WATER & POWER
Serving Central California since 1887

(209) 883.8300 • www.tid.com
333 East Canal Drive • P.O. Box 949 • Turlock, CA 95381-0949

LATE COMMENT

March 29, 2013

Via E-mail with Hardcopy to Follow

Jeanine Townsend
Clerk of the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95814-0100

RE: Comment Letter – Bay-Delta Plan SED

Dear Ms. Townsend:

We appreciate the opportunity to provide comments on the Draft Substitute Environmental Document (SED). The following comments were developed and are intended to supplement oral and written comments previously submitted by the San Joaquin Tributaries Authority (SJTA) and the Turlock Groundwater Basin Association (TGBA), as well as the Turlock Irrigation District (TID or District). As proposed, the SED would devastatingly impact water resources in our region and have a cascading effect on local jobs and the economy. We trust the State Water Resources Control Board will address these comments as they prepare revisions to the proposed program in the coming months.

Located in the Central Valley, and the heart of the area to be impacted by the proposed action, the TID has a significant stake in this process. TID, as a part of the SJTA, provided detailed comments as the SED was being prepared. TID and the other agencies of the SJTA not only represent the areas to be most impacted, but also represent the agencies with the most in depth knowledge of the resources in question. Yet it appears as though the information provided has been ignored. The comments submitted by SJTA, both before and after the SED was distributed, must be thoroughly reviewed and addressed.

The first irrigation district formed in California, TID has spent over 125 years developing and implementing water management strategies to maximize the beneficial use of the water resources entrusted to it by the State of California. Not only has TID developed facilities to transport water supplies to irrigation customers, the water is also used to generate clean energy, provide safe, affordable recreation, recharge the groundwater system, and provide flows for environmental purposes. While irrigation was the District's initial goal, with the construction of the canals and

reservoirs, TID recognizes the importance each of these other functions, and has invested significant time, energy and resources to ensuring their development and long-term sustainability. As proposed, the SED would adversely impact the continued success of these programs.

The SED implies that the resources are not currently balanced, and that additional water should be released to the river, regardless of the local "unavoidable" impacts the proposed action identifies. Rather than consider non-flow related alternatives to address the issue, the SED requires additional instream flows, and in doing so assigns more importance to the fishery than to the other beneficial uses the SWRCB is entrusted to protect. A more balanced approach would be to implement non-flow related actions first before considering additional instream flows.

The SED also implies that local agriculture is not currently using the water entrusted to it in the most efficient manner. That's not the case. In fact TID and its customers make every effort to ensure the water is used efficiently. Not only do we make use of the water in multiple ways but the system has been shown to be extremely efficient in delivering water, and helping to recharge the groundwater aquifer relied upon by the community for its water supply. The proposed increases in instream flows would unravel this system, severely impacting agricultural production within the Turlock subbasin, and making the groundwater system that everyone, not just agriculture, relies upon for supply. Additional information about TID's irrigation system and why it is so efficient in meeting local needs, is available in the Agricultural Water Management Plan (AWMP) adopted by the TID in December 2012 (http://www.tid.org/water/water-management/agricultural-water-management-plan), and the Turlock Groundwater Basin Groundwater Management Plan (GWMP) adopted by TID in March 2008 (http://www.water.ca.gov/wateruseefficiency/sb7/docs/AgWaterUseReport-FINAL.pdf). Both are available online, with the web addresses provided. Information in these plans should be used to provide accurate information regarding the local area, and correct inaccurate assumptions regarding crops grown, water use, groundwater supply and other factors within the SED and discussed below.

TID owns and operates approximately 230 miles of canals, running from LaGrange to the valley floor, of which 207 miles (or 90%) are fully or partially lined. From the canal, customers have built and continue to maintain and upgrade hundreds of miles of ditches and pipelines which convey the water to individual parcels. Water is diverted at LaGrange Reservoir, after which it flows by gravity through several power plants before being delivered to the farm. Water is used for recreation purposes, both at Don Pedro Reservoir and Turlock Lake, and along some of the canals which include bike routes and green ways.

TID's distribution system is very efficient. The vast majority of water diverted for irrigation is either consumed by the crop, or recharges the aquifer. The water balance within the AWMP documents that fact. A very small percentage of the water supply spills back to the river for use downstream. The only real "losses" are from evaporation. The canal system was designed to maximize delivery of water and minimize spills. The upper portion of the system spills into the lower canals where it becomes a part of the supply delivered downstream. Most of the land within TID is relatively flat, with level basins. The vast majority of water applied to the land for irrigation is either consumed by the crop or percolates into the groundwater system. There is very little surface water runoff. In fact, only 10,900 acres (less than 7% of TID's irrigable acreage) have access to surface water drains, some of which drain back into the system. Even though the system is already efficient, TID continues to

evaluate improvement opportunities, from installing canal telemetry to sidegate measurement and regulating reservoirs, and invest significant resources toward maintenance and upgrades to maximize supplies and meet customer needs.

The TID irrigation delivery system efficiency was analyzed in the recently adopted AWMP, which provides two different approaches to quantifying the system efficiency. First, the "*delivery fraction*" or the amount delivered divided by the total supply, averaged 85% over the last 5 years. Undelivered water includes canal spills, evaporation, and seepage losses, the majority of which is not lost. Canal seepage recharges the aquifer. Canals spill to the adjacent rivers, and are reused downstream. The "*water management fraction*" (calculated as the outflows available for beneficial use divided by total supply), takes these other uses (i.e. recharge and other recoverable flows) into consideration, and is one of the Department of Water Resources recommended methods for quantifying the efficiency of agricultural water use (http://www.water.ca.gov/wateruseefficiency/sb7/docs/AgWaterUseReport-FINAL.pdf). TID's *water management fraction* averages 99%. In other words, nearly all the water is either consumed by the crop, provides recharge to the groundwater system or, to a lesser extent, spills back to the river for reuse downstream.

The AWMP water balance estimates 243,200 acre-feet per year has been recharged to the through TID's conjunctive management practices between 1991 and 2011. During the same timeframe, the AWMP shows that Tuolumne River water provided between 79% (dry year average) and 84% (normal and wetter year average) of total irrigation supplies. Therefore, the vast majority of recharge came from surface water diverted from the Tuolumne River.

The GWMP developed for the Turlock Groundwater Basin, and adopted by TID in 2008, provides a detailed analysis of the Turlock Subbasin's water supplies. It describes how groundwater is relied upon for all uses (i.e. urban, rural domestic, industrial, commercial and agricultural), with the exception of surface water irrigation deliveries by TID and to a lesser extent Merced ID. The GWMP emphasizes the importance of surface water recharge to the subbasin.

As discussed in the TGBA's comment letter (dated March 28, 2013), the subbasin is currently overdrafted on the eastern side, due to groundwater pumping outside of the TID's boundaries, in an area without access to surface water supplies. The SED estimates there are nearly 300,000 acres irrigated within the Turlock Subbasin, just over half of which has access to surface water. The remainder (mainly to the east of TID) relies on groundwater for their supply. Rainfall in this area averages 13 inches per year, much of which rolls off of the hills to the east of TID. The overdraft in this area has formed a cone of depression on the eastern side of the subbasin, changing how TID and the other agencies in the subbasin manage their resources. While TID used to rely more heavily on the groundwater, particularly in drier years, the groundwater level declines on the eastern side of the subbasin have reduced TID's ability to do so.

Up until the 1970's, it was not uncommon for TID to pump 120,000 acre-feet in normal or wetter years, and over 300,000 acre-feet in dry years (e.g. TID pumped 310,700 acre-feet in 1977). However, when TID pumped 285,400 acre-feet in 1988, groundwater levels declined substantially, and 309 domestic wells were impacted. The cone of depression has changed the dynamics of the

subbasin such that even one year of increased pumping of the magnitude envisioned by the SED has the ability to impact groundwater levels dramatically.

TID revised its water supply strategies substantially after 1988. It no longer pumps as heavily in dry years, making every effort to maximize surface water supplies, and recharge in wetter years. TID's management practices include minimizing pumping on the eastern side of the District, delivering mainly surface water to that area and focusing groundwater pumping to supplement supplies on the western portion of the District where groundwater levels have been more stable. With these practices in place, TID pumping in normal and wetter years has been reduced to about 90,000 acre-feet per year. In recent dry years, TID successfully pumped between 100,000-120,000 acre-feet/year in dry years, by systematically operating wells and rotating wells pumped to minimize localized impacts. Without the recharge from surface water supplies, these levels could not be achieved.

The impacts to groundwater supplies are not adequately evaluated in the SED, which substantially underestimates the impacts. The SED states that "*With increased groundwater pumping to replace surface water diversions, the groundwater levels may decline as a result of the increase pumping and slightly reduced recharge below lands currently irrigated with surface water.*" (SED, p. 9-23). It goes further and implies that if groundwater is used to make up of the proposed reductions in Tuolumne River supplies, and the impacts would result over time. In doing so, it fails to recognize the current groundwater conditions.

In its analysis, the SED simply identifies an additional amount of pumping that it deems needed to make up for the lost surface water supplies, in an average year. The use of averages, dilutes the magnitude of the impact. Rarely are there "average" years. Instead, the analysis needs to consider dry cycles, and represent the range of possible outcomes. Even if the averages are used, the additional groundwater pumping is estimated by the SED analysis to increase by 115,000 acre-feet per year, on top of the current pumping, making average pumping levels more than double what is currently pumped by TID. At the same time, surface water diversions are decreased by an average of 143,000 acre-feet per year, which will result in less recharge. The additional pumping alone would far exceed the current volumes which are bolstered by the current recharge. The SED does not even make an effort to understand the potential impacts of the reductions in surface water recharge, combined with increased pumping. Reductions in recharge from surface water are not independent of the increased pumping. They are interrelated, and the impacts are cumulative. Only modeling can provide that type of analysis.

The groundwater system is simply not capable of replacing the reduced surface water diversions. As a result, the impacts both to local water supplies, the local communities that rely on the supply for drinking water, irrigation and other uses have been severely underestimated. In fact, the SED indicates that under Alternative 3, that, "*It is not expected that the impact to groundwater resource in these subbasins would occur at the same time as the impact or reduction to overall water supply. An increase in pumping ...would occur over time, and the physical changes... would occur over time.*" (SED, p. 9-26) Experience from 1988, as described above, when significantly increased pumping combined with reduced surface water supplies impacted groundwater over a one year timeframe shows that that is simply not the case. The erroneous conclusion is reached because no effort was made to consult with TID or to model the potential impacts to groundwater. That must be remedied.

In addition to concerns about impacts to groundwater supply, the actions proposed by the SED would result in significant water quality issues that are not adequately evaluated. The Tuolumne, Merced and San Joaquin rivers in the vicinity of the Turlock subbasin are generally gaining streams (e.g. groundwater flows into the stream) as described in the GWMP. Current groundwater levels allow groundwater containing salts to flow naturally to the river system, helping to maintain a salt balance. Groundwater level declines could reduce or eliminate the outflow of salt, creating a saline sink. Additionally, lower groundwater levels near the San Joaquin River could allow highly saline groundwater on the western side of the river to migrate into the Turlock subbasin, further increasing the subbasin's salinity.

Once groundwater quality is degraded there may be little if anything that can be done to reverse these affects. The SED analysis contains little if any evaluation of water quality impacts, which could include increased salinity, expensive treatment for drinking water supplies and other uses, reduced ability to grow certain crops, or increased water demand flush the accumulation of salts from the soils. The SED should be revised to evaluate and mitigate groundwater quality impacts.

Additionally, groundwater inflows to the river help to create cooler river pools which provide refuge in the warm summer months. An accretion/depletion study recently conducted on the Tuolumne River, as a part of the Don Pedro relicensing process, provides valuable information regarding this particular issue. The study was done in conjunction with the W&AR-02 study entitiled Accretion/Depletion Measurement Locations Memo (June 6, 2012) (FERC submittal #20130319-5040). Groundwater levels would decline significantly under the proposal, resulting in the current gaining river reaches (where groundwater flows into the river) becoming loosing reaches, eliminating the cool water inflows, causing warmer river temperatures and adversely impacting the aquatic environment. The potential for these and other redirected impacts are not identified, and must be evaluated.

As described above, the analysis of groundwater impacts within the draft SED is insufficient to evaluate the potential impacts and analyze the related costs of the proposal. Past evidence has shown it isn't reasonable to assume groundwater can make up for the reduced surface water supplies without substantial, immediate, and long term adverse impacts. Even if it could, it is unclear if there are adequate locations to place the wells without significant interference. If groundwater is unable to meet water supply needs, the economic impacts will grow exponentially. Modeling must be used to fully evaluate and mitigate the proposed action and its associated impacts.

It is unclear if the additional costs for pumping and water treatment have been incorporated into the economic analysis. Surface water is delivered via gravity. Rather than consuming energy, the water deliveries generate clean electricity. A significant number of wells, with diesel or electric pumps would have to be installed to replace lost surface water supplies. All of which represents increased costs. As groundwater levels go down, pumping costs will also increase. Less electricity will be generated by hydroelectric facilities along the canals. Additional energy sources will be required.

The SED evaluated impacts to agriculture, but it appears as though the impacts were spread over a much larger area than is appropriate. Doing so underestimates the impacts to certain areas, and is misrepresentative. Impacts will not be spread evenly throughout the valley, but will be concentrated

in this area. The analysis should include the representative costs to the various areas. For instance, impacts within the Turlock, Modesto, and Merced irrigation districts should be analyze and presented. The information can then be aggregated to show impacts to the larger community such as the associated subbasins, and counties. In this way, the impacts can be easily identified. Without such an analysis, the true impacts are masked by averages and inclusion of areas not associated with the impacted areas, making the impacts appear less significant.

TID was founded and continues to remain dominated by small family farms. The vast majority of parcels in TID are 20 acres or less. The family farm concept is further corroborated by a recent analysis of the number of rural residences within the District, which was estimated using aerial photography. Approximately 5,000 rural residences are located throughout the District. Many times the owners still live and work on the family farm. Fallowing the entire parcel, which in some instances represents the only income for a family farm, could have devastating impacts. The economic analysis must reflect local conditions, not statewide averages, to provide an accurate picture of the potential impacts.

The SED analysis indicates that low value crops could be fallowed to reduce the economic impacts. Cropping within TID is roughly 37% permanent crops, 61% dairy related crops (if double cropping is included), and 2% other crops. Permanent crops accounts for approximately 58,000 acres, while dairy related crops cover another 71,000 acres. Dairy related crops are just as "permanent" as trees when you take into consideration the dairy's nutrient management requirements. It is unclear what low value crops could be fallowed without significant impacts.

The assumption that low value crops could be fallowed without adversely impacting the dairy industry it supports is incorrect. The dairy industry operates under waste discharge requirements, which requires dairies to implement nutrient management practices. Dairies rely upon the ability to utilize nutrient water generated to fertilize the "low value" crops (corn, oats, alfalfa, pasture and sudan) that the SED envisions fallowing. Surface water provides a very clean water supply for the dairies. Even if they were to pump groundwater instead, there would still be an impact, as groundwater has a higher level of nutrients, limiting the ability to meet nutrient management requirements. If the dairy is unable to meet these requirements, not only would the dairy have to find another feed source, but it would also have to find another means of utilizing the nutrients, or reduce the herd size. The operational and economic impacts to these operations, and their influence on the overall economy must be analyzed.

In addition, TID has maximized hydropower generation by building power plants not only at its dams and reservoirs, but also at key locations along the canal system. Hydropower generated by irrigation releases between March and October generates power to meet local needs during the hot summer months. Reduced reservoir releases for irrigation, would reduce power generation when demand is at its peak. In addition, the actions evaluated in the SED would increase demand, as groundwater pumping replaces gravity-fed surface water deliveries, groundwater levels decline, and grower move to pressurized systems. Additional power would have to be purchased or additional generation facilities built to make up for the lost generation. The economic cost and environmental impacts of which have not been addressed.

The SED clearly misses the mark when evaluating the economic impacts. Agriculture is the life blood of the communities which the surface water deliveries have historically served. The loss of water is not just a loss of the crop value, it's a larger loss to the community. Local industries are built around servicing the farms, from farm management services, farm equipment, harvesting services, pest management and other irrigation products and services, to post harvest processing, and sales. Industries have located in these communities because of the affordable power and ready access to the farm products used in their businesses. Bring with them jobs, families, and resources that help the communities to thrive. Workers on the farm, and in the industries live in local communities. They spend money in local businesses. Their sales and tax dollars support community services. Their children go to local schools. The list goes on and on.

The community is a system built around local agriculture. Without which, the economic impacts will begin unravel the system affecting entire communities, not just ag-related or ag-dependent industries and businesses. If land is fallowed, jobs will be lost. If jobs are lost, agricultural businesses will fold. People will stop spending money in local business (restaurants, stores, and other services). The entire community is affected. School enrollment will go down, as people leave to find jobs elsewhere. Property taxes will decrease as property values decline. Those that don't leave will require additional social services which the community will be hard pressed to provide with reduced revenues. The impacts of the SED proposal will have a ripple effect throughout the entire community. The economic impact to the entire community needs to be identified, clearly evaluated and mitigated.

Before the State Water Resources Control Board can consider the proposed action, it must accurately evaluate and mitigate the impacts of the project. These comments, and the volumes of comments provided previously, clearly show the SED does not adequately meet any of those needs. Surface water addressed within the SED is only one portion of a complex and interrelated system. That system must be evaluated and modeled as a whole prior to making any recommended changes to the use of surface water. Thank you for the opportunity to comment.

Sincerely,

Steve Boyd
Director of Water Resources & Regulatory Affairs