

February 2, 2012

VIA EMAIL

Delta Stewardship Council  
980 Ninth Street  
Suite 1500  
Sacramento, CA 95814

Re: Comments of Fifth Staff Draft Delta Plan and PEIR

Dear Chairman Isenberg and members of the Council:

These comments are submitted on behalf of the Save the California Delta Alliance (“STCDA”). STCDA is headquartered in Discovery Bay, California. STCDA represents the interests of individuals who live and work in the Delta, including those with waterfront homes located in Discovery Bay, Delta related businesses, and many who engage in all kinds of water-related recreation in the Delta. STCDA regularly turns out several hundred enthusiastic members at its town hall style meetings held in Discovery Bay.

Thank you for the opportunity to submit comments on the above-captioned matters. We are in awe of the enormity of the task facing the Council and understand that much hard work has been put into conducting public outreach and drafting. We also understand the selfless commitment to public service by members of the Council. Although much work has been done, we believe there is a long way to go in making the Delta Plan and PEIR serve the function that we are sure members of the Council would like them to serve: making real, positive changes, in management of the Delta.

Our comments are frank and direct. We hope the Council will take them in the spirit in which they are offered, to point out major flaws that we believe might not otherwise come to the Council’s attention and to allow the Council to consider major revisions in the documents to address these flaws.

We thank you in advance for considering our views.

**I.  
ORGANIZATION OF COMMENTS**

We provide comments that address both the Fifth Staff Draft Delta Plan (“Delta Plan” or “Plan”) itself and the Draft Delta Plan Program Environmental Impact Report (“Draft PEIR” or “PEIR”). Although there is some necessary overlap between our comments on the Plan and our comments

on the PEIR, different legal standards apply to the Delta Stewardship Council's ("Council") authority and responsibilities with respect to the two documents. The scope and focus of our comments, while treating similar subject matter, are therefore different when addressing the Plan and PEIR respectively.

Our comments on the Delta Plan are organized as follows:

- 1) **Plan Inconsistencies.** Comments addressing areas where we believe the Plan is inconsistent with the Legislature's statutory mandate to the Council. The Council does not have authority to enlarge or impair the scope or contents of the Delta Plan but may only prepare the Plan in accordance with the Sacramento-San Joaquin Delta Reform Act of 2009, Stats. 2009-2010, 7th Ex. Sess., c.5 (S.B.1.), codified at Div. 35 Cal. Water Code & Div. 19.5 Cal. Pub. Res. Code ("Delta Reform Act" or "Act"). Comments pointing out Plan Inconsistencies address areas where we believe the Plan *must* be revised in order to be legally sufficient. They also address areas where we believe the Council does not exercise any discretionary authority and its pronouncement are not due any deference. *See, e.g., San Francisco Fire Fighters Local 798 v. City and County of San Francisco*, 38 Cal.4th 653, 668 (2006) (holding that "[a]dministrative regulations that alter or amend the statute or enlarge or impair its scope are void and courts not only may, but it is their obligation to strike down such regulations"); *Samantha C. v. State Dept. of Developmental Services*, 185 Cal.App.4th 1462, 1482 (2nd Dist., 2010) (holding that "[i]n deciding whether the regulation conflicts with its legislative mandate, the court does not defer to the agency's interpretation of the law under which the regulation issued, but rather exercises its own independent judgment") (internal quotation marks and citation omitted); *Agricultural Labor Relations Bd. v. Superior Court*, 48 Cal.App.4th 1489, 1510 (5th Dist. 1996) (holding that "[a]dministrative regulations that violate acts of the Legislature are void and no protestations that they are merely an exercise of administrative discretion can sanctify them. They must conform to the legislative will if we are to preserve an orderly system of government") (internal quotation marks and citation omitted).
- 2) **Unreasonable Policy Choices.** Comments addressing areas where we believe that, although the Council may have broad discretion to make policy choices, it has exceeded the bounds of its discretionary authority because the choice made is not reasonably designed to aid a statutory objective of the Delta Reform Act. Comments pointing out Unreasonable Policy Choices address areas where we believe the Plan *must* be revised in order to be legally sufficient. Although courts will grant substantial deference to the Council with respect to its policy choices, that deference is not unlimited and choices that are arbitrary or capricious, or which are not reasonably supported by the evidence upon which the Council has relied cannot be sustained. *See Samantha C. v. State Dept. of Developmental Services*, 185 Cal. App. 4th 1462, 1483 (2nd Dist., 2010) (noting that "the court will defer to the agency's expertise and will not superimpose its own policy judgment upon the agency in the absence of an arbitrary and capricious decision" but that a court will strike down regulations that are not "reasonably designed to aid a statutory objective") (internal quotation marks and citation omitted); *Credit Ins. Gen. Agents Assn. v. Payne*, 16 Cal.3d 651, 657 (1976) (holding that the court will "ascertain whether the agency reasonably interpreted its power in deciding that the regulation was necessary to accomplish the purpose of the statute"); *Id.* (holding that if "the evidence relied on . . .

does not reasonably support the regulation in light of the purpose of the statute” the regulation must fall).

Some items are analyzed as both Plan Inconsistencies and Unreasonable Policy Choices.

- 3) **Suggestions For Improvement.** Comments addressing areas where we believe the Plan is legally sufficient but the Council may wish to consider suggestions for improvement or alternative means of accomplishing its goals.

## II.

### COMMENTS ON THE DELTA PLAN

#### A. Delta Plan Chapter 3 Governance: Implementation of the Delta Plan.

##### PLAN INCONSISTENCIES:

##### 1. **Delta Plan Governance Provisions Are Too Vague and Ill-Defined To Assure Implementation Of The Goals And Sub-Goals Of The Delta Reform Act.**

Water Code Section 85210(i) provides that the Council has a responsibility to “adopt regulations or guidelines as needed to carry out the powers and duties identified in this division [Div. 35].” The Council has established that its proposed policies (including Policy G PI, which is the only policy proposed to implement Council governance) will have the force of law and are subject to the normal administrative rulemaking process, including review by the California Office of Administrative Law. The Council is, therefore, proposing regulations pursuant to its authority under Cal. Water Code § 85210(i). California Government Code Section 11342.600 provides in pertinent part that a regulation is designed to “implement, interpret, or make specific the law enforced or administered.”

The law that the Council is statutorily charged with implementing and administering is the Delta Reform Act and specifically achieving the Legislature’s coequal goals for the Delta, which are “providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” Cal. Pub. Res. Code § 29702. The Legislature further defined the Council’s duties by making explicit eight objectives that are inherent in achieving the coequal goals:

- (a) Manage the Delta’s water and environmental resources and the water resources of the state over the long term.
- (b) Protect and enhance the unique cultural, recreational, and agricultural values of the California Delta as an evolving place.
- (c) Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem.
- (d) Promote statewide water conservation, water use efficiency, and sustainable water use.

(e) Improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta.

(f) Improve the water conveyance system and expand statewide water storage.

(g) Reduce risks to people, property, and state interests in the Delta by effective emergency preparedness, appropriate land uses, and investments in flood protection.

(h) Establish a new governance structure with the authority, responsibility, accountability, scientific support and adequate and secure funding to achieve these objectives.

Cal. Water Code § 85020.

In order to fulfill its statutory mandate, the Council must adopt regulations that are concrete and specific enough so that foreseeable and quantifiable implementation of each of the above sub-goals can confidently be predicted as a result of implementation of the regulations. The Council has acknowledged that so far no such result can be expected. The PEIR acknowledges that the Delta Plan is so vague that what, if any, effect it will have is unclear: “The Delta Plan’s likelihood of nudging already considered projects forward, and the Delta Plan’s degree of influence on future undefined projects, is unclear.” PEIR at 2B-2. “How much influence the Council will have is unclear.” *Id.* These statements are entirely inconsistent with legislative intent. It was the intent of the Legislature that the Council adopt regulations definite enough “to achieve these objectives.” Cal. Water Code § 85020(h). The Council is supposed to be “a governance structure.” *Id.* The Delta Plan should include “quantified or otherwise measurable targets.” Cal. Water Code § 85308. The Legislature’s directive to the Council is for an active and imperative management of the Delta. The verbs “manage,” “protect,” “restore,” and “establish” indicate that the Council’s function is governmental and mandatory rather than merely hortatory. However, the Council has described its function as constrained to seeking to “influence” other agencies “through limited policy regulation or through recommendations.” PEIR at 16-1. The PEIR goes so far as to relegate the Council’s role in the critical area of water conveyance to “the authority to opine generally about improving Delta conveyance as it may relate to the rest of the Delta Plan and the coequal goals.” PEIR at 23-5.

This approach is inconsistent with the Legislature’s finding that the “Sacramento-San Joaquin Delta watershed and California’s water infrastructure are in crises and existing Delta policies are not sustainable.” Cal. Water Code § 85001(a). The Legislature did not intend to create a passive and tepid agency; rather it intended that by “enacting this division, it is the intent of the Legislature to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem [and to] establish a governance structure that will direct efforts across state agencies.” Cal. Water Code § 85001(c). In short, the Legislature’s command was “make it happen now,” and the Council’s response thus far has been “we wish it will happen some day.”

## **2. Delta Plan Governance Is So Amorphous That It Is Void For Vagueness Where It Regulates Private Conduct.**

Because the plan regulates land use in the Delta it regulates private conduct and is therefore constitutionally suspect because it is so vague that private parties will not be able to

determine what conduct is allowed and what it prohibited. The Plan reiterates numerous times that it only regulates actions of other public agencies and not the private sector. This is incorrect. A private developer proposing a project in the Delta must conform the project to the Delta Plan. So must a farmer undertaking projects on her own land. The fact that it is the decision of the local land use authority to approve the project that would be appealed to the Council makes no difference because it is the private proponent who is the real party in interest. Saying that the Delta Plan only applies to public agencies would be like saying that a city council hearing an appeal of a decision of its planning commission to approve a shopping mall was only regulating the planning commission and not the private developer.

The Council will be well informed as to the issue of vagueness by the number of comments it receives complaining that the regulation of land use in the Delta (and the Plan on the whole) is so ill-defined as to be subject to the vagaries of ad hoc decision making. From what we have heard from other reviewers we suspect there will be many comments addressing the vagueness of the Plan. It “is an established principle of due process that an enactment is void for vagueness if its provisions and requirements are not clearly defined.” *California Coastal Com’n v. Alves*, 222 Cal.Rprt. 572, 586 (1st Dist. 1986). “All are entitled to be informed as to what the state commands or forbids.” *Id.* A regulation “which either requires the doing of an act in terms so vague that men of common intelligence must necessarily guess as to its meaning and differ as to its application violates the first essential of due process of law.” *Id.*

Policy G P1 provides that some covered actions may not be consistent in all respects with the Delta Plan. It requires a proponent to explain why consistency in all respects is not feasible and explain how “on the whole” the action would be consistent. It then provides that the Council “may” determine that the covered action is consistent. Delta Plan at 60. However, the Plan provides no standards for determining when a partially consistent action will be approved. Without more definite standards this policy is an invitation to ad hoc and arbitrary decision making. For example, what does “feasible” mean? Does it mean that compliance would render the project economically unviable? Does it mean that it would increase the cost by a given factor, say 20%? Does it mean that it is physically impossible? What does consistent on the whole mean? Does it mean for an environmental project that the ecosystem benefits substantially outweigh any negative impacts? Given the mandate of the Delta Reform Act to balance water supply with ecosystem restoration with economic development with maintaining the Delta’s sense of place it is unlikely that any covered action will be 100% consistent with all aspects of the co-equal legislative goals and eight sub-goals. For example, how will the Council square the goals of recreational and economic development of the Delta as an evolving place with environmental concerns? The point of regulations is to provide standards and guidance on how these questions will be handled before the first appeal comes before the Council so that parties have reasonable expectations as to what is and is not permissible. So far, it is anyone’s guess how the first case appealed to the Council will play out with respect to these and host of other issues.

### **3. The Plan Contains Numerous Provisions That Have No Effect Because They Parrot Existing Well-Settled Law That Is Already Fully Enforced In The Guise Of Providing New Guidance.**

Policy G P1 also contains the following: “covered actions must be fully transparent by disclosing all potentially significant adverse environmental impacts and feasible mitigation measures of those adverse impacts.” This says nothing at all because statutorily, in order to be a covered action, a proposed action must qualify as a project under CEQA. Cal. Water Code §

85057.5(a). Once a proposed action meets the definition of a project under CEQA, CEQA requires that all significant adverse impacts be disclosed and all feasible mitigation measures be adopted. The Plan has a propensity for setting forth requirements like this that are already required and fully enforced under well-settled law. It does this at length in Chapter 4 by putting forth water conservation measures that are already set out in the same level of detail by existing statutes separate and apart from the Delta Reform Act. This appears to the reviewer as being designed to make the Plan look like it is accomplishing something where really it isn't accomplishing anything at all. It buttresses the impression that the Plan is so vague as to not contain any definite requirements at all because wherever it is definite it usually turns out on closer inspection that it is only reiterating existing law that is well covered without any Delta Plan. In numerous instances, the above being only one example, the outcome would be no different if there were no Delta Plan at all. We respectfully suggest that the Council would be wise to strip out all the padding, see what's left, and assess whether the Plan accomplishes anything or not.

#### **4. The Adaptive Management Requirement Does Not Fulfill The Statutory Requirement For Hard Science To Guide Decision Making.**

Policy G P1 also requires covered actions to demonstrate an "adaptive management framework" as elucidated in Chapter 2. Chapter 2 in turn provides what looks like the worst kind of management consultant's boardroom power point for gestalt decision making. It provides nine steps that essentially require a proponent to demonstrate that he thinks about the problem, establishes goals, selects actions that he thinks will achieve his goals, tries it out, assesses his results, and adapts his plan based on the outcome. After reviewing Chapter 2, what possible project proponent could fail to put together a power point for display to the Council that wouldn't meet this requirement? Does the Council believe that someone will present a project and proclaim that he doesn't think he is going to get the results he is after but he is just going to go ahead anyway? That he hasn't thought about it? That he isn't going to pay attention to how progress is going? That he won't change course if his plan isn't working? This requirement is a recipe for busywork. It is not what the Legislature intended.

California Water Code Section 85052 provides that :

"Adaptive Management" means a framework and flexible decision-making process for ongoing knowledge acquisition, monitoring, and evaluation leading to continuous improvements in management planning and implementation of a project to achieve specified objectives.

Water Code Section 85211 in turn provides in pertinent part that:

The Delta Plan shall include performance measurements that will enable the council to track progress in meeting the objectives of the Delta Plan. The performance measurements shall include, but need not be limited to, quantitative or otherwise measurable assessments of the status and trend in all of the following:

(a) The health of the Delta's estuary and wetland ecosystem for supporting viable populations of aquatic and terrestrial species, habitats, and processes, including viable populations of Delta fisheries and other aquatic organisms.

These two sections taken together require establishment of a network to collect hard data, the means to analyze that data, and the establishment of quantitative trigger points for altering operations in response to the data *in real time*.

For example, the effects of water exports that are begun under flow criteria established by the SWRCB based on modeling and projections must be monitored in real time with actual, not modeled, data. The Delta Plan and management of the Delta must be based on good science and any good scientist knows that all models are wrong, though some models are useful. We hope that the Bay Delta Conservation Plan's ("BDCP") models referred to here turn out to be useful). This would be achieved by establishing a network of stations throughout the Delta that monitor for dissolved oxygen, salinity (electrical conductivity), turbidity, algal counts, and a number of other factors. A good starting point would be to establish stations that could check all the projections of the BDCP models in response to real water diversions under real conditions. In addition, stations must be established and staffed to conduct ongoing population counts of selected species and vegetation. Trigger points must be established in advance to alter diversions in real time in response to monitored data. For example, if dissolved oxygen falls below a specified level for a specified time in specified number of locations, the rate of diversion of water must be curtailed until dissolved oxygen returns to pre established healthy levels. The trigger points, location and number of stations, and prescribed response can all be refined over time as experience managing the system is gained. The same principles apply to restoration projects.

The above example represents the quality of adaptive management required by the Delta Reform Act. It is not intended by any means to exhaust the quantity of adaptive management protocols that will be required. The Delta Plan need not set forth details like the location of monitoring stations or the exact criteria that will be used to signal changes in water diversion. However, it must provide for such real scientific adaptive management to be put into place sooner rather than later. Certainly before any diversion through the Peripheral Canal can begin and before work on major restoration projects begins. At a minimum it must contain a schedule and the outline of how adaptive management will work and be put into place. We see no justification for not engaging this issue now in a meaningful way.

## **B. Delta Plan Chapter 4: A More Reliable Water Supply For California.**

### **PLAN INCONSISTENCIES.**

- 1. The Delta Plan Fails to Implement Measures to Reduce Reliance on the Delta because it Fails to Require Regional Water Use Efficiency and Self Reliance and Fails to Establish Measurable Goals for Reduced Reliance on Delta Water.**

One of the coequal goals is "providing a more reliable water supply for California. Cal. Pub. Res. Code § 29702. Inherent in providing a more reliable water supply is the objective of promoting "statewide water conservation, water use efficiency, and sustainable water use." Cal. Water Code § 85020(d). The Delta Plan takes the position that all it need do is require water importers to be in compliance with existing water conservation law. However, the Delta Reform Act does more than reiterate state policy with regard to water conservation. It imposes

new and specific requirements, not found in preexisting law, for reduction in reliance on the Delta for each region of the state that *depends on water from the Delta*:

### **Reduction of reliance on Delta for future water supply needs**

The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts.

Cal. Water Code § 85021.

Despite this special requirement for regions that import water from the Delta, the Delta Plan does nothing more than rehearse existing water conservation law and congratulate Californians for their progress with respect to improved efficiency: "The Delta Plan does not establish targets for additional water conservation beyond existing state law and the 2020 deadline." Delta Plan at 7. "Statewide improvements in water conservation, water efficiency, and development of new local and regional supplies over the past decade have significantly increased California's ability to meet most of its agricultural and urban water needs." Delta Plan at 69.

The Council is not at liberty to ignore section 85021. The Legislature specifically commanded a reduction in use of Delta water by regions that depend on the Delta. The Council is statutorily obligated to adopt regulations that carry the mandate of section 85021 into practice.

In implementing the Delta Reform Act, the Delta Plan must "[i]nclude quantified or otherwise measurable targets associated with achieving the objectives of the Delta Plan." Cal. Water Code § 85308(b). Asking regions that depend on Delta water to submit a water management plan, by itself, is insufficient to meet the mandate of section 85308(b). Although collaboration with importers, including the development of regional plans, could certainly be part of implementing section 85021, the implementation must contain quantifiable targets for reducing reliance on the Delta as required by section 85308(b).

There are many forms such regulations could take. For example, the Delta Plan could require each region that depends on Delta water to demonstrate a 10% reduction in per capital use of Delta Water every five years. Or, it could treat regions individually, setting different targets for different regions depending on their various circumstances. The latter would probably be the wiser policy choice as the Plan acknowledges that reliance "on water provided through Delta exports varies throughout California from region to region" with, for example, the MWD obtaining 25% of its supply from the Delta while Zone 7 Water Agency obtains 90% of its supply from the Delta. Delta Plan at 77. The Council has discretion in how it goes about implementing section 85021 so long as it does so in a meaningful and quantifiable way, but it cannot determine that section 85021 need not be implemented because the Council has decided that existing water conservation measures are good enough.

The Delta Plan's reliance on existing water conservation measures and failure to implement section 85021 are inconsistent with the Delta Reform Act. In order to be legally sufficient, the Plan must be revised to address these inadequacies.

**2. The Plan Lacks Balance Because It Focuses on The Peripheral Canal to Provide a More Reliable Water Supply and Fails To Address Water Use Efficiency and Conservation Projects In Any Meaningful Way.**

The Plan does not treat the sub-goals of establishing new and improved conveyance facilities on the one hand and improving efficiency and self-reliance on the other as equal. After establishing that nothing more will be done with regard to conservation (other than requiring compliance with existing law) the Plan concludes that the real issue to be addressed is the reliability of water deliveries to the SWP and CVP from the Delta:

Yet, at the same time, the reliability of water deliveries from the State Water Project (SWP) and the Central Valley Project (CVP) has diminished because of drought and the sharp decline of native fisheries that has resulted in court-ordered and regulatory water project operating restrictions to protect the Delta ecosystem.

Delta Plan at 69.

The Delta Plan envisions that through construction of new conveyance facilities, project “operating restrictions” would be avoided at the same time as claimed benefits to fisheries would be achieved “One of the Delta Plan’s objectives is to promote options for new and improved infrastructure relating to water conveyance in the Delta . . . . The existing configuration of Delta water conveyance and associated conveyance facilities do not provide adequate long-term reliability to meet current and projected water needs for SWP and CVP water deliveries.” Delta Plan at 86. New conveyance facilities “can enhance the operational flexibility of the Delta system to divert and move water at times and from locations that are less harmful to fisheries, or to reliably transport environmental water supplies to specific locations at times when it can benefit fish and water quality.” Delta Plan at 87. This is all code for “Peripheral Canal.” Through this logic, the Council has thus far chosen to promote construction of the Peripheral Canal and to abdicate its responsibilities to promote regional self-sufficiency and reduction in reliance on the Delta.

The Legislature has slated the BDCP for incorporation into the Delta Plan. Cal. Water Code § 85320. The words “Peripheral Canal” do not appear in the Delta Plan or in the BDCP, however the Peripheral Canal project is already well defined in the BDCP planning process. *See, generally, <http://baydeltaconservationplan.com/Home.aspx>* (last visited Feb. 1, 2012); *see also infra* at 14–15. The Delta plan assumes, without explaining to the public, that the Peripheral Canal will achieve the Council’s water supply objectives. In many ways, the Delta Plan is really a *sub rosa* plan to build the Peripheral Canal and at the same time to shelve other water supply reliability measures.

This approach is inconsistent with the Delta Reform Act which provides for new conveyance facilities as only one among a list of water reliability measures:

Providing a more reliable water supply for the state involves implementation of water use efficiency and conservation projects, wastewater reclamation projects, desalination, and new and improved infrastructure, including water storage and Delta conveyance facilities.

Cal. Water Code § 85004(b). In addition to the specific language of section 85004(b), it is obvious to even the casual reader that the overall structure and purpose of the Delta Reform Act is to strike a balance. First there is the balance of the coequal goals: water supply does not trump

the environmental needs of the Delta and both are important. And then within the goal of a more reliable water supply building a more efficient means of exporting water must be balanced against reducing demand.

The Delta Plan is not consistent with the balance sought by the Legislature. The Plan endorses a specific and highly controversial multi-billion dollar Peripheral Canal. It touts the purported benefits of the Canal but does not discuss any potential pitfalls. On the other hand the Plan provides no measurable targets for conservation. The Plan even goes so far as to admit that “additional targets for urban conservation and agricultural water use efficiency will be necessary, but these will be addressed in future updates to the Delta Plan.” Delta Plan at 7. Building a canal now to allow the export of more water and getting around to water conservation at some undefined time in the future is not what the Legislature had in mind. The failure to address water supply reliability in conformance with legislative intent is of course exacerbated by the attempt to camouflage the dominant role of the Peripheral Canal in the whole process.

The long rehearsal of existing state law requirements at Policy WR P1 is no substitute for regulations that provide for quantifiable reductions in Delta water use. For example, the repetition of Water Code Section 10608’s requirement for a 20% reduction in statewide urban per capita water use by 2020 in no way implements a reduction in reliance on the Delta. An importer’s per capita use could go down while the per capita use of Delta water goes up. In fact, as Delta water deliveries become more reliable due to the Peripheral Canal and other sources of water become less reliable due to such things as climate change and restrictions on use of Colorado River water, increased consumption of Delta water is the most likely scenario. The plan, as currently formulated, will probably have the effect of *increasing* reliance on the Delta.

The Delta Plan’s focus on the Peripheral Canal and lack of attention to meaningful implementation of water conservation is not consistent with the balanced approach required by the Delta Reform Act. In order to be legally sufficient, the Plan must be revised to address these inadequacies.

## **UNREASONABLE POLICY CHOICES**

### **3. The Plan Ignores Real World Implications Of The Peripheral Canal: Once The Infrastructure is Built Water Importers Will Use More Delta Water.**

In California today, the factor constraining new development and population growth is the limited supply of water. Numerous factors provide incentives for local agencies to promote new development, not least of which are the incentives built into the state’s financing structure that translate new development into revenue for local government. The situs sales tax structure and the ability of local government to exact cash and community benefits from developers are just two examples. Population pressure from immigration is only forecast to increase in coming years. And the public has an appetite for water intensive uses, such as large lawns and other water inefficient landscaping. Likewise, agriculture has an appetite for bizarrely water intensive agricultural practices, such as growing cotton and rice in the desert. The BDCP’s operational criteria for the Peripheral Canal takes the approach of determining the minimum amount of water required for in-stream flow in order to sustain a viable ecosystem and then identifying everything above that amount as available for export. This means that much larger quantities of water will be available for export through the Peripheral Canal than are currently available. The BDCP, standing alone without constraint from the encompassing Delta Plan, is a plan for increased reliance on Delta water. The combination of incentives for growth, elimination of the constraints on increased water supply, and undisputable historical record of water agencies using

every drop of water they can get their hands on make for the perfect statewide storm of new development fueled by vastly increased exports of Delta water.

The criteria the Council may apply when considering incorporation of the BDCP are limited by statute. However, the Delta Plan is the primary plan for Delta water management and the BDCP, if incorporated, will be one part of the master plan and subject to its larger structure. The Delta Plan must therefore take account of likely effects of the BDCP. If any result of BDCP incorporation is likely to increase Delta exports, then the Council is required to build a Delta Plan around the BDCP that will counteract those effects.

The Delta Plan shuts its eyes to the enormous pressure for increased reliance on Delta water that is certain to accrue after construction of the Peripheral Canal. It shuts its eyes to the reality of the BDCP. At the very least, reasoned decision making would require a thoughtful discussion of how the Delta Plan will overcome these pressures and carry out its mandate to reduce reliance on Delta water. Instead, the Council has concluded that “the agencies pursuing BDCP are best positioned to develop and evaluate possible options and decide on the best Delta conveyance concept.” PEIR at 23-5. Therefore, the Delta Plan “does not include any regulatory policies regarding Delta conveyance.” PEIR at 23-4. The discussion of the Council’s authority at pages 23-2–23-5 of the PEIR concludes that in the face of the BDCP, the Council has no authority over new conveyance options or water exports. Statutory authority for and the content of the BDCP are prescribed by the Delta Reform Act, the same piece of legislation that creates the Council and provides for its powers and duties. The Delta Reform Act provides that the “Delta Plan shall promote options for new and improved infrastructure relating to the water conveyance in the Delta, storage systems, and for the operation of both to achieve the coequal goals.” Cal. Water Code § 85304. The Legislature further mandated that the Council “[i]mprove the water conveyance system and expand statewide water storage.” Cal. Water Code § 85020(f). If all the Council can do with respect to conveyance is “opine generally,” as the PEIR proclaims, then these code sections have no effect. The Council has read the Delta Reform Act in a way that renders sections 85304 and 85020(f) surplusage. Courts “should give meaning to every word of a statute, if possible, and should avoid a construction making any word surplusage.” *Arnett v. Dal Cielo*, 14 Cal. 4th 4, 22 (1996). The PEIR attempts a marvelous lawyer’s argument to the effect that the Council’s authority over conveyance and water exports is “contingent,” and would come into effect only if the BDCP fails to come to fruition. PEIR at 23-3. However, this is simply not what the plain language of the Delta Reform Act says. The Council’s reading gives effect to the parts of the Delta Reform Act that provide for the BDCP and chooses to give no effect to the parts that provide for its own authority over conveyance and exports. A court will “reject this interpretation of the statute because it fails to give effect to each of its parts.” *Arnett*, 14 Cal. 4th at 22.

The Delta Plan must take proper account of the Peripheral Canal and plan for managing water exports, water conservation, and reduced reliance on the Delta in the face of greatly increased demand pressure for Delta water and capacity for export that are inherent in the Peripheral Canal project.

#### **4. The Plan Does Not Assess The Real Potential For Reduced Delta Exports Through Conservation and Regional Self Reliance Inherent In The Fact That Only A Small Percentage Of The State’s Water Comes From The Delta.**

The Plan correctly points out that only 14% of the state’s water supply comes from the Delta. Delta Plan at 77. It also correctly points out that many regions of the state that consume large quantities of Delta water at the same time use Delta water for only a minority of their total

consumption. For example, MWD uses Delta water for approximately 25% of its water supply. Delta Plan at 77. The obvious corollary to this observation is that MWD presents a great opportunity for *reduction* in Delta water use. If, as the plan proclaims, water use efficiency is going great and significant reductions in water use can be expected, then a 10% reduction in total MWD water use would be a reasonable expectation in the near future (existing law calls for a 20% reduction by 2020). If MWD reduces its total consumption by 10% then it is in position to reduce the share of water it takes from the Delta from 25% to 15% (cutting Delta water use almost in half) by simply reducing Delta imports by the amount of water that is saved through conservation. The Council has the authority to impose such a requirement that (a) conservation be achieved; and (b) conserved water be applied to reducing the share of water taken from the Delta.

We believe that this logic should be applied in absolute terms and net use of Delta water should be reduced by the amount conserved, or at least reduced by some percentage of the amount conserved. But at a minimum, there is no reason why MWD should not be required to reduce its per capita consumption of Delta water from 25% to 15% in the near future.

Because the facts are taken from the Delta plan, the implications are obvious, and Water Code Section 85021 mandates that the Council require reduced reliance on Delta water, the Plan's failure to adopt this position (or even discuss it) means that the Plan overlooks an important aspect of the problem and fails to make a rationale connection between the facts found and the policy choices made. Two red flags for arbitrary and capricious administrative action.

At a minimum, for each importer, the plan should set forth the figures for how much Delta water is used in both absolute terms and as a percentage of total water used. It should then assess the potential for increased efficiency and regional self reliance and set a target for reduction in Delta water imports achieved by applying conserved water to reducing the Delta share. For some regions, like Zone 7, progress in the near future may be modest. For others that use Delta water for only a small percentage of total consumption, complete elimination of Delta imports would be readily achievable in the near future.

In the absence of this approach, or some other meaningful, measurable way to prevent the Delta Plan and incorporated BDCP from being instruments to vastly increase Delta exports (which is the only possible result absent explicit measures to prevent it) and increase reliance on Delta water, the Plan is unreasonable in light of water code section 85021.

##### **5. The Delta Plan Does Not Address The Fundamental Problem With California Water Supply: The Inability To Harvest And Store The Abundant Water Available At Times of Peak Flow.**

The Delta Plan correctly identifies the crux of California's water supply problem to be that the state lacks the capacity to harvest and store the overabundance of water that is available during peak storm flows. Implementation of conveyance and storage facilities that could harvest peak flows at times of great abundance would provide plenty of water for beneficial use and would also greatly reduce the environmental harm from water diversions because water would be diverted at times of greatest flows so the diversion would have little or no negative impact on healthy in stream flows.

The Delta Plan lays out the facts to support the above conclusion as follows:

Because so much of California's precipitation comes from relatively few storms, the pattern of extreme annual fluctuations in the State's water supply is intensified.

Delta Plan at 69.

California experiences the most erratic pattern of precipitation of all the states in the nation, with the bulk of its annual water supply falling within just 5 to 15 days (Dettinger et al. 2011). This means that in years when fewer storms pass over California, the state faces the problem of too little water; conversely, a few extra storms may result in flooding.

Id. at 69–71.

More water is exported by the SWP and CVP in average or dry years [when environmental impacts of diversion are greatest] than in wet years [when impacts would be minimal]. This is because the current infrastructure for water conveyance and surface storage limits the ability for the State and federal systems to capture more water during high flows that otherwise would have been available for diversion. Wet year exports through these projects averaged about 4.6 MAF, significantly less than average or dry year diversions.

Id. at 75.

Conveyance improvement can enhance the operational flexibility of the Delta system to divert and move water at times and from locations that are less harmful to fisheries . . . .

Id. at 87.

The statewide water storage capacity is currently inadequate, especially south of the Delta, to facilitate export of water at times of surplus when the only impediment is lack of available storage capacity (DWR 2009). For example, in spring 2011, the south Delta pumps were turned off because real-time urban and agricultural water users' needs could be met through local water supplies and previously delivered export supplies, and storage opportunities south of the Delta were insufficient to take delivery of available water.

Id. at 88.

Yet the Plan proposes no policies with regulatory effect to address this problem. Delta Plan at 89. Rather, the Plan pins its hopes on DWR's Surface Water Storage investigation. The Surface Water Storage Investigation is discussed and embodied in Recommendation WR R6 at page 90. A visit to DWR's Surface Water Storage Investigation website reveals that the Investigation consists of five projects: Shasta Lake Water Resources Investigation; In Delta Storage; Los Vaqueros Reservoir Expansion; Upper San Joaquin River Basin Storage Investigation; and North-of-the-Delta Offstream Storage (NODOS). See <http://www.water.ca.gov/storage/uppersj/index.cfm> (last visited January 25, 2012). However, three of the five do not really exist. The status of three key projects is as follows: "DWR has stopped work on the Shasta Lake Water Resources investigation since July 2005 due to lack of funding." <http://www.water.ca.gov/storage/shasta/index.cfm> (last visited January 25, 2012).

“The in-Delta Storage Program has been suspended since July 2006 when State funding for the program was cut.” See <http://www.water.ca.gov/storage/indelta/index.cfm> (last visited January 25, 2012). “With additional funding, local, state, and federal partners may choose to continue to study the feasibility of a 275 TAF expansion [at Los Vaqueros].” See <http://www.water.ca.gov/storage/losvaq/index.cfm> (last visited January 25, 2012). Two of the five projects upon which the Delta Plan depends for its storage element were shelved in 2005 and 2006. A third has no funding and no definite plan to begin.

The NODOS project is being studied. The NODOS project, if built, would provide between 1.27 and 1.81 MAF of new storage, with a diversion capacity of between 3900 and 5900 CFS. Water would be diverted from the Sacramento River at times of high flow. The water would be stored for later use and released at times of scarcity. NODOS, as a solution, is consistent with the facts as found in the Delta Plan. Whereas the Peripheral Canal is not. The Canal would not significantly increase the ability to harvest peak storm flows and therefore does not address the basic problem. In addition to NODOS, there are millions of acre feet of water that are diverted at times of flood flow but not made available for beneficial use. Harvesting this water is the most expeditious way to meet the coequal goals of protecting the Delta ecosystem and improving water supply reliability because use of this “excess” water would have the least (if any) environmental impact on the Delta and would provide abundant water for beneficial use.

Attached is a DWR fact sheet entitled Sacramento River Flood Control Project Weirs and Flood Relief Structures. It shows historical diversions at the Moulton, Colusa, Tisdale, Fremont, and Sacramento Weirs. These weirs have combined capacity to divert 588,000 cfs. The Sacramento Weir alone, operating at a river stage of 31 feet, diverts over 31,000 cfs. To put this into perspective, that would be 1 MAF approximately every 16 hours, or the equivalent of the high end of total SWP and CVP yearly diversions (6 MAF) in a period of 4 days. From just one of the five weirs. The Delta Plan contains no discussion of how this abundance of water might be harvested for beneficial use, taking pressure off the Delta.

The diversion structures are already in place. A number of ways to harvest and store the water might be considered. For example, if a Peripheral Canal is to be built, it could harvest water from these flood flow diversions points rather than the proposed diversion point at Hood. The NODOS project storage site could also be connected directly to the Peripheral Canal, allowing water harvested a times of abundance to be used during periods of scarcity. Currently the Canal has no such capacity. The Delta Plan also identifies over-pumping and depletion of groundwater throughout the state as a major problem. Delta Plan at 93. But the Plan adopts no policies to address the problem. *Id.* Water diverted at times of abundance could be conveyed through the SWP and CVP and used for groundwater re-charge. This would allow excess capacity at times of high flow to be harvested, stored (in aquifers), and later used at times of scarcity. The Public Policy Institute of California (“PPIC”) has estimated that more than 2 MAF could be stored in groundwater basins in a cost-effective manner. See California Public Policy Institute, *Just The Facts, Water Supply And Quality*, available at [http://www.ppic.org/content/pubs/jtf/JTF\\_WaterJTF.pdf](http://www.ppic.org/content/pubs/jtf/JTF_WaterJTF.pdf) (last visited Feb. 2, 2012). PPIC estimates that next to improvements in urban use efficiency, groundwater storage has the highest potential for additional water supply. *Id.* Recall that during periods of wet weather the export pumps are turned off because regions throughout the state meet their demand from existing storage or local supply sources. Delta Plan at 88. Why not take advantage of this opportunity to convey excess water and use it to recharge groundwater?

With regard to this problem, the Delta Plan is so vague and amorphous as to not be any plan at all. Rather the approach is to call for more study of ways to improve storage and point to non-existent projects as the hope for the future. There have been plenty of studies. What is

needed now is a plan of action that is specific enough to take a direction. At a minimum, the Plan should set targets for increasing the percentage of exported water that is diverted at times of peak flow and decreasing the amount diverted at all other times. It should sketch out, in at least conceptual terms, how excess capacity can be used for groundwater recharge. It should set targets for groundwater recharge accomplished in this way.

As to the crux of the California's water problem, harvesting and storing peak flows, the Delta Plan as currently formulated has really nothing to say at all.

### **C. Chapter 5: Restore The Delta Ecosystem**

#### **SUGGESTIONS FOR IMPROVEMENT.**

We agree with the sentiment that rivers "in the Delta and its watershed [should] have expansive riparian edges that are seasonally connected to large floodplains." Delta Plan at 107. We also believe that where more conventional levees remain in place they should be heavily vegetated. We understand the constraints placed on levee vegetation by existing Army Corps of Engineers ("ACOE") policies. See Delta Plan at 42.

We suggest that the Council make implementation of expansive riparian edges a higher priority and that it take an active role in changing ACOE's mind with regard to levee vegetation.

We have no doubt that appropriate criteria can be developed so that attractive and high habitat value vegetation can co-exist with maintaining the stability and flood control function of levees. Through the Delta Science Panel, provision of grants, and other means of conducting research and pilot projects, we believe the Council should take the lead in developing a "living flood barrier" concept. We are reminded of the experience of the Urban Creeks Council with ACOE in the 1980's. At that time ACOE prescribed channelizing urban creeks in narrow, unnatural concrete lined passages with steep banks. Urban Creeks Council fought this policy and developed a sketch of a natural creek transect, showing gentle sloping banks and vegetation, as its emblem. After some years of fighting these efforts, ACOE abandoned its position on channelization, adopted the approach recommended by the Urban Creeks Council, and took Urban Creeks Council's motto (showing a natural, vegetated channel) as its own. ACOE is susceptible to rationale argument and can be persuaded to change its position.

We suggest that the Council is in the best position to lead the effort with respect to Delta levees. The Council could identify funding sources, develop pilot research projects assessing different kinds of vegetation and different alternatives to armored levees, and come up with a proposal for the living flood barrier concept. We suggest that this be embodied as a target to put in place a demonstration project within 3 years. It can also call on other state and federal agencies, through recommendations, to begin work on the living flood barrier concept and to put in place demonstration projects within 3 years.

With respect to setback levees and a more natural riparian edge connected to seasonal flood plains, we suggest that through the Delta Science Panel, provision of grants, and other means at its disposal, the Council begin identifying specific reaches of river that can be converted to this configuration and identify the first project area with a goal of completing work in a specified time frame.

We think the Council is on the right track with regard to these issues and that its approach can be improved by providing specific measures and definite time frames such as those suggested above.

### III. COMMENTS ON THE PEIR

#### A. **The PEIR Fails To Include Details Of The Peripheral Canal Sufficient To Allow Members Of The Public To Understand And Meaningfully Consider The Issues Raised By Approval Of The Delta Plan.**

The BDCP is a plan to build the Peripheral Canal along with an associated Habitat Conservation Plan. The BDCP is cast by the Legislature for review by the Council and incorporation into the Delta Plan. Cal. Water Code § 85320. Without approval by the Council and incorporation into the Delta Plan, the Peripheral Canal is not eligible for state funding. Cal. Water Code § 85320(b). Therefore incorporation into the Delta Plan is a necessary step in the approval and ultimate construction of the Peripheral Canal. Adoption of the Delta Plan itself is also a necessary step for approval of the Peripheral Canal as failure to adopt the Delta Plan would mean the Peripheral Canal could not be incorporated into it, making construction of the canal impossible. Where an early approval is a “necessary step” in the ultimate approval of a project then the environmental impacts of that project are a reasonably foreseeable consequence of the early approval and an environmental analysis of the ultimate project must be undertaken. *Fullerton Joint Union High School Dist. v. State Bd. of Education*, 32 Cal.3d 779, 794 (1982), *disapproved on other grounds by Board of Supervisors v. Local Agency Formation Com.*, 3 Cal. 4th 903, 918 (1992). However, the PEIR fails to undertake a program level analysis of the Peripheral Canal. Rather the PEIR concludes that the “BDCP is a separate and distinct program from the Delta Pan.” PEIR at 23-28. We believe that this conclusion is inconsistent with governing law.

Practically speaking, the most significant aspect of the Delta Plan is that it provides the framework for approval and construction of the Peripheral Canal<sup>1</sup>. The Council’s most significant action is likely to be approving incorporation of the Peripheral Canal into the Delta Plan.

The Peripheral Canal project is already well defined. It involves construction of a new multi-billion dollar canal with a new point of diversion on the Sacramento River near Hood. Water will be conveyed through the canal around the Delta and directly to the export pumps for the SWP and CVP located at Clifton Court Forebay in the south Delta. Water that previously flowed through a myriad of Delta channels before reaching the export pumps will no longer do so. *See generally Draft Bay Delta Conservation Plan available at* <http://baydeltaconservationplan.com/Home.aspx> (last visited January 30, 2012). Although the BDCP process ostensibly considered alternatives to the above described canal, such as through Delta conveyance, the Canal was selected as the preferred alternative early in the BDCP process and no serious observer disputes that the SWP and CVP water contractors (“Water Contractors”) who are driving the process are well along in pushing the Canal project through. Likewise the BDCP seeks to establish flow criteria in consonance with approvals from the SWRCB that will establish a “safe yield” for water export quantities significantly greater than amounts currently exported. *Id.* A range of specific quantities for safe yield has been established in the BDCP and are being considered by the SWRCB. By avoiding entrainment of Delta Smelt, the Peripheral Canal will facilitate export of water at these increased levels.

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<sup>1</sup> The Peripheral Canal might reasonably be considered a larger project than the Delta Plan itself and the Delta Plan might be considered “a necessary precedent for action on a larger project” and approval of the Delta Plan might be considered an action that “commits the [state] to the larger project.” 14 Cal. Code Regs. §15165.

The PEIR justifies failure to analyze the specifics of the Peripheral Canal (or any water conveyance facility) with statements such as the following with respect to new conveyance facilities: “It is unclear where these facilities would be located;” PEIR at 3-3, and the “precise magnitude and extent of project-specific impacts on water resources would depend on the type of action or project being evaluated, its specific location, its total size, and a variety of project-and site-specific factors that are undefined at the time of preparation of this program-level study;” PEIR at 3-76, “At this time, the specific details of BDCP have not been defined, and because the BDCP is a voluntary program, there is no mandate to complete the BDCP within a specific schedule or with specific features or operations.” PEIR at 23-28. These statements are not accurate. Specific information on the extent, type of project, location, size, and range of water exports *is* available with regard to the Peripheral Canal at the time of preparation of this PEIR. As to the “voluntary nature” of the program. The BDCP is the highest priority with regard to the Delta of DWR, The United States Fish and Wildlife Service, The United States National Marine Fisheries Service, The United States Bureau of Reclamation, and the Water Contractors. USFWS and NMFS have taken the unusual step of becoming project proponents placing themselves in the role of lead agencies rather than the normal Cooperating Agency role for permitting agencies under NEPA. The fact that it may be in some sense “voluntary” is irrelevant. It is more than reasonably foreseeable. It is a virtual certainty that the BDCP will come before the Council in the near term. Put another way, if adoption of the BDCP isn’t a reasonably foreseeable result of adoption of the Delta Plan, then no future project could every be considered reasonably foreseeable under any circumstances and CEQA’s requirement for consideration of reasonably foreseeable impacts would be rendered a nullity.

Construction of the Peripheral Canal is a reasonably foreseeable result of adoption of the Delta Plan, adoption of the Delta Plan is a necessary step in the approval and construction of the canal, and the Council is well apprised of the specifics of the Peripheral Canal project which it will shortly be called upon to approve. The description and analysis of the Peripheral Canal in the PEIR should therefore be concrete and specific. *See* 14 Cal. Code. Regs. § 15146 (providing that the degree of specificity in an EIR should correspond to the degree of specificity with which the underlying activity is known). As it stands, the PEIR treats water exports in only the vaguest and most general terms and addresses improved conveyance facilities as a generality. There is no justification for this lack of specificity in the face of information available to the Council.

An “EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.” *Laurel Heights Improvement Ass’n*, 47 Cal. 3d 376, 405 (1988). The PEIR’s attempt to relegate the Peripheral Canal to the cumulative effects section is not consistent with *Laurel Heights*. Although we have identified the Peripheral Canal and ferreted out its scope and direction by reference to the BDCP website, “reading between the lines” of the Delta Plan, and consulting the Delta Plan PEIR cumulative effects section, a member of the public coming to the PEIR and taking it at face value would never know that the Delta Plan is in effect a well developed proposal to build a multi-billion dollar canal that will radically alter the hydrology of the Delta<sup>2</sup>. The BDCP documents are not much better. The Peripheral Canal is disguised in the BDCP as a “conservation measure” rather than a piece of water supply infrastructure. Even a persistent member of the public who would take the trouble to consult BDCP documentation in

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<sup>2</sup> The PEIR cumulative effects section does provide some detail on conveyance options and uses the word “canal” although not “Peripheral Canal”. It is odd, to say the least, that in many instances one only understands what the Delta Plan contains by consulting the PEIR.

addition to the Delta Plan PEIR, would be hard pressed to understand “the issues raised by the proposed project<sup>3</sup>.”

The “EIR process protects not only the environment but also informed self-government.” *Laurel Heights Improvement Assn. v. Regents of University of California*, 47 Cal.3d 376, 392 (1988). Only “through an accurate view of the project may the public and interested parties and public agencies balance the proposed project’s benefits against its environmental cost, consider appropriate mitigation measures [and] properly weigh other alternatives.” The PEIR is thus fatally deficient in that it fails to inform the public and the decision makers of what is actually at stake here.

**B. The PEIR Fails To Provide The Program Level Analysis Of The Peripheral Canal That The Council Needs To Make Informed Decisions About The Content And Approach Of The Delta Plan.**

An analysis of impacts that are reasonably foreseeable should be provided in a planning stage EIR if the information for the analysis is reasonably available. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova*, 40 Cal. 4th 412 (2007). It is well established that where a result is reasonably foreseeable, an EIR should make reasonable forecasts regarding that result. *San Francisco Ecology Ctr. v. City & County of San Francisco*, 48 Cal. 3d 584, 595 (1975). An analysis of the impacts of future actions should be undertaken when the future actions are sufficiently well defined to make it feasible to evaluate their potential impacts. *Environmental Protection Info. Ctr. v. Department of Forestry & Fire Protection* 44 Cal.4th 459, 503 (2008).

We are aware that proponents of the Peripheral Canal are in the process of preparing an EIR for that project (we dispense with the newspeak nomenclature promoted by the Water Contractors in the BDCP environmental documentation, such as “alternative conveyance options” and call the Peripheral Canal what it is). We do not dispute that consideration of some aspects of the Canal may be deferred to that project level documentation. Such things a site specific impacts dependent on canal alignment, and more precise consideration of diversion rates and flow criteria may be deferred to the subsequent EIR. However, the PEIR should provide a “more exhaustive consideration of effects and alternatives than in an EIR on an individual action,” ensure “consideration of cumulative impacts,” and “consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts.” 14 Cal. Code Reg. §15168(b).

The PEIR does none of these things with respect to the Peripheral Canal. We are aware that the Council will have the Peripheral Canal project EIR at its disposal when it considers incorporation of the BDCP. However, this is of little relevance as the factors the Council may consider in approving incorporation of the BDCP are statutorily limited. Cal. Water Code §

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<sup>3</sup> The words “Peripheral Canal” are nowhere used in any of the BDCP or Delta Plan documents. However, at the monthly meetings held by BDCP planners, everyone in attendance refers to the project as the Peripheral Canal and project proponents at the highest level of state government candidly admit that the restoration projects are offered to buy off opposition to the canal. The point of the exercise is to build a Peripheral Canal. One would never know this by reading the environmental documentation. As the lead agency responsible for the Delta Plan PEIR and a Responsible Agency with regard to the BDCP, the Council is culpable in perpetuating this lack of transparency.

85320(e). In fact, the Council's role is to judge the sufficiency of the project EIR in discussing and considering alternatives, not to select which alternatives are to be adopted. The PEIR acknowledges these limitations on the Council's review of the Peripheral Canal. See PEIR at 23-3–23-4. However, the PEIR and Delta Plan fail to take the necessary steps flowing from this conclusion, that the Council's role in carrying out its statutory mandate with regard to the Peripheral Canal is to build a Delta Plan that takes account of and actively manages the consequences of the canal. The water conservation requirements, groundwater recharge requirements, reduction in Delta water reliance requirements, requirements for usage of peak flow, and other active management techniques discussed throughout our comments would form a part of this management. In order to do this, the Council needs environmental analysis of the big picture effects of the Canal now, while it is formulating the Delta Plan. Not later when the plan has been approved and the Peripheral Canal comes up for incorporation. Environmental analysis must be undertaken at the earliest practical time and at a time where it will provide meaningful information to decision makers.

With regard to secondary effects, one salient secondary effect of the Peripheral Canal (and any improvement in water supply reliability) will be its growth inducing impact. Removal of constraints on water supply will spur growth. A program EIR need not be as detailed as subsequent EIRs with respect to specific projects, however the program EIR should “focus on the secondary effects that can be expected to follow from adoption” of the plan. 14 Cal. Code Regs. § 15146.

The PEIR, however, avoids any discussion of this secondary effect. DWR and the Water Contractors have taken the position that the Water Contractors are Responsible Agencies for CEQA purposes with respect to the BDCP. If this is true, then they are responsible agencies with respect to improved water supply reliability for the Delta Plan as well. A Responsible Agency is required to participate in the preparation of an EIR being prepared by the Lead Agency. It must “consider the parts of the project that are subject to its jurisdiction.” *Riverwatch v. Olivenhain Mun. Water Dist.* 170 Cal. App. 4th 1186,1202 (2009). Its findings are required “for those effects within the scope of the responsible agency's jurisdiction.” *Id.* The PEIR must consider the growth inducing impacts of the Peripheral Canal and any water supply reliability improvement. The Water Contractors are required to participate in preparation of those parts of the PEIR that consider the growth inducing impacts that may occur within their respective jurisdictions. For example, MWD must participate in preparation of the sections of the PEIR that treat the growth inducing impacts of the Peripheral Canal on Los Angeles County.

Failure to provide a program level analysis of the Peripheral Canal, including its growth inducing impacts, renders the PEIR, as currently drafted, inadequate

### **C. The PEIR Fails To Provide Program Level Analysis Of The 2-Gates Project.**

The PEIR mentions the 2-Gates project in the cumulative impacts section as a “related action.” PEIR at 22-26. The Plan provides that 2-Gates, and the other projects listed in table 22-1 “are not addressed, directly or indirectly, by the Delta Plan (i.e. the Delta Plan does not contemplate these as covered projects and makes no recommendations regarding them).” PEIR at 22-2. The logic by which the Council has arrived at this conclusion is unclear.

The 2-Gates project is a proposal by the United States Bureau of Reclamation in league with several Water Contractors to alter the turbidity regime of the south Delta. By placing operable gates across Connection Slough and Old River project proponents hope to manipulate turbidity south of the gates. The proponents believe that the Delta Smelt prefers areas of high turbidity and that by lowering the turbidity in the region surrounding the export pumps they can

avoid restrictions on pump operation designed to protect the Delta Smelt from entrainment. The 2-Gates project was temporarily withdrawn in the face of criticism that the smelt-turbidity hypothesis was unproven. In response to this criticism, USBR has undertaken a field study to prove the smelt-turbidity hypothesis. The study is nearing completion and preliminary results purport to support the smelt-turbidity hypothesis. Water Code Section 85085 makes construction of the 2-Gates project not only state policy, but a high priority for the Delta.

Even if all goes according to the best expectations of the Water Contractors the Peripheral Canal would not be operational for at least ten and probably fifteen years. The 2-Gates project is their best hope of increasing exports and escaping court-ordered pumping restrictions in the mean time. USBR has made the follow up smelt-turbidity study a priority.

The 2-Gates project is reasonably foreseeable and soon.

We do not understand the PEIR's statement that approval of 2-Gates would not be a covered action. It would be (1) a project under CEQA; (2) occur at least in part within the Delta; (3) be carried out, approved, or funded by a public agency; (4) would be covered by one or more provisions of the Delta Plan; and (5) have significant impact on the coequal goals. Water Code § 85057.5. A perusal of BDCP draft Chapter 4, Covered Activities, reveals a number of barrier projects, but not the 2-Gates project or anything fitting its description. Even on the Council's logic that anything contemplated by the BDCP need not be considered by the Council, 2-Gates would not be exempt.

The 2-Gates project has been the subject of great controversy, generating thousands of individual comments in opposition. A great deal of opposition to the 2-Gates project has come from boaters because the project would hinder navigation. Numerous environmental concerns have also been raised.

The general concept of regulating turbidity and salinity through operable gates is also the subject of a number of other proposed projects at various stages of completion.

The Council is statutorily mandated to adopt a plan that promotes water supply reliability and ecosystem health. 2-Gates purports to do both of these things. It is also state policy, as embodied in the Delta Reform Act, that it be implemented.

Unless the Council can point to some further justification that approval of 2-Gates will not be a covered action that has escaped our notice, then program level analysis of this project is required.

#### **IV. CONCLUSION**

For the foregoing reasons, we respectfully request that significant revisions to the Delta Plan and PEIR be undertaken to render them consistent with law and to address the flaws in approach and management we have endeavored to point out.

Submitted,

s/Michael Brodsky  
Michael A. Brodsky

State of California  
The Resources Agency  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF FLOOD MANAGEMENT

## Fact Sheet

# Sacramento River Flood Control Project Weirs and Flood Relief Structures



December 2010  
Flood Operations Branch

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## Overview

Sacramento Valley has a history of floods and management of floods that goes back as long as people have populated the region. Prior to flood management, the valley floor would be blanketed by seasonal runoff nearly every year; the Sacramento Valley was once nicknamed the “inland sea.” This tendency to flood results from the geography of the region as well as the weather. The occasionally large amounts of rain that fall in the surrounding Coastal ranges and the relatively steep Sierra Nevada mountain ranges produce rapid surface water runoff to the Sacramento River. The amount of this surface water runoff can be quite large, depending on the amount of rainfall, snow melt, and soil moisture of the watershed. Fast water flowing from the mountains is blunted by the relatively shallow grade of the Sacramento River south of the city of Red Bluff, and would often overtop the river banks. In addition, The Sacramento River would begin depositing sediment in the more shallow grades that would often alter its direction of flow. In order to control these storm flows that would otherwise flood farmland and cities, the Sacramento River Flood Control Project (the Project) was created.

The Project was designed with the understanding that runoff from many of the storm events experienced in the Sacramento River watershed cannot be contained within the banks of the river. Nor could this flow be fully contained within a levee system without periodically flooding adjacent property. Thus, the Project was designed to occasionally spill through a system of weirs and flood relief structures into adjacent basins. These basins are designed to contain flood waters and channel them downstream, to eventually be conveyed back into the Sacramento River near Knights Landing and Rio Vista. Dry weather flows are contained within levees near the river banks and land within the flood basins is then used for agricultural purposes.

There are ten overflow structures in the Project (six weirs, three flood relief structures, and an emergency overflow roadway) that serve a similar function as pressure relief valves in a water supply system. Weirs are lowered sections of levees that allow flood flows in excess of the downstream channel capacity to escape into a bypass channel or basin.

All six weirs of the Project (Moulton, Colusa, Tisdale, Fremont, Sacramento, and Cache Creek) consist of the following: (1) a fixed-level, concrete overflow section; followed by (2) a concrete, energy-dissipating stilling basin; with (3) a rock and/or concrete erosion blanket across the channel beyond the stilling basin; and (4) a pair of training levees that define the weir-flow escape channel.

All overflow structures except the Sacramento Weir pass floodwaters by gravity once the river reaches the overflow water surface elevation. The Sacramento Weir has gates on top of the overflow section that hold back floodwaters until opened manually by the Department of Water Resources' Division of Flood Management.

Four other relief structures are concentrated along 18 river miles between Big Chico Creek (River Mile 194) and the upstream end of the left (east) bank levee of the Sacramento River Flood Control Project (near River Mile 176). These structures function like weirs but are not called weirs because they do not have all four structural characteristics previously described. All of these relief structures convey water into the Butte Basin (a natural trough east of the river) upstream of the levee system designed to guide the flood waters.

Three of the structures are designated as flood relief structures (M&T, 3B's, and Goose Lake). If these three fail as designed a raised 6,000-foot roadway near the south end of Parrott Ranch allows excess floodwaters to escape the Sacramento River to the Butte Basin before being confined by the downstream project levees.

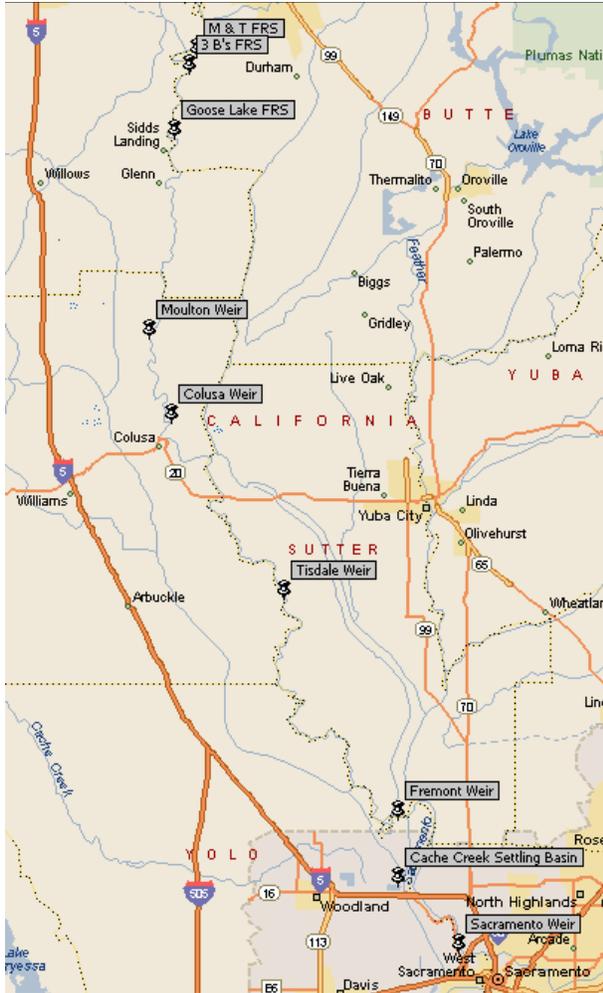


Figure 1 (above), Location Map for Weirs and Relief Structures in the Sacramento River Flood Control Project

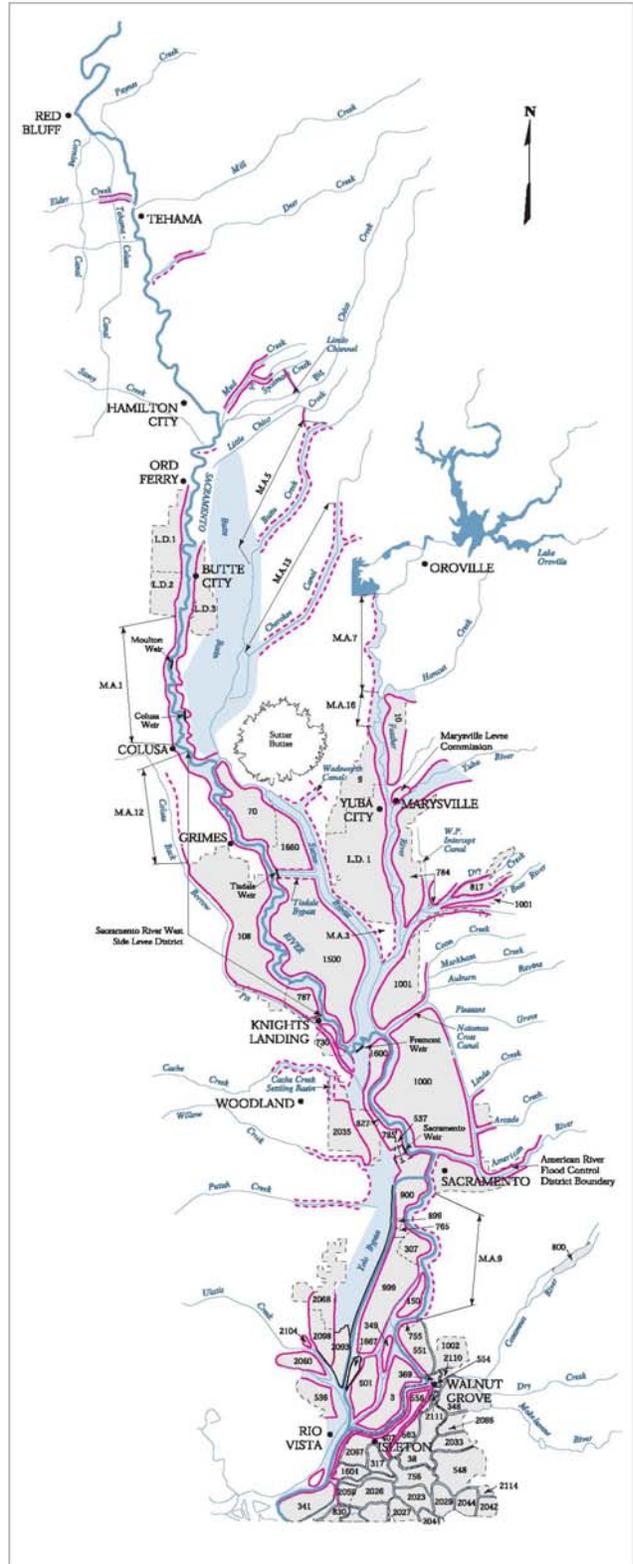


Figure 2 (right), Sacramento River Flood Control Project Overview, showing project levees and basins

### **Moulton Weir**

Moulton Weir was completed in 1932. It is located along the easterly side (left bank looking downstream) of the Sacramento River approximately eight miles north of the town of Colusa and about 100 miles north of Sacramento. Its primary function is to release overflow waters of the Sacramento River into the Butte Basin at such times when floods exceed the safe carrying capacity of the main channel of the Sacramento River downstream from the weir. The fixed crest reinforced concrete weir is 500 feet long with concrete abutments at each end. The outlet channel is flanked by training levees and is approximately 3,000 feet long. The crest elevation is 76.75 feet and the project design capacity of the weir is 25,000 cubic feet per second (cfs). The Moulton Weir is typically the last of the non-gated weirs to overtop, and spills for the shortest duration.



**Figure 3, Moulton Weir, January 1997**

### **Colusa Weir and Bypass**

Colusa Weir was completed in 1933. It is located along the left bank of the Sacramento River one mile north of the town of Colusa. Its primary function is to release overflow waters of the Sacramento River into the Butte Basin. The fixed crest reinforced concrete weir is 1,650 feet long and is flanked by training levees that connect the river to the basin. The crest elevation is 61.80 feet and the project design capacity of the weir is 70,000 cfs. Normally, the Colusa Weir does not overtop until the Tisdale Weir is also spilling, except for flood events that are characterized by rapid rise in Sacramento River stage.



**Figure 4, Colusa Weir, January 1997**

### Tisdale Weir and Bypass

Tisdale weir was completed in 1932. It is located along the left bank of the Sacramento River about ten miles southeast of the town of Meridian and about 56 miles north of Sacramento. Its primary purpose is to release overflow waters of the Sacramento River into the Sutter Bypass via the Tisdale Bypass. The fixed crest reinforced concrete weir is 1,150 long. The four-mile leveed bypass channel (Tisdale Bypass) connects the river to the Sutter Bypass. The crest elevation is 45.45 feet and the project design capacity of the weir is 38,000 cfs. Typically, the Tisdale Weir is the first of the five weirs in the Sacramento River Flood Control System to overtop, and continues to spill for the longest duration.



Figure 5, Tisdale Weir and Tisdale Bypass (Sutter Bypass in background, January 1997)

### Fremont Weir

Fremont Weir was completed in 1924. It is the first overflow structure on the river's right bank and its two-mile overall length marks the beginning of the Yolo Bypass. It is located about 15 miles northwest of Sacramento and eight miles northeast of Woodland. South of this latitude the Yolo Bypass conveys 80 percent of the system's floodwaters through Yolo and Solano Counties until it connects to the Sacramento River a few miles upstream of Rio Vista. The weir's primary purpose is to release overflow waters of the Sacramento River, Sutter Bypass, and the Feather River into the Yolo Bypass. The crest elevation is 33.50 feet and the project design capacity of the weir is 343,000 cfs.



Figure 6, Fremont Weir (Sutter Bypass on left, and Yolo Bypass on right)

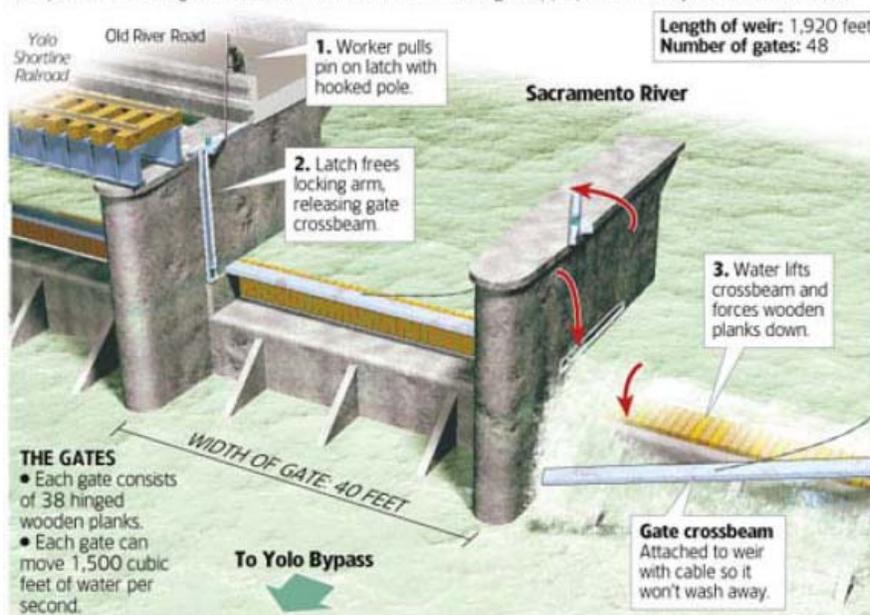
### Sacramento Weir and Bypass

The Sacramento Weir was completed in 1916. It is the only weir that is manually operated – all others overflow by gravity on their own. It is located along the right bank of the Sacramento River approximately 4 miles upstream of the Tower Bridge, and about 2 miles upstream from the mouth of the American River. Its primary purpose is to protect the City of Sacramento from excessive flood stages in the Sacramento River channel downstream of the American River. The weir limits flood stages (water surface elevations) in the Sacramento River to project design levels through the Sacramento/West Sacramento area. The project design capacity of the weir is 112,000 cfs.

It is 1,920 feet long and consists of 48 gates that divert Sacramento and American River floodwaters to the west down the mile-long Sacramento Bypass to the Yolo Bypass. Each gate has 38 vertical wooden plank "needles" (4 inches thick by 1 foot wide by 6 feet long), hinged at the bottom and retained at the top by a hollow metal beam. The beam is manually released using a latch. Flood forecasters provide the necessary predictive information to weir operators who manage the number of opened gates in order to control the river's water surface elevation. Closing the hinged gates is a more laborious process than opening them. While opening a gate takes only a matter of minutes, closing it can take up to an hour. Long, hooked poles are used to raise each gate from its free open position to the vertical upright position. The hollow metal beam is then replaced, and the gate is released and allowed to rest against it.

### How the Sacramento Weir works

The Sacramento Weir is the only gated weir on the Sacramento River system. It is cumbersome and expensive to operate, and questions have long been asked about whether its 1916 design is appropriate for today's flood-control needs.



**Figure 7. Diagram Depicting the Opening of the Sacramento Weir.**  
*Appeared in the Sacramento Bee on January 5, 2006.*

The Department of Water Resources operates the weir according to regulations established by the U.S. Army Corps of Engineers. The opening and closing criteria have been optimized to balance two goals: (1) minimize sediment deposition due to decreased flow velocities downstream from the weir to the mouth of American River; and (2) limit the flooding of agricultural lands in the Yolo Bypass until after they have been inundated by floodwaters over Fremont Weir.

Though the weir crest elevation is 24.75 feet, the weir gates are not opened until the river reaches 27.5 feet at the I Street gage with a forecast to continue rising. This gage is about 1,000 feet upstream from the I Street Bridge and about 3,500 feet downstream from the mouth of the American River. The number of gates to be opened is determined by the NWS/DWR river forecasting team to meet either of two criteria: (1) to prevent the stage at the I Street gage from exceeding 29 feet, or (2) to hold the stage at the downstream end of the weir to 27.5 feet. Once all 48 gates are open, Sacramento River stages from Verona to Freeport may continue to

rise during a major flood event. Project design stages are 41.3 feet at Verona, 31.5 feet at the south end of the Sacramento Weir, and 31 feet at the I Street gage.



**Figure 8, Sacramento Weir with Yolo Bypass in foreground, January 1997**



**Figure 9, Sacramento Weir with American River in background, March 1995 (30,000 cfs)**

During a major flood, opening the weir gates at river stages below 27.5 feet does not reduce ultimate peak flood stages in the Sacramento River from Verona to Freeport. Diversion of the majority of upstream floodwaters to the Yolo Bypass from Fremont Weir controls Sacramento River flood stages at Verona.

Downstream of the Sacramento Weir, the design flood capacity of the American River is 5,000 cfs higher than that of the Sacramento River. Flows from the American River channel during a major flood event often exceed the capacity of the Sacramento River downstream of the confluence. When this occurs, floodwaters flow upstream from the mouth of the American River to the Sacramento Weir.

The weir gates are closed as rapidly as practicable once the stage at the weir drops below 25 feet. This provides "flushing" flows to re-suspend sediment deposited in the Sacramento River between the Sacramento Weir and the American River during the low flow periods when the weir is open during the peak of the flood event.

A rating table has been developed to estimate flow over the Sacramento Weir into the Yolo Bypass (Table 1). This table can be used to calculate both the approximate discharge per open gate and, for higher stages, the approximate discharge over closed gates as well. All stages are listed with respect to USGS mean sea level datum.

Table 1. Rating Table for the Sacramento Weir.

		Discharge over Weir Crest per Open Gate (cfs)									
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Sacramento River Stage at Gage Opposite of Weir - ft (USGS)	22	0	3	8	14	22	30	40	50	61	73
	23	86	100	114	130	146	163	181	199	218	238
	24	258	279	301	323	346	370	394	419	445	471
	25	498	525	552	581	610	639	669	699	730	762
	26	794	826	859	893	927	961	996	1031	1067	1103
	27	1140	1177	1215	1253	1291	1330	1370	1410	1450	1490
	28	1531	1573	1615	1657	1700	1743	1786	1830	1874	1918
	29	1963	2008	2054	2100	2146	2193	2240	2288	2336	2384
	30	2432	2481	2530	2580	2630	2680	2730	2781	2832	2884
	31	2936	2988	3041	3094	3147	3200	3254	3308	3362	3417
			Discharge over each Closed Gate (cfs)								
	28	0	4	11	20	30	41	54	68	82	98
	29	115	132	151	171	191	212	234	256	280	304
	30	329	355	381	408	436	465	494	524	554	585
	31	617	650	683	717	752	787	823	860	897	935

**Cache Creek Settling Basin and Weir**

The Cache Creek Settling Basin and Weir were originally completed between the late 1930's through the early 1950's. The basin was expanded and the new weir was completed in 1991. It is located in Yolo County about two miles east of the City of Woodland. Its primary purpose is to preserve the floodway capacity of the Yolo Bypass by entrapping the heavy sediment load carried by Cache Creek before its waters pour into the bypass. The basin is bound by levees on all sides and covers approximately 3,600 acres. The roller compacted concrete weir is 1,740 feet long along the east levee of the basin and controls discharge to the bypass. The project design capacity of the weir is 30,000 cfs, which is also the maximum capacity of the upstream Cache Creek channel system.



**Figure 10, Cache Creek Settling Basin Weir, March 1995**

Overflow records for Moulton, Colusa, Tisdale, Fremont, and Sacramento Weirs from 1934 through 2007 are found on the following pages. Subsequent years will be added as the charts are updated.



Season of	October					November					December					January					February					March					April					May					Peak Stage / Remarks
	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	
1971-72																																					No flow				
1972-73																																					No flow				
1973-74																																				No flow					
1974-75																																				No flow					
1975-76																																				No flow					
1976-77																																				No flow					
1977-78																																				No flow					
1978-79																																				No flow					
1979-80																																				No flow					
1980-81																																				No flow					
1981-82																																				Record stage 83.71 feet, 3/3/83					
1982-83																																				No flow					
1983-84																																				No flow					
1984-85																																				No flow					
1985-86																																				No flow					
1986-87																																				No flow					
1987-88																																				No flow					
1988-89																																				No flow					
1989-90																																				No flow					
1990-91																																				No flow					
1991-92																																				No flow					
1992-93																																				No flow					
1993-94																																				No flow					
1994-95																																				No flow					
1995-96																																				No flow					
1996-97																																				No flow					
1997-98																																				82.20 feet					
1998-99																																				77.07 feet					
1999-00																																			No flow						
2000-01																																				No flow					
2001-02																																				No flow					
2002-03																																				78.31 feet					
2003-04																																				78.17 feet					
2004-05																																			80.18 feet						
2005-06																																			No flow						
2006-07																																				No flow					
2007-08																																				No flow					
2008-09																																				No flow					
2009-10																																				No flow					

Note: Data compiled from records of DWR stream gaging station: Sacramento River at Moulton Weir (MLW)  
 Datum: 0=0' U.S.E.D. Period of Record 1935 to 2008  
 Crest Elevation: 76.75 feet  
 Designates period of flow over weir

Season of	Colusa Weir Overflow Period of Record												Peak Stage / Remarks			
	October	November	December	January	February	March	April	May	May	April	March	February				
	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	5 10 15 20 25	
1934-35																
1935-36																
1936-37																
1937-38																
1938-39																
1939-40																
1940-41																
1941-42																
1942-43																
1943-44																
1944-45																
1945-46																
1946-47																
1947-48																
1948-49																
1949-50																
1950-51																
1951-52																
1952-53																
1953-54																
1954-55																
1955-56																No flow
1956-57																
1957-58																
1958-59																
1959-60																
1960-61																
1961-62																
1962-63																
1963-64																
1964-65																
1965-66																
1966-67																
1967-68																
1968-69																
1969-70																
1970-71																
1971-72																No flow
1972-73																
1973-74																No flow
1974-75																No flow
1975-76																No flow
1976-77																No flow
1977-78																

Note: Data compiled from records of DWR stream gaging station: Sacramento River at Colusa Weir (CLW)  
 Datum: 0=0' U.S.E.D. Period of Record 1935 to 2008  
 Crest Elevation: 61.80 feet  
 ■ Designates period of flow over weir

Season of	October			November			December			January			February			March			April			May			Peak Stage / Remarks		
	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25		5	10
1971-72																										No flow	
1972-73																											No flow
1973-74																											No flow
1974-75																											No flow
1975-76																											No flow
1976-77																											No flow
1977-78																											No flow
1978-79																											No flow
1979-80																											No flow
1980-81																											No flow
1981-82																											No flow
1982-83																											No flow
1983-84																											Record stage 68.96 feet. 3/4/83
1984-85																											No flow
1985-86																											No flow
1986-87																											No flow
1987-88																											No flow
1988-89																											No flow
1989-90																											No flow
1990-91																											No flow
1991-92																											No flow
1992-93																											No flow
1993-94																											No flow
1994-95																											No flow
1995-96																											No flow
1996-97																											No flow
1997-98																											No flow
1998-99																											Flow ended June 7th
1999-00																											No flow
2000-01																											No flow
2001-02																											No flow
2002-03																											No flow
2003-04																											No flow
2004-05																											No flow
2005-06																											No flow
2006-07																											No flow
2007-08																											No flow
2008-09																											No flow
2009-10																											No flow

Note: Data compiled from records of DWR stream gaging station: Sacramento River at Colusa Weir (CLW)  
 Datum: 0=0' U.S.E.D. Period of Record 1935 to 2008  
 Crest Elevation: 61.80 feet  
 ■ Designates period of flow over weir







Fact Sheet, Sacramento River Flood Control System Weirs and Flood Relief Structures

Season of	October			November			December			January			February			March			April			May			Peak Stage / Remarks
	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	5	10	25	
1971-72																								No flow	
1972-73																									No flow
1973-74																									No flow
1974-75																									No flow
1975-76																									No flow
1976-77																									No flow
1977-78																									No flow
1978-79																									No flow
1979-80																									No flow
1980-81																									No flow
1981-82																									No flow
1982-83																									No flow
1983-84																									No flow
1984-85																									No flow
1985-86																									No flow
1986-87																									No flow
1987-88																									No flow
1988-89																									No flow
1989-90																									No flow
1990-91																									No flow
1991-92																									No flow
1992-93																									No flow
1993-94																									No flow
1994-95																									No flow
1995-96																									No flow
1996-97																									No flow
1997-98																									No flow
1998-99																									No flow
1999-00																									No flow
2000-01																									No flow
2001-02																									No flow
2002-03																									No flow
2003-04																									No flow
2004-05																									No flow
2005-06																									No flow
2006-07																									No flow
2007-08																									No flow
2008-09																									No flow
2009-10																									No flow

Note: Data compiled from records of DWR stream gaging station: Sacramento River at Freemont Weir (FRE), West End  
 Datum: 0=0' U.S.E.D. Period of Record 1935 to 2008 Crest Elevation: 33.50 feet  
 ■ Designates period of flow over weir





**Sacramento Valley Flood Control Historical Timeline**  
(Based on *Battling the Inland Sea*, by Robert Kelley)

1849	U.S. Congress passes Swamp Land Act of 1849
1850	Swamp Land Act of 1850
January 7, 1850	City of Sacramento floods
March, 1850	Another storm hits Sacramento. Hardin Bigelow organizes flood fighting party and successfully dams most low points along American and Sacramento Rivers (Bigelow soon becomes Mayor of Sacramento)
1851	First levees built in Sacramento (3-feet high)
December, 1852	First levees built in Sacramento failed
March, 1853	Second flood of season (larger than first) inundates Sacramento
May 31, 1861	AB 54 (State Reclamation Act) passed – Swamplands Commission created, tasked with statewide flood control program development
1861	Andrew Humphreys of the U.S. Army Corps of Engineers (USACE) submits Mississippi River flood study to U.S. Congress – Advocates levees only, main channel flood control approach (All storm flow to remain within levees, and assumption that river will scour out material from the bed to accommodate additional flow)
1862	City of Sacramento Levee District created
March 22, 1866	AB 591 passes – State-wide Swampland Commission dissolved (Reclamation authority delegated to county boards of supervisors)
1867 – 1880	Reclamation districts upstream and downstream of Colusa race each other to construct levees on each bank of Sacramento River
April 13, 1868	Sacramento Valley Levee District 1 (Sutter County) created
May 30, 1868	Green Act (named for <i>Colusa Sun</i> editor William S. Green, who authored the bill) passes – Greatly reduces County authority to block reclamation projects. William Green is also the earliest known figure to call for a system of flood overflow basins for the Sacramento River
December 6, 1871	Colusa-area swampland owner, William Parks completes construction of earthen dam across Butte Slough, the effect of which will inundate the property of others upstream

December 27, 1871	Parks Dam is cut by parties unknown; releasing pooled floodwaters downstream – Dam is rebuilt in following year
January 19, 1874	Parks Dam fails
December 28, 1874	L.F. Moulton proxy and Parks Dam flood victim, Justin Laux v. William Parks: Suit is dismissed when Parks purchases Laux's farm
January, 1875	Marysville inundated by water and mining sediment via Yuba River – Mining sediment from hydraulic mining operations had for several years been polluting rivers and settling in river beds, thus raising the bed elevation, and causing more frequent flooding and more extensive damage to adjacent properties
January 25, 1875	Parks Dam fails again
May 7, 1875	William Parks petitions for creation of swampland district
June 3, 1875	County Supervisors deny Parks' request to rebuild dam
June 16, 1875	William Parks' Swampland District (SLD) 226 created – Construction of dam recommences
January 5, 1876	Floodwaters impounded by Parks Dam breach Reclamation District (RD) 70 levee; flooding farm properties downstream
January 8, 1876	Thirty to Forty armed men from RD 70 form naval party to successfully destroy Parks Dam
March 4, 1876	Judge Phil. Keyser issues injunction against Parks' and SLD 226 dam construction
March, 1878	Drainage Bill enacted – Independent public commission would establish drainage districts; State Engineer would plan projects (based on levees only); Districts would raise and expend taxes, construct and operate projects
March, 1879	Judge Phil. Keyser issues injunction against Bear River mining operations, citing Equity Clause
November, 1879	State Supreme Court overturns Keyser's injunction
January 21, 1880	California's first State Engineer, William Hammond Hall, submits Irrigation/Flood Control Report to State Legislature – A damning report on the mining operations' environmental destruction that advocated State control of drainage
September 26, 1881	Drainage Act declared unconstitutional – Act was not created by State Legislature

January, 1884	Edwards Woodruff v. North Bloomfield Gravel Mining Company-- Prohibited the discharge of mining waste in surface waters
February, 1891	USACE's Biggs Commission Report asserts mining operations may continue, with mining companies construction of debris dams, and Federal restoration of natural river channels downstream
March, 1893	Caminetti Bill (based on Biggs Commission Report findings) signed by President Benjamin Harrison – Establishes California Debris Commission
December, 1894	Marsden Manson & C.E. Grunsky, (consulting engineers working for State Commissioner of Public Works, A.H. Rose,) issue <i>Marsden &amp; Grunsky Report for Sacramento Valley Flood Control</i> , and present it to California Governor – First comprehensive report that advocated bypass channels (William Green had asserted this need three decades earlier)
January, 1896	Flood of '96 – Many mining debris dams (products of Biggs Commission recommendations) fail, sending waste downstream
March, 1896	Rivers and Harbors Act enacted in Congress -- \$250K appropriated (none of which was for mining assistance)
May, 1902	River Improvement and Drainage Association of California created
May 11, 1904	San Francisco Chronicle editor and Commonwealth Club founder, Edward Adams' public presentation on statewide flood control and reclamation – A retelling of California reclamation history to date, and a call for State and Federal governments to assert control of future planning
1904	U.S. Army Corps of Engineers' Dabney Commission issues report that rejects the Manson & Grunsky Report's findings of the need for bypass channels and a design flood of 300,000 cfs. Advocates levees only main channel approach and a design flood of 250,000 cfs
March 19, 1907	Flood of '07 – First flood event to occur with USGS staff gages in place to measure river levels – Observed flow calculated to be 600,000 cfs (more than <i>double</i> the Dabney design flood) Feather River dumps into Butte Sink, Yuba City & Shanghai Bend Sacramento River jumps banks both north and south of Colusa
1907	USACE's California Debris Commission expands navigation assurance role to include flood control
1909	Flood of '09 – Nearly as large as the Flood of '07
1910	Thomas H. Jackson of the USACE produces the "Jackson Report"; the foundational plan for the Sacramento Flood Control Project – employing the Manson & Grunsky Report's bypass channels, only with a design flood of 600,000 cfs
1911	State Flood Control Act enacted

1913	State Reclamation Board given greater authority
1913	Dredging of the mouth of the Sacramento River begins – Continues through the 1920s
1917	Congress enacts Flood Control Act – Includes funding for the Sacramento Flood Control Project, but largely limited to navigation related tasks
1928	Flood Control Act of '28 – Enacted as a response to the Mississippi Flood of '27, and adds flood control to USACE directives
1936	Flood Control Act of '36 – Promotion of multi-purpose water resource projects for USACE purview
February 11, 1986	Flood of '86 – 600,000 cfs (maximum design flow) pours into Sacramento-San Joaquin Delta via Sacramento River and Yolo Bypass. Only upstream flood control reservoirs prevent approximately <i>one million</i> cfs from severely testing the Sacramento Flood Control Project. As a result, the system largely works as designed
January 3, 1997	Flood of '97 – nearly 600,000 cfs again pours into Sacramento-San Joaquin Delta via Sacramento River and Yolo Bypass. Only upstream reservoirs prevent approximately one million cfs from inundating the Sacramento Flood Control Project.