolitan Statistical Areas, identified by the U.S. Office of Management and Budget] to the surprise of many. As its largest city, Stockton, fell into bankruptcy in 2012 many predicted doom and stagnation for the Stockton MSA (San Joaquin County). Instead, the Stockton MSA is in the

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[98] Thomas H. Means, Salt Water Problem, San Francisco Bay and Delta of Sacramento and San Joaquin Rivers, April 1928, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_213.pdf, and California Department of Water Resources, Quantity and Quality of Waters Applied to and Drained from the Delta Lowlands, Report No. 4, July 1956, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_148.pdf.

[99] W. Turrentine Jackson and Alan M. Paterson, The Sacramento-San Joaquin Delta: The Evolution and Implementation of Water Policy, an Historical Perspective, Caliofrnia Water Resources Center, Contribution No. 163, June 1977, http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_215.pdf.

[100] Stockton Retail Water Sources, 2015, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_225.pdf; and Projected Water Supplies for Stockton, 2020 to 2040, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_226.pdf.

[101] Northeastern San Joaquin County Groundwater Banking Authority, Eastern San Joaquin Groundwater Basin, Groundwater Management Plan, 2004, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_146.pdf; and San Joaquin County Flood Control and Water Conservation District, Water Management Plan, Phase 1 - Planning Analysis and Strategy, October 2001, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_147.pdf.

> process of posting its 4th consecutive year of job growth above 3 percent, led by a booming logistics sector that has added more than 6,000 warehousing and trucking jobs in the last year as Amazon and other fulfillment centers have flocked to its strategic location as the closest part of the Central Valley to the booming Bay Area. Most of this expansion has been in the southern half of San Joaquin County (i.e. Tracy, Lathrop, Manteca) but it has also provided an employment and economic boost to Stockton city residents. The economic gains are especially impressive since the devastated residential construction industry has only begun to recover and remains one-fourth its pre-recession size as housing demand and costs rise. There is substantial room for additional growth and we project the Stockton MSA will lead Northern California in job growth in 2016 and 2017 before slowing down.[102]

Between 2016 and 2020, per capita income in the Stockton MSA is projected to grow from an estimated $38,400 at the end of 2015 to about $45,200 at the end of 2020, a nearly 18 percent increase. Total employment is forecast to rise from 222,300 non-farm jobs at the end of 2015 to about 241,200 jobs by the end of 2020 (an 8.5 percent increase over the five-year period), while the region's unemployment rate is forecasted to fall from 8.6 percent at the end of 2015 to about 7.5 percent at the end of 2020.

Threats to environmental justice communities' beneficial uses from conveyance proposals like California WaterFix

Delta agriculture continues as the region's economic base, and irrigation water quality is the foundation for the sustainability of that future growth. Threats from conveyance projects exist to beneficial uses of water by environmental justice communities in the Delta region, particularly in the Stockton area where the largest and most distressed environmental justice communities are found.

Delta environmental justice communities are isolated from more mainstream levels of prosperity by language barriers, low educational attainment rates, and lack of economic opportunity. Since environmental justice communities are closely linked to issues raised by California WaterFix like drinking water quality; agricultural, land use, and socioeconomic issues; and fish contamination issues, their residents are made more vulnerable by the disproportionately distressed conditions in which they live. Water quality impacts from construction and operation of California WaterFix would be environmental blunt trauma to a region on the threshold of recovery and sustainable prosperity, if water quality in the Delta and underground water sources can be improved.

Environmental justice communities in the Delta region face quantifiable economic distress where they live, and threats to beneficial uses of water they enjoy. There is also

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[102] University of the Pacific Eberhardt School of Business, Center for Business and Policy Research, May 2016 California and Metro Forecast, p. 7, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_216.pdf.

evidence that the Delta region's economy has prospects for improving income, employment and economic opportunity generally in the near future.

We provide additional detailed evidence concerning the need to protect crucial beneficial uses of drinking water for predominantly low-income Stockton customer service areas and public health concerns for human use of Delta waters related to subsistence fishing, due to the current presence of long-term contaminants and the potential for increased frequency of harmful algal blooms due to operational effects of California WaterFix Facilities.

Operation of California WaterFix Facilities would degrade water quality in Delta channels, which would in turn degrade raw water diversions and, via deep percolation, the eastern San Joaquin County groundwater basin, both of which serve as sources of drinking water for Stockton metropolitan area residents.

The two largest suppliers of urban drinking water in Stockton are the City of Stockton Municipal Utilities Department and California Water Service Company (CWSC). Both suppliers recently prepared urban water management plans.[103]

Urban Water Supplies and Demand of Stockton's Environmental Justice Communities.

CWSC delivered about 22,090 acre-feet to its Stockton District customers in 2015. To meet these supplies, CWSC purchased 15,350 acre-feet (69.5 percent) from Stockton East Water District (SEWD) and pumped 6,740 acre-feet (30.5 percent) of local groundwater in 2015. CWSC projects that by 2040 its customers will increase demand to 30,740 acre-feet per year, a 39 percent increase over the next 25 years, although an absolute increase of just 8,650 acre-feet. Total urban water supplies for Stockton delivered by these two water suppliers in 2015 came to 46,933 acre-feet.[104]

Both water suppliers disclosed how much water their low-income customer households use. These customers live in census blocks where the median income is less than 80 percent of the state median income. They comprise about 43 percent of housing stock in the City's water service areas in north and south Stockton, according to the City's recent general plan housing element. Their water use in the City's service area is estimated at 10,300 acre-feet per year.[105]

CWSC reports that, for purposes of estimating water demand of lower income households, the City's general plan housing element indicated that 47 percent of

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[103] California Water Service Company, 2015 Urban Water Management Plan, Stockton District, June 2016 (hereafter CWSC UWMP); and City of Stockton, Draft Urban Water Management Plan, 2015, May 2016 (hereafter Stockton UWMP).

[104] CWSC UWMP, p. 67, Table 6-8.

[105] Stockton UWMP, p. 3-7.

CWSC's service area would qualify as lower income households. In 2015, lower income household customer demand was about 5,475 acre-feet of water use. By 2040, lower income household customer demand is projected to be about 8,213 acre-feet.[106]

Total low-income household water use amounts to about 15,775 acre-feet at present in Stockton. Together, the City and CWSC project about 18,500 acre-feet of low-income household demand by 2040. This is approximately the drinking water demand for Stockton's environmental justice communities.

Urban Drinking Water Quality in Stockton

Each year, urban water suppliers release a summary water quality report based on samples of their treated drinking water. Both the City of Stockton and CWSC's water quality reports distinguish their reporting results by groundwater versus surface water sources.[107] In Stockton's case, surface water quality sampling distinguishes between treated water supplies purchased from SEWD and the Delta Water Treatment Plant (which originated from the Stockton Delta Water Supply Project (DWSP)).[108] At present, the only primary water quality standard violation Stockton experienced during 2015 concerned total trihalomethanes in surface water, which reached as high as 84 micrograms per liter (μg/L), in just one sample at Westchester Circle (the maximum contaminant standard is 80 μg/L).[109]

CWSC suffered one primary water quality standard violation in 2015 when its purchased water supplier (SEWD) did not meet the total organic carbon (TOC) compliance standard.[110] TOC provides a medium for formation of disinfection byproducts like trihalomethanes and halo-acetic acids. According to CWSC's water quality report, SEWD is now meeting the TOC standard in 2016.[111]

Both the City and CWSC report a somewhat elevated presence in their water samples of total dissolved solids (TDS), which is a secondary drinking water matter (addressing water's discoloration or odor). Stockton reports a TDS range in its groundwater of 210 to 560 milligrams per liter (mg/L) and an average of 358 mg/L, while its surface water sources have generally lower ranges and annual average concentrations of TDS.[112]

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[106] CWSC UWMP, pp. 36-37.

[107] City of Stockton Water Quality Report for 2015, June 2016 (hereafter Stockton WQR); California Water Service Company, 2015 Water Quality Report (hereafter CWSC WQR).

[108] Stockton WQR, p. 3.

[109] *Ibid.*, p. 3, 4, footnote 8.

[110] CWSC WQR, p. 15.

[111] *Ibid.*, p. 15, footnote 5.

[112] Stockton WQR, p. 5.

CWSC's groundwater has TDS concentrations that range higher than the City's groundwater but has a lower overall average TDS for groundwater than the City. CWSC's surface water TDS averages 160 mg/L, while Stockton's Delta water averages about 216 mg/L, and its purchased Stockton East water averages about 151 mg/L.[113]

Regarding California WaterFix environmental documents, Contra Costa Water District (CCWD) commented on carcinogens, of which bromide is a precursor to the formation of disinfection byproducts (which include bromate, bromoform, and other brominated trihalomethanes [THMs], and halo acetic acids. All of these constituents are potentially harmful to human health through municipal water supplies.[114] CCWD commented further that neither environmental review of Petition Facilities is adequate, first because tallying just the number of days the bromide objective is violated fails to disclose the magnitude of the excess bromide. Similarly, the percent change in concentration also obscures human health risks of increased bromide levels.The absolute magnitude is directly related to the level of health risk from bromide due to its contribution to carcinogen production during the water treatment process. If the bromide analysis looks only at the number of days or percent change in which a threshold is exceeded, it obscures the human health impact of the exceedance.[115]

Such contaminants cumulating in Delta water channels would have to be treated prior to distributing drinking water supplies obtained therein. CCWD further commented that:

> Conventional water treatment plants are not capable of removing many of these toxic and noxious algal byproducts and could require costly upgrades to handle increases in these compounds. CCWD's two water treatment plants (Bollman and Randall-Bold) have ozone treatment systems that are capable of removing current levels of algal byproducts at the proper ozone dosage and pH level. However, the expected increase in algal byproducts caused by the BDCP would require a corresponding increase in ozone dosage; the amount of such an increase is limited by the requirement not to increase bromate formation to levels that exceed the bromate maximum contaminant level, established to prevent the potential carcinogenic effects of excess bromate in drinking water.…
>
> CCWD provides treated water to its customers from the Bollman water treatment plant in Concord and Randall-Bold water treatment plant in Oakley. Both water treatment plants use flocculation, sedimentation, filtration, ozonation, and chloramination to produce high quality drinking water. CCWD relies on ozone application to reduce tastes and odors but the effectiveness of the treatment is limited by pH and regulated disinfection byproduct limits. Increased

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[113] CWSC WQR, p. 16; Stockton WQR, p. 5.

[114] Contra Costa Water District, Comments on Bay Delta Conservation Plan and Draft EIR/EIS, July 25, 2014, including attachments, p. 56.

[115] *Ibid.*, p. 57.

> cyanobacteria in Delta waters would necessitate more frequent changes of filtration materials and increase chemical usage (ozone and sulfuric acid) to control pH, disinfection byproducts [citation], and noxious tastes and odors.[116]

Based on the array of treatment techniques identified by CCWD the City of Stockton would likely have to raise water rates on top of those increases it identified in its 2016 water rate study, in order to ensure distribution and delivery of safe, clean and affordable drinking water in its service area for the long term.

Stockton's efforts to protect its drinking water supplies and its protest to the State Water Resources Control Board on California WaterFix.

The City informed the State Water Resources Control Board in January 2016 that it sought to develop the DWSP to protect regional groundwater from increasing overdraft and to reduce its draw on groundwater because of that source's higher TDS content.[117] The City stated:

> Groundwater levels improved over the past few decades in the Stockton vicinity, but if groundwater must be relied upon more extensively as a result of the proposed action, groundwater levels will be expected to decline, and TDS levels in potable supplies and wastewater discharges will increase. Indirect groundwater-related effects of this nature would be inconsistent with the Sustainable Groundwater Management Act or its goals.[118]

The City also stated, in protest of the California WaterFix proposal, that:

> …the City's economy, and the health and well-being of City residents, are dependent on the health of the Delta, including water quality and fish and wildlife resources, and Delta agriculture.[119]

The City's DWSP was developed under a California Water Code section that provides that a municipality discharging water into the San Joaquin River "may file an application for a permit to appropriate an equal amount of water, less diminution by seepage, evaporation, transpiration or other natural causes between the point of discharge and the point of recovery, downstream from said disposal plant and out of the San Joaquin River or the Sacramento-San Joaquin Delta." (Cal.Water Code § 1485.) The DWSP now appropriates Delta water supplies to serve some 47,000 residential, commercial, and industrial customers with an estimated service population of 170,000 people in the

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[116] *Ibid.,* p. 62.

[117] City of Stockton, Protest of California WaterFix Change Petition, January 5, 2016, p. 2.

[118] *Ibid.*, Attachment 2, p. 2, and Attachment 4, p. 1.

[119] *Ibid.*, Attachment 2, p. 1.

City's service area.[120] The City expressed grave concerns that DWR and the Bureau have ignored City water rights, quality, and supply, as these would be affected by California WaterFix during the BDCP environmental review process in 2013-2014 as well as the California WaterFix environmental review process during 2015.[121]

The City, representing its service area customers and its economic base, commented that water quality effects on agriculture and urban water supplies are also connected to the City's future prospects:

> There is no analysis of the relative effect on the City's economy, despite its role as a major center of agricultural-dependent business in the Delta. There are many agricultural processing, packing and shipping, and other (e.g., insurance) businesses within the City that could be adversely affected as a result of the impacts to agriculture from the BDCP (loss of agricultural production in areas surrounding the City). The BDCP could have adverse socioeconomic impacts as a result of adverse effects to agriculture-dependent businesses, agricultural recyclers, and their labor force who reside in the City. There is a trend of agricultural industries leaving the City, and the BDCP could exacerbate this trend. Reduced economic activity will result in empty buildings, decreased investment, reduced tax revenues, which will further constrain the City's ability to maintain public infrastructure, and therefore physical blight through deterioration of physical and aesthetic conditions within the City.[122]
>
> [A]griculture in the Delta will be harmed from increased levels of salinity resulting from the operation of the Delta tunnels. The DEIR/EIS water quality chapter claims that BDCP impacts on salinity will be minimal based on the BDCP's modeling, but these results are strongly disputed. Furthermore, the state has repeatedly violated current water quality standards in the Delta or relaxed standards in dry years such as 2014 [and 2015]. Given this history of weak enforcement in the current system, the tens of billions of dollars borrowed to build the isolated conveyance system, and the fact that this debt will be repaid from revenues of water sales from the Delta, the risk of the BDCP actually operating differently than described in the DEIR/EIS and serious degradation of Delta water quality through excessive North Delta diversions is great.[123]

In its comments on California WaterFix in October 2015, the City reminded DWR and the Bureau that the City's 2014 comments "identified numerous problems with BDCP and DEIR/DEIS" and stated that "to the City's surprise and dismay, none of the

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[120] City of Stockton, 2014 Bay Delta Conservation Plan Comments, p. 1.

[121] *Ibid.*; City of Stockton, 2015 California WaterFix RDEIR comments.

[122] Stockton 2014 BDCP comments, p. 50.

[123] *Ibid.*, p. 52.

problems [we] identified…were addressed by the changes to the Project or the revised environmental documents."[124]

Water affordability in Stockton

The City of Stockton and its residents are under financial pressure to pay down debt incurred to develop the DWSP. The City announced in May 2016 water rate increases for 2016 and 2017 of 18 percent and 11 percent, with 3 percent increases projected for future years, according to its recent water rate study.[125] Should California WaterFix be permitted, would have a construction period as long as 14 or 15 years.[126] Meanwhile, water quality impacts (including increased risk of turbidity, salinity, and mobilization of mercury or methyl mercury, and selenium from Delta channel sediments) from the construction and operation of these facilities could result in increased treatment costs beyond those contemplated in Stockton's water rate study. **These upward pressures on local water costs could further disproportionately burden Stockton's environmental justice communities' drinking water supplies with higher water rates over the next 15 years, and beyond.** The proponents of California WaterFix have failed to demonstrate that Stockton's water rights at DWSP and the City's urban drinking water customers would not be injured by construction and operation of California WaterFix. This oversight has profound environmental justice implications for Stockton residents, many of whom are environmental justice communities and neighborhoods.

Petition Facilities' potential to degrade water quality would affect subsistence fish consumption by environmental justice communities in the Delta region, should the frequency of environmental conditions that foster toxic algal blooms increase.

DWR and the Bureau acknowledge occurrence of subsistence fishing and risks of adverse effects to people consuming fish caught from Delta channels in the period when California WaterFix operates. There has never been a census of Delta subsistence anglers, despite the potential health risks of catching and consuming fish routinely from Delta channels. Using publicly available data from the California Department of Fish and Wildlife (DFW), Restore the Delta estimates through two distinct methodologies that there are, on any given day, between 66 and 110 licensed

[124] Stockton 2015 California WaterFix Comments, p. 2.

[125] City of Stockton, Municipal Utilities Department, May 2016 Water Rate Study, p. 4, 58.

[126] California WaterFix RDEIR/SDEIS, July 2015, p. 4.3.8-18:7, p. 4.3.8-25:20, p. 4.3.8-41:1, 37, p. 4.3.12-1:8, p. 4.3.16-1:11

subsistence anglers from distressed communities fishing Delta water ways.[127] Our methodologies rely on both an angling hours survey and county-level fishing license data from DFW. Assumptions are spelled out in our exhibits accepted into evidence by the State Water Board detailing how we arrived at our estimates.[128] Our methods conservatively assume that each angler fishes just once a year, which probably underestimates total subsistence fishing activity in the Delta. Despite this limitation of our methods, we estimate between 24,000 to 40,000 subsistence fishing visits annually in the Delta from local residents of distressed communities. We offer no estimate of the mass of fish nor the number of persons actually consuming those fish.

Delta region subsistence anglers have been found to fish along both the Sacramento and San Joaquin Rivers, despite the latter being an impaired water body for a number of contaminants.[129] Delta region subsistence anglers are known to catch and consume a variety of native and introduced fish species, including American shad, bluegill, carp, catfish, crappie, Chinook salmon, largemouth bass, pike minnow, Sacramento split tail, Sacramento sucker, steelhead/rainbow trout, striped bass, sturgeon, and sunfish.[130]

Many fish caught and consumed by subsistence anglers consume prey from the bottom of river channels where contaminants can accumulate. Other fish consumed by subsistence anglers feed on prey consumed in open water or other parts of river channels. In the course of consuming prey, these species may also consume contaminants such as mercury, pesticides, selenium, and other chemicals that accumulate in prey tissues and that are regulated via Total Mean Daily Loads adopted by the State Water Board and Central Valley Regional Water Quality Control Board. Consequently, environmental justice communities are at risk of heightened exposure to

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[127] Methodology for Estimating Population of Delta Region Subsistence Anglers from Fishing License Data, p. 2, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_229.pdf; and Methodology for Estimating Delta Counties Subsistence Anglers from Angling Intensity (Hours) Data, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_230.pdf.

[128] *Ibid.*

[129] F. Shilling, et al, 2010. Contaminated fish consumption in California's Central Valley Delta. *Environmental Research* 110(2010): 335, Figure 1, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_231.pdf.

[130] *Ibid.*, p. 336 Table 1; J.A. Davis, et al., 2008. Mercury in sport fish from the Sacramento-San Joaquin Delta region, California, USA. *Science of the Total Environment*, 391: 69, Table 2, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_232.pdf.

health risks associated with consuming fish caught through subsistence angling in the Delta.[131]

In addition, such fish may be vulnerable to disease and death from exposure to toxins released by harmful algal blooms, such as microcystin, a hepatotoxin (toxic to liver tissue and skin) produced by *Microcystis*, a common cyanobacterium found in the Delta since 1999.[132] Key factors believed by scientists to drive algal blooms that cause harm in open water ways include water temperature, sunlight irradiating water, water clarity, a stratified water column coupled with long residence times of water; availability of nitrogen and phosphorus, and salinity.[133]

Two of these factors would be directly affected by operation of Petition Facilities: residence time of water and salinity. Increased residence time of water decreases the loss rate of cyanobacteria from a water body.[134] Increased residence time of water also influences inversely the stratification of the water column; the slacker the flow of water the more the upper levels of a water column can warm to an optimal growth temperature range for *Microcystis*, between 25 and 35 degrees Centigrade (77 to 95 degrees Fahrenheit).[135] Such conditions may occur mainly in late summer months, but climate change effects may shorten California's winter wet season and contribute to extending the season during which harmful algal blooms may occur.[136]

Operation of California WaterFix would also increase residence time of water in the Delta. When such increased residence time is combined with reduced flows and increased salinity, also caused by California WaterFix, the period of time could increase during which environmental conditions favor algal blooms.

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[131] Shilling, et al, 2010; Davis, et al, 2008; E. Silver, et al, 2007. Fish consumption and advisory awareness among low-income women in Sacramento0-San Joaquin Delta, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_235.pdf.

[132] Berg, M. and M. Sutula, 2015. Factors affecting the growth of cyanobacteria with special emphasis on the Sacramento-San Joaquin Delta, Southern California Coastal Water Research Project Technical Report 869, August 2015, p. 4, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_236.pdf; and P.W. Lehman, et al, 2013. Long-term trends and causal factors associated with *Microcystis* abundance and toxicity in San Francisco Estuary and implications for climate change impacts. *Hydrobiologia* 718: 142, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_237.pdf.

[133] Berg and Sutula, *ibid.*, p. ii, and pp. 21-33.

[134] *Ibid.*, p. 33.

[135] *Ibid.*, p. 31, 33.

[136] *Ibid.*, p. iii, 32, 48, 51.

The environmental justice effects of increased harmful algal blooms would include increased contamination of fish populations locally from microcystin uptake and accumulation and increased risk of illness and death for environmental justice community members and pet dogs they may take with them fishing, due to contact with water while engaged in subsistence fishing. These effects would be borne disproportionately by racial and ethnic minorities, people in poverty, and people challenged by language barriers. These disproportionate effects would accumulate with the economic distress already prevalent in their communities and would undermine long-term growth in jobs, economic output, and sustainable economic development in the Stockton region.

DWR and the Bureau bear the burden to prove that legal users of water, including members of the environmental justice communities, will not be harmed by the new north Delta points of diversion. While the RDEIR/S attempts to bury, dismiss, and lessen significant water quality impacts, it should be remembered that the RDEIR/S states the following regarding the Delta's significant environmental justice community:

> Alternative 4A [the preferred California WaterFix alternative] would result in disproportionate effects on minority and low-income communities resulting from land use, socioeconomics, aesthetics and visual resources, cultural resources, noise, and public health effects. Mitigation and environmental commitments are available to reduce these effects; however, effects would remain adverse. For these reasons, effects on minority and low-income populations would be disproportionate and adverse.[137]

The City's attorney, Kelley Taber, elicited from modeling panel testimony that Petitioners' modeling team was unfamiliar with or did not recall seeing the City's comment letters, or responded to one or both of them only in the context of preparing responses to comments for the California WaterFix's Final EIR/EIS.[138] Ms. Taber also elicited testimony from the California WaterFix modeling panel before the SWRCB stating that the modeling team did not model Stockton's Empire Tract intake for its DWSP. This contrasts with the modeling team's inclusion of modeling results for urban drinking water intakes at Banks and Jones Pumping Plants, Contra Costa Water District's Rock Slough Intake for the Contra Costa Canal, and the City of Vallejo's municipal intake in the north Delta.[139] The modeling team, according to this testimony, indicated that they relied upon conversion equations applied to water quality modeling results derived from water quality stations near to Stockton's wastewater treatment plant and water treatment plant intake.[140] The nearest of these water quality stations was, as DWR witness Parviz Nader-Tehran stated, "a few miles" away from Stockton's discharges and intakes.

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[137] California WaterFix RDEIR/SDEIS, July 2015, p. 4.3.24-8 [PDF page 1,202].

[138] Cross examination of Modeling Panel, August 25, 2016, morning session.

[139] California WaterFix RDEIR/SDEIS, July 2015, p. 4.3.24.8 [PDF page 1,202].

[140] *Ibid.*

Contra Costa Water District (CCWD) noticed this assumption by the Draft BDCP EIR/EIS in its 2014 comments because Petitioners applied this assumption not only to Stockton's intake on the San Joaquin River but to CCWD's intakes at Rock Slough, Old River, and Victoria Canal.[141] CCWD termed this assumption "inappropriate" and "unreasonable" because the actual intakes and their presumably representative locations were up to 17 miles apart.[142] Moreover, CCWD chose to locate new intakes further east in the Delta to escape encroaching salinity from reduced Delta inflows:

> [I]ndeed, it is the difference in salinity at different locations in the Delta interior that drove CCWD's construction of its Old River intake and Middle River intake on Victoria Canal (collectively "Old and Middle River intakes"). Even intakes that are relatively close together such as CCWD's Old and Middle River intakes have very different water quality because of the complexity of the hydrodynamics in the Delta.[143]

CCWD's 2014 comments also directly criticized the attempt to use Buckley Cove as "representative" in water quality conditions to the location of the City of Stockton's DWSP intake, stating that "results from modeling of the No Action Alternative, performed for BDCP Draft EIR/EIS and provided to CCWD by DWR [citation], illustrate that salinity at the City of Stockton's intake differs significantly from salinity at…Buckley Cove. The quality of water at the Buckley Cove is not representative of the City of Stockton's intake."[144] This figure shows modeled salinity differences reflecting electrical conductivity results on the order of 300 to 600 microsemens per centimeter for a modeled period similar to the 1975 through 1977 drought.[145]

Differences in water quality at varied locations in the interior Delta can often be due to differences in source water. Some locations' source water is dominated by water originating from the Sacramento River, while other locations are dominated by San Joaquin River water; still other locations may be dominated by Bay waters. According to source water analysis obtained by CCWD from DWR, Stockton's intake often receives greater than 70 percent of its water from the Sacramento River, while Buckley Cove seldom receives water from the Sacramento.[146]

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[141] Contra Costa Water District, Comments on Bay Delta Conservation Plan and Draft EIR/EIS, July 25, 2014, including attachments, p. 70, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_153.pdf.

[142] *Ibid.*, pp. 70-71, Figure 2-1.

[143] *Ibid.*, p. 70.

[144] *Ibid.*, p. 72, Figure 2-2.

[145] *Ibid.*

[146] *Ibid.*, pp. 73-74, Figure 2-4.

Concerning bromide effects, the City of Stockton alleges that Petitioners chose Buckley Cove as the monitoring station for modeling changes in bromide levels representative of the City's DWSP intake.[147] The City expressed its concern that:

> What would the bromide concentration level increases be at the City's Delta intake? The BDCP must evaluate the effects of changes in bromide levels at or near the City's intake on the San Joaquin River, including effects on consumers of water and on City operations. Further, if treatment plant upgrades may be necessary due to increased levels in bromide due to the BDCP, significant environmental and economic impacts need to be evaluated and mitigated by the BDCP, not left to the City to address.[148]

Evaluating a high bromide or salinity, but non-representative water quality site between the No Action Alternative baseline conditions and California WaterFix's operational effects, would overstate concentrations of salinity and bromide at the baseline, and by doing so could, in turn, minimize the change in salinity or bromide concentrations.

CCWD also commented on carcinogens, of which bromide is a precursor to the formation of disinfection byproducts (which include bromate, bromoform, and other brominated trihalomethanes [THMs], and halo acetic acids). All of these constituents are potentially harmful to human health through municipal water supplies.[149] CCWD commented further that neither environmental review of Petition Facilities is adequate, first because tallying just the number of days the bromide objective is violated fails to disclose the magnitude of the excess bromide. The magnitude is directly related to the level of health risk from bromide due to its contribution to carcinogen production during the water treatment process. If the bromide analysis looks only at the number of days a threshold is exceeded, or percent change in concentration, it obscures the human health impact of the exceedance.[150]

Similarly, CCWD stated that California WaterFix's environmental reviews obscure bromide concentration impacts by limiting its identification of significant bromide impacts to those at Barker Slough/North Bay Aqueduct.[151] No other locations were analyzed, although it is possible that significant bromide impacts would occur at other drinking water intakes in the Delta, such as Stockton's.

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[147] City of Stockton, 2014 Bay Delta Conservation Plan comments, p. 39.

[148] *Ibid.*, p. 40.

[149] Contra Costa Water District, Comments on Bay Delta Conservation Plan and Draft EIR/EIS, July 25, 2014, including attachments, p. 56.

[150] *Ibid.*, p. 57.

[151] *Ibid.*

Nitrosamines and harmful algal blooms were also identified in CCWD's comments as potential human carcinogens if found in drinking water supplies above safe thresholds.[152] In particular, CCWD commented that operation of Petition Facilities would contribute to physical factors that would contribute to the type of environment in which cyanobacteria (species that can make up harmful algal blooms) thrive, such as: increased nutrients (such as ammonium), increased tidal mixing contributing more salinity to Delta waters; increased residence time of water; and increased water clarity.[153]

California WaterFix is expected to increase residence times of water in Delta channels. CCWD commented that projected increases in residence time would allow cyanobacteria blooms to thrive and last longer than they now do in the Delta. This would be expected particularly in the south Delta, where south Delta exports at Banks and Jones pumping plants will decrease as SWP and CVP operators "would likely preferentially use" the north Delta intakes, which could result in a negative feedback where the north Delta intakes would be used more and more in the event that higher residence times in the south contribute to longer-lasting harmful algal blooms, exacerbating the impact.[154]

Concerning chloride effects, the City of Stockton alleges that the Petitioners failed to address impacts from chloride to its DWSP intakes, preferring in the BDCP DEIR/EIS to defer impact disclosure and possible mitigation to "some later date," which the City called unacceptable.[155]

6. Water quality effects on groundwater supplies for municipal beneficial uses.

Such water quality effects in Delta channels would affect groundwater, since surface and groundwater supplies in the Delta are connected. The Delta area has a large pumpage depression or "cone of depression" that causes an influx of water from the Delta to percolate to underground water supplies.[156] United States Geological Survey groundwater modeling estimates that Delta surface channels lose between 100 to over 500 acre-feet per year to groundwater percolation.[157] Surface water was also found to

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[152] *Ibid.*, pp. 60-65.

[153] *Ibid.*, pp. 63-64.

[154] *Ibid.*, pp. 64-65.

[155] City of Stockton, 2014 Bay Delta Conservation Plan comments, p. 41.

[156] Faunt, C.C., ed., 2009, Groundwater Availability of the Central Valley Aquifer, California: U.S. Geological Survey Professional Paper 1766, p. 167, column 2, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_145.pdf.

[157] *Ibid.*, pp. 171-172, Figure C19.

recharge groundwater from Calaveras and Stanislaus rivers and Dry Creek. On average there was a net lateral inflow to the groundwater system of 120,000 acre-feet between 1970 and 1993 (an estimated annual average of about 5,000 acre-feet per year).[158] Generally, groundwater pumping rates in San Joaquin County in 2004 were found to exceed the sustainable yield of the groundwater basin, estimated to be approximately 150,000 to 160,000 acre-feet.[159] The eastern San Joaquin groundwater basin management plan assumed that "all basin inflow in west Stockton is saline" because "accretions in the western fringes of the Basin and the Lower San Joaquin River are undesirable due to elevated salinity levels. Saline groundwater intrusion has forced the closure of several wells in the Calwater service area."[160] The City of Stockton's domestic water supply permit from the State Water Resources Control Board shows that Stockton has nine inactive wells and has destroyed another 17 wells.[161] Increased west-to-east flow is considered by San Joaquin County's groundwater basin management plan is "undesirable," as this water is typically higher in TDS and chloride levels and causes degradation of water quality in the Basin.[162] The plan further states:

> Degradation of water quality due to TDS or chloride contamination threatens the long-term sustainability of a very important water resource for San Joaquin County, since water high in TDS and/or chloride is unusable or either urban drinking water needs or for irrigating crops. Damage to the aquifer system could for all practical purposes be irreversible due to saline water intrusion, withdrawal of groundwater from storage, and potential subsidence and aquifer consolidation.[163]

The saline front of groundwater intrusion beneath south and downtown Stockton is projected to move another 1.5 miles east by 2030, just as future urban water demand

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[158] Northeastern San Joaquin County Groundwater Banking Authority, Eastern San Joaquin Groundwater Basin, Groundwater Management Plan, 2004, p. 69, Section 2.3.4.4. Accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_146.pdf.

[159] *Ibid.*, p. 69, Section 2.3.6.

[160] *Ibid.*

[161] State Water Resources Control Board, Transmittal of Water Supply Permit to City of Stockton, *op. cit.*, pp. 13-14.

[162] Northeastern San Joaquin County Groundwater Banking Authority, Eastern San Joaquin Groundwater Basin, *op. cit.*, p. 71, Section 2.3.7.

[163] *Ibid.*

was expected to see a net increase among the cities of San Joaquin County of 146,600 acre-feet per year.[164]

7. Summary of Water Quality Degradation

Increased groundwater percolation from Delta channels containing surface water that is made more saline by operation of California WaterFix facilities would increase the risk that poorer DWSP water quality would force Stockton and its other urban water supplier, California Water Service Company, to rely more on groundwater sources to supply their customers.

There are many legal users of water in the north Delta, where major agricultural crops include pears, vineyards, and other permanent deciduous crops which depend on good quality fresh water supplies. Removal of 20 percent or more of the fresh water in this region of the agricultural Delta will reduce fresh water supplies to farmers and cause injury to their water rights and crop productivity when salts build up in soil horizons, which must be leached out.[165] Available salinity modeling from the RDEIR/SDEIS indicates that central Delta locations will see increased salinity conditions as an effect of construction and operation of Petition facilities. Increased salinity conditions in affected parts of the Delta will mean agricultural uses will be injured by having either to accept lower crop yields or shift to more salt-tolerant crops, or both.

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[164] *Ibid.*, p. 74, Figure 2-27, p. 75, Table 2-4; San Joaquin County Flood Control and Water Conservation District, Water Management Plan, Phase 1 - Planning Analysis and Strategy, October 2001, pp. 2-15 to 2-16, Figures 2-8 and 2-9, and p. 2-18, Table 2-3, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_147.pdf.

[165] California Department of Water Resources, Quantity and Quality of Waters Applied to and Drained from the Delta Lowloands, Report No. 4, July 1956, accessible at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/RestoretheDelta/RTD_148.pdf.

Stockton Retail Water Sources, 2015

		2015 (Acre-feet quantities)		
Water Supply	**Additional Detail on Water Supply**	**Actual Volume**	**Water Quality**	**Total Right or Safe Yield**
City of Stockton				
Purchased water	SEWD	4,159	Drinking water	6,380
Purchased water	WID (DWSP Intake Facility)	4,628	Raw water	6,500
Supply from storage				
Groundwater	Eastern San Joaquin Sub-basin 5-22.01	6,628	Raw water	50,000
Surface water	Delta (DWSP Intake Facility)	9,428	Raw water	33,600
Recycled water		0		0
Desalinated water		0		0
Stormwater use		0		0
Transfers		0		0
Exchanges		0		0
City of Stockton Total Supplies		**24,843**		**96,480**
California Water Service Company				
Purchased or imported water	SEWD	15,350	Drinking water	
Groundwater	Eastern San Joaquin Sub-basin 5-22.01	6,740	Drinking water	
California Water Service Company Total Supplies		**22,090**		**0**
Total, Urban Stockton Water Supplies		**46,933**		**96,480**

Sources: RTD-219, p. 67, Table 6-8; RTD-218, p. 5-11, Table 5-6.

Projected Water Supplies for Stockton, 2020 to 2040

		2020		2025		2030		2035		2040	
Water Supply Type	**Water Supply Source**	**Available Volume**	**Total Right or Safe Yield**	**Available Volume**	**Total Right or Safe Yield**	**Available Volume**	**Total Right or Safe Yield**	**Available Volume**	**Total Right or Safe Yield**	**Available Volume**	**Total Right or Safe Yield**
City of Stockton											
Purchased water	SEWD	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Purchased water	WID	6,500	6,500	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000
Supply from storage											
Groundwater		23,100	50,000	23,100	50,000	23,100	50,000	23,100	50,000	23,100	50,000
Surface water	Delta (DWSP Intake Facility)	33,600	33,600	33,600	33,600	33,600	33,600	50,000	50,000	50,000	50,000
Recycled water		0	0	0	0	0	0	0	0	0	0
Desalinated water		0	0	0	0	0	0	0	0	0	0
Stormwater		0	0	0	0	0	0	0	0	0	0
Transfers		0	0	0	0	0	0	0	0	0	0
Exchanges		0	0	0	0	0	0	0	0	0	0
City of Stockton Total Supplies		**69,200**	**96,100**	**75,700**	**102,600**	**75,700**	**102,600**	**92,100**	**119,000**	**92,100**	**119,000**
California Water Service Company											
Purchased or imported water	SEWD	24,000		24,000		24,000		24,000		24,000	
Groundwater		5,642		5,772		6,040		6,361		6,740	
California Water Service Company Total Supplies		**29,642**		**29,772**		**30,040**		**30,361**		**30,740**	
Total, Urban Stockton Water Supplies		**98,842**	**96,100**	**105,472**	**102,600**	**105,740**	**102,600**	**122,461**	**119,000**	**122,840**	**119,000**