No.	Commenter
1.	American Council of Engineering Companies California Alliance for Jobs California Building Industry Association California Business Properties Association California Chamber of Commerce California Manufacturers and Technology Association California State Association of Counties Construction Industry Coalition on Water Quality Home Builders Association of Northern California Industrial Environmental Association Regional Council of Rural Counties
2.	Bay Area Clean Water Agencies (BACWA)
3.	Bay Area Stormwater Management Agencies Association (BASMAA)
4.	Central Contra Costa Sanitary District (CCCSD)
5.	City of American Canyon
6.	City of Burlingame
7.	City of Petaluma
8.	Delta Diablo Sanitation District
9.	Department of Transportation (Caltrans)
10.	East Bay Municipal Utility District (EBMUD)
11.	Sewerage Agency of Southern Marin (SASM)
12.	Sonoma County Water Agency
13.	Union Sanitary District
14.	Vallejo Sanitation and Flood Control District
15.	West County Agency
16.	General Electric – Farella, Braun and Martell LLP
17.	General Electric – Berkeley Economic Consulting (BEC)
18.	General Electric – Anchor QEA
19.	Gary Youker – General Public
20.	San Francisco Baykeeper Clean Water Action Center for Biological Diversity Communities for a Better Environment Pacific Coast Federation of Fishermen’s Association Save the Bay Santa Clara County Creeks Coalition The Watershed Project Friends of the Earth Environmental Justice Coalition for Water

	Friends of Trinity River Alameda Creek Alliance California Sportfishing Protection Alliance California Indian Environmental Alliance Center for Environmental Health The West County Toxics Coalition Ma'at Youth Academy Healthy 880 Communities Half Moon Bay Fishermen's Association Asian Pacific Environmental Network Bayview Hunter's Point Community Advocates
21.	San Francisco Baykeeper Ecological Rights Foundation Clean Water Action

No.	Author(s)	Comment	Response
0.1	Multiple	Many of the comments submitted in opposition to the State Board's approval of this TMDL were previously submitted to the Regional Water Board and submitted verbatim to the State Board, without further explanation.	Many of the comments submitted to the State Board on this matter are identical to a comment submitted to the Regional Board at the time the draft version of this regulation was under Regional Board consideration. During its consideration, the Regional Board received and provided written responses to all of the many significant comments. The Regional Board's responses either indicated that changes would be made to the regulatory provisions or related documentation in view of the comment (in which case corresponding changes were made), or the Regional Board's written responses indicated that that changes would not be made, and the response indicated why not. Where a commenter merely repeats the comment tendered below on a prior version of this regulation, but fails to disclose what quarrel, if any, the commenter has with the response provided or the action taken by the Regional Board in response to the comment, the State Board is unable to address the comment. Specifically, in those cases where the Regional Board made changes in response to a comment, the commenter has failed to explain how the changes were allegedly inadequate. Likewise, where the Regional Board did not make changes, the commenter has failed to explain how the response or explanation that the Regional Board provided was allegedly inadequate, or even if the commenter even believes that the response was inadequate. Where a commenter has merely repeated the comment submitted below, the State Water Board cannot divine what the commenter believes has been adequately satisfied and what has not, nor can it determine the reason for any remaining dissatisfaction.

1.)	1,	We support efforts to protect and improve water quality in a meaningful way through attainable implementation measures.	Comment Noted
2.)	1,	We believe there are several remaining economic, technical, and procedural issues regarding flaws in the PCB TMDL that warrant the PCB TMDL to be remanded back to the Regional Board.	Comment Noted. This is a vague and general comment and opinion. State Board Staff assumes that the commenter will provide more depth in later comments.
3.)	1,	The TMDL calls for hundreds of millions of dollars to be spent annually on removal of PCBs from stormwater, without analysis to demonstrate that such removal is necessary or feasible at any particular San Francisco Bay locations. Additional huge sums of money would be necessary to physically remove PCBs from sediments in the Bay. In fact, the Regional Board identified a cost of $500 million a year over a twenty-year period to comply with the TMDL – or $10 billion over the life of the program.	The 500 million dollar estimate is a high end estimate that would address treatment of stormwater runoff for all pollutants, including PCBs. However, the TMDL does not require full scale treatment of stormwater at this time. The TMDL implementation plan calls for pilot projects to be implemented over the next 5-10 years to provide information about the cost and effectiveness of full scale implementation. The implementation plan requires that within 10 years the TMDL will be reevaluated based on this additional information collected and revised as necessary. The TMDL does not require any new implementation measures to remove PCBs from in-Bay sediments.
4.)	1,	Our organizations believe that TMDL has serious errors in its data, modeling, and analysis that does not provide the Board with an accurate understanding of PCBs in the Bay. We believe the TMDL significantly understates the ability of the Bay to assimilate PCBs. The TMDL also ignores extensive, reliable data showing that the Bay is recovering from PCBs with half the PCBs dissipating every six to twelve years. External loads from the Central Valley, non-urban runoff, the atmosphere and rainfall are indefinite, and based on inappropriate, incomplete, or the faulty interpretation of data. The TMDL uses an uncalibrated model to calculate storm water loads and then arbitrarily assigns load reductions to counties based on their populations. Our organizations believe it is critical for regulatory agencies to base their decision on the best possible scientific data and information available. We remain concerned that the Regional Board did not meet this fundamental principle at the time it adopted the PCB TMDL based on comments submitted during the Regional Board process.	This TMDL is based on sound, peer reviewed scientific data and available information. The adaptive implementation plan will allow for future data to refine allocations if needed. The Regional Board plans to revisit the TMDL allocations after 10 years using collected data and current relevant scientific information to determine progress towards meeting the fish tissue targets. If necessary, the Regional Board will make modifications to the targets, allocations, and implementation plan through the Basin Planning process.

5.)	1,	The PCB TMDL states that within 10 years of the effective date of the TMDL, the Regional Board will consider a Basin Plan Amendment that will reflect and incorporate the data and information that is generated in the intervening years. Our organizations are concerned that we have to rely on the Regional Board's discretion as to whether or not to modify the TMDL based on a review of how things have progressed during the first 10 years. We believe that all affected stakeholders would benefit from the inclusion of a clear and stated process within the TMDL as to how the Regional Board will revisit this issue. A transparent and fair process with full opportunity for public comment and debate benefits all involved. The TMDL is another example of an unsound regulatory regime that is not supported by science and that likely will impose very significant costs on California in general, and the San Francisco Bay Area regional economy specifically, without commensurate environmental benefit.	Regional Board Staff has included as part of its adaptive implementation plan an opportunity for public participation. From the Regional Board Staff Report Pg. 80: "The Water Board will adapt the TMDL and implementation plan to incorporate new and relevant scientific information such that effective and efficient measures can be taken to achieve the TMDL allocations and numeric fish tissue target. The Water Board, via an annual report by Water Board staff on TMDL implementation progress, will evaluate new and relevant information from implementation actions, monitoring, special studies, and scientific literature. Within ten years of the effective date of the TMDL, any necessary modifications to the targets, allocations, or implementation plan will be incorporated into the Basin Plan. The Water Board will make new information available to the public and will allow opportunities for public participation regarding the results of the periodic review of the TMDL, attainment of load allocations, attenuation of PCBs, or revised TMDL derivations." The SF Bay Regional Board has acknowledged that there are critical data needs related to this TMDL and have included an extensive monitoring program as part of the implementation plan. The adaptive implementation plan requires dischargers to monitor effluent and runoff to fill these data needs. As stated above, after the first 10 years of the TMDL Staff will solicit public input as part of their review. The annual reporting process will also provide opportunities for interested parties to provide input on adapting the TMDL. State Board Staff sees this outlined process as adequately satisfying the request for transparency and public participation.

6.)	1,	Our organizations respectfully request that the Board remand the TMDL back to the Regional Board in order for our organizations and other interested parties to work collaboratively with the Regional Board to find economically-feasible and environmentally-beneficial solutions to address PCB in the San Francisco Bay. At a time where California is looking for ways to improve the health of the economy and create an environment aimed at enhancing the business climate in the state, our organizations are extremely concerned that the PCB TMDL approved by the Regional Board sends the wrong message. We believe that there are less costly, more environmentally sensitive alternatives to the proposed TMDL such as monitored natural attenuation with an education and outreach program for subsistence fisherman.	State Board Staff does not support a remand for this TMDL. The Regional Board has shown due diligence with this extremely complex TMDL, using sound science and public participation. State Board Staff feels that it is an economically feasible project that will provide pollution reduction benefits beyond the scope of just PCBs. The adaptive implementation approach is based on taking immediate actions commensurate with available information, reviewing new information as it becomes available, and modifying actions as necessary based on the new information. Taking immediate action means making progress while more and better information is collected, and the effectiveness of current actions is evaluated. This suggested alternative of "monitored natural attenuation with an education and outreach program for subsistence fisherman" is not acceptable because it does not achieve the objectives of the project within a reasonable time frame as required by Section 303 (d) of the Clean Water Act. Because the Bay is on the Clean Water Act 303 (d) list as impaired by PCBs, the Regional Board is obligated to develop a plan to restore beneficial uses that are not attained as a result of the impairment. In this case, the best option is to fulfill that obligation through a TMDL for PCBs in the Bay.
7.)	2, 4, 5, 6, 8, 11,12, 14, 15	We appreciate your serious consideration of these concerns as we believe that the TMDL is not statistically valid or scientifically accurate. Moreover, this TMDL was based on very specific assumptions (e.g., half life of PCBs, laboratory methods to be used, number of congeners being regulated, fish species being consumed, applicable risk factors, etc.) that if demonstrated to be inaccurate or modified during the implementation phase, will place municipal wastewater agencies in potential compliance jeopardy when NPDES permit effluent limitations are developed to implement this TMDL.	Comment Noted

8.)	2, 4, 5, 6, 8, 11, 12, 14, 15	The Municipal Wastewater Waste Load Allocation and Individual Discharger Waste Load Allocations are not Performance-based. The February 2008 Basin Plan Amendment for the PCB TMDL states that the group and individual waste load allocations for municipal wastewater discharges are "performance based." However, this statement is factually incorrect. Table A-1 of the PCB TMDL estimates the annual aggregate loading from municipal wastewater dischargers throughout the Bay at 2.3 kg/yr. Table A-2 then reduces that estimated waste load allocation ("WLA") for municipal wastewater dischargers to 2 kg/yr. Table A-3 of the TMDL further divides the aggregate municipal loading into separate, smaller waste load allocations for individual dischargers. All of the proposed waste load allocations are based on a very limited effluent data set collected from only nine municipal wastewater dischargers between 1999-2001, and calculated using 2003 flow data, as acknowledged by the San Francisco Bay Regional Water Quality Control Board staff on page 78 of the December 2007 Staff report. BACWA believes that the analytical data set is inadequate to establish either the proposed total waste load allocation to San Francisco Bay for municipal discharges or individual waste load allocations to specific municipal dischargers due to the great uncertainty associated with the limited concentration data available, which is certainly not representative of current flows or performance by all Bay Area municipal wastewater dischargers.	This comment was received by the SF Bay Water Board during their second comment period, and it responded under BACWA comment No. 4.1. Please see Response to Comment 0.1. Additionally, while the allocations may not reflect "current performance levels," there will be no regulatory consequences during the adaptive implementation phase of this TMDL. The only requirement of BACWA during the adaptive implementation timeframe is to collect additional data on PCBs in order to ensure NPDES permit limits are performance based. The Regional Board does expect that future discharger collected data will result in recalculation of individual wasteload allocations and consideration of Basin Plan revisions after 10 years.
9.)	2, 4, 5, 6, 8, 11, 12, 14, 15	<u>Group Municipal Wastewater Dischargers Waste Load Allocation</u> BACWA does not believe that the TMDL adequately substantiates and explains the derivation of the aggregate loading of 2.3 kg/yr for all municipal wastewater. This WLA was based on just 23 data points from a limited number of municipal wastewater dischargers and were determined using an unapproved analytical method.	SF Bay Regional Board acknowledged that the individual wasteload allocations are based on a limited dataset. During the data collection period, Bay Area Clean Water Authority (BACWA), representing multiple wastewater dischargers, collected data to support development of the TMDL. With this dataset, the Regional Board was tasked to determine the group load based on the best available data. At the time, BACWA agreed to this approach. The TMDL calls for individual dischargers to collect additional data on PCBs in their effluent using an

			acceptable low detection analytical method which can then be used to refine/recalculate the individual wasteload allocations and revise the TMDL if necessary. In addition, there are no regulatory consequences to the wasteload allocations included in the TMDL. The derivation of the wasteload allocations was addressed in the SF Bay Regional Board's response to BACWA comments 4.1, 4.2, and EBMUD comments 6.2 to 6.4.
10.)	2, 4, 5, 6, 8, 11, 12, 14, 15	BACWA also does not believe that a reduction from the estimated 2.3 kg/yr to 2 kg/yr is necessary or will result in meaningful water quality benefits for the San Francisco Bay.	The commenter is presenting an opinion and has not presented evidence to support the opinion. The TMDL's implementation plan calls for monitoring to evaluate water quality improvement.
11.)	2, 4, 5, 6, 8, 11, 12, 13, 14, 15	The PCB TMDL appears to arbitrarily round the municipal wastewater WLA to a whole number and just one significant figure: "which reflects the current estimated aggregate load of 2.3 kg/year rounded down to one figure." In contrast, the industrial discharger WLA was calculated to 2 significant figures (0.035 kg/yr), "which reflects estimated current loads." *See* Page 71 of the SFBRWQCB Staff Report. This seemingly harmless and benign reduction is neither and will only add to the potential for compliance jeopardy when permit effluent limitations for PCBs are developed because, in fact, this total WLA was not developed from effluent data collected at all municipal discharger facilities and does not represent current performance.	This statement is incorrect. The WLA was not arbitrarily rounded down. Municipal wastewater dischargers were allocated a load of 2.0 kg/year rather than 2.3 kg/year. There are several factors that are considered in this 10% reduction. The reduction reflects anticipated decreases in current loadings expected from implementation actions and degradation of PCBs in sources to wastewater systems. In response to the statement about significant figures, since the allocations were not arbitrarily rounded as the commenter states then there is no response needed. As responded to above, there are no regulatory consequences in the short term and thus no potential for compliance jeopardy. Data collected by dischargers will be used to refine wasteload allocations during the next 1-2 permit cycles.
12.)	2, 4, 5, 6, 8, 11, 12, 13, 14, 15	<u>Individual Municipal Wastewater Discharger Waste Load Allocations</u> As a consequence of the limited effluent data set, the individual wasteload allocations for municipal wastewater dischargers are	Please see responses to above comments 5 and 8-9.

<table>
<tr>
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<td>based solely on an estimated performance by a limited number of secondary and advanced secondary treatment facilities and calculated using individual facility flow design. The result is that secondary treatment facilities have disproportionately lower waste load allocations, which cannot accurately be called “performance-based”

<table>
<tr><th>Facility Type</th><th>Average PCB Concentration 1999-2001 pg/L</th><th>Number of Agencies</th></tr>
<tr><td>Secondary POTWs</td><td>3460</td><td>5</td></tr>
<tr><td>Advanced 2° POTWs</td><td>208</td><td>4</td></tr>
</table>

The proposed individual allocations were developed based on PCB effluent concentration data for select dischargers as presented in the PCB TMDL Project Report (December, 2003). Data were collected from just four (4) dischargers with advanced secondary treatment and five (5) dischargers with secondary treatment. Two to four samples were analyzed for each of the selected dischargers. A total of fourteen (14) samples were collected over a nine (9) month period to characterize PCB effluent levels for advanced secondary treatment in 1999-2000 and a total of nine (9) samples were collected over a three (3) month period in 2000-2001 to characterize PCB effluent levels for secondary treatment. No data are available to characterize the remaining 31 wastewater treatment facilities listed in Table A-3 of the proposed Basin Plan amendment.</td>
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<td>13.)</td>
<td>2, 4, 5, 6, 8, 11, 12, 14, 15</td>
<td>The PCB allocations are not representative of municipal discharger performance, and should not be used as a basis for compliance determinations.</td>
<td>Please see responses to above comments 5 and 8-9</td>
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<tr>
<td>14.)</td>
<td>4,</td>
<td>The limited PCB effluent data for individual wastewater treatment plants, the uncertainty with the ability to comply with the PCB allocations, and the lack of details on future permit requirements puts dischargers at risk for future permit violations and mandatory minimum penalties. In other words, the Basin Plan Amendment sets the course for an unknown future, and dischargers must trust the process to later understand the consequences. This creates</td>
<td>Please see above response to comment 8.</td>
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		great concern for CCCSD. CCCSD requests that the SWRCB consider the compliance jeopardy that could result from the implementation of the PCB TMDL and to develop statistically valid data or move forward with reasonable uncertainty factors until adequate data is collected to develop performance-based effluent limits.	
15.)	13,	Analytical Methodology – The reference to 40 CFR Part 136 for the determination of compliance, on page B-10 of the PCB TMDL, is missing an analytical method reference number. As different analytical methods include different numbers of PCB congeners, it is important that the method for demonstrating compliance is clear and appropriate for that purpose.	The Regional Board determined that an effective date for the determination of compliance was necessary to meet the Office of Administrative Law (OAL) incorporation by reference requirement. An Executive Officer Correction Memo was sent to the State Board initiating the non-substantive changes to the BPA. An effective date of April 25, 2007 for the Title 40, Code of Federal Regulations, Part 136 analytical method was added on page A-7 of the BPA. State Board staff agrees that this was a non-substantive change for clarity and consistency.
16.)	4,	PCB load allocations are based upon RMP congener list. Different analytical methods and a different list of congeners will result in different PCB concentrations causing potential compliance problems in the future. The TMDL needs to be explicit with regard to the analytical method and the list of congeners for compliance determination.	See Response to comment No. 15
17.)	13,	Union Sanitary District does not agree that the 15% reduction in waste load allocation from 2.3 kg/yr listed municipal dischargers in table A-1 of the February 2008 TMDL, to 2.0 kg/yr actually allocated to municipal dischargers in Table A-3 is warranted or appropriate. In contrast the industrial discharger WLA was calculated to 3 significant figures (0.035 kg/yr), "which reflects estimated current loads" both as described on Page 71 of the SFBRWQCB staff report.	See Response to comment No. 10-11
18.)	10, 7	EBMUD shares the San Francisco Bay Regional Water Quality Control Board's (RWQCB's) goal of reducing PCB loading to the Bay. EBMUD also supports most of the elements of the proposed Amendment's approach to achieving that goal, including, with respect to PCB discharges from municipal wastewater dischargers (POTWs), the following: 1. "implementation of best management practices to maintain optimum treatment performance for solids removal and the	Comment Noted

		identification and management of controllable sources" [Amendment, p. A-7]; 2. "NPDES permits shall include effluent limits based on current performance" [Amendment, p. A-7]; 3. "support [of] actions to reduce the health risks of people who eat PCBs contaminated, San Francisco Bay fish" [Amendment, p. A-7]; 4. "conduct[ing] monitoring, and studies to fill critical data needs" [Amendment, p. A-7];	
19.)	10, 7	Available data are inadequate to support the Staff Report's 2.3 kg/yr estimate of POTWs' annual PCB loading to the Bay. According to the RWQCB's February 2, 2008 Staff Report (pp. 42-44), the 2.3 kg/yr estimate is based on 23 data points collected from November 1999 through February 2001. These consist of nine data points from five secondary-treatment POTWs and 14 data points from four advanced-treatment POTWs. That works out to an average of 1.6 data points per POTW. These data are insufficient to support the estimate for several reasons. First, the data set is much smaller than is customarily used in analogous situations. For example, for the mercury TMDL, the data set included at least 12 data points for every major discharger and over 600 data points in all. Second, the small number of data points is particularly problematic here, because, as the Staff Report notes: • the PCB data are subject to a high degree of variability [Staff Report pp. 63, 65, 72]; • the data variability problem is worsened because it is combined with the inherent variability in POTW systems, which requires a "substantial data set" [Staff Report, p. 72]; • the PCBs are "difficult to measure" [Staff Report, p. 72]; • the PCBs are "present at very low levels" [Staff Report, pp. 72]; • differing analytical methods used to collect the various data points raise confounding "data comparability issues" [Staff Report, p. 20]; and • the analytical methods can have "poor precision" [Staff Report, p. 20]. Therefore, the SWRCB should decline to approve those portions of	Please see responses to above comments 5 and 8-9.

		the proposed Amendment that relate to, depend on or are derived from the 23-point data set. Those portions should be remanded with instructions to (1) collect a more robust and reliable data set and (2) take such actions are appropriate based on that data set.	
20.)	10, 7	The proposed categorical load allocation of 2.0 kg/yr for the POTW source category is improper. Even if the 2.3 kg/yr estimate of current POTW loading were supported by adequate data, which it is not, the proposed 2.0 kg/yr categorical load allocation for the POTW source category would be improper. The Staff Report states: • "the proposed individual wasteload allocations for municipal wastewater dischargers reflect current performance levels" [Staff Report, p. 66]; and • "Wasteload allocations for municipal and industrial wastewater discharges reflect current PCBs loads" [Staff Report, p. 72]. EBMUD agrees that POTW waste load allocations should be based on current performance. Yet the RWQCB assigned a POTW-group wasteload allocation of 2.0 kg/yr, rather than the RWQCB's own estimate of current perfom1ance, 2.3 kg/yr. The RWQCB cited two reasons for this 13% reduction in the current performance figure, neither of which is proper. First, the RWQCB asserted that it was simply rounding to the nearest whole number: "The wasteload allocations for municipal wastewater dischargers total 2 kg/yr, which reflects the current estimated aggregate load to the nearest kg/yr." Staff Report, p. 65 [emphasis added]. None of the other group wasteload allocations was rounded, and there is nothing in the record suggesting rounding is appropriate in this instance. Second, the RWQCB asserted that, "Although this [2 kg/yr] is lower than our actual estimate of 2.3 kg/yr, [it] reflects anticipated decreases in current loadings expected from implementation actions and degradation of PCBs in sources to wastewater systems." Staff Report, p. 65. Again, none of the other group wasteload allocations was adjusted to account for such "anticipated decreases." Plus, there is no evidence in the record to	See comment No. 9-12

		support the adjustment chosen in the POTW-group's case. Therefore, the SWRCB should decline to approve those portions of the proposed Amendment that relate to, depend on or are derived from the 2 kg/yr figure. Those portions should be remanded with instructions to (1) treat all group wasteload allocations equitably and (2) cite evidence in the record supporting any adjustments to group wasteload allocations.	
21.)	10,	The waste load allocation of 0.3 kg/yr for EBMUD is improper. As noted above, the Staff Report states, "the proposed individual wasteload allocations for municipal wastewater dischargers reflect current performance levels" and "current PCBs loads." Staff Report, pp. 66, 72. Yet the individual wasteload allocation for EBMUD does not. Instead, the RWQCB knowingly assigned a wasteload allocation (0.3 kg/yr) to EBMUD that is 48% lower than the best evidence of current performance of EBMUD's facility. This was done by multiplying EBMUD's flow rate times the average PCB concentration (3,556 pg/L) of the nine data points for municipal dischargers with secondary treatment. Response to Comments, p. 177. Not surprisingly, the record contains no evidence suggesting that this approach yielded a more accurate estimate of EBMUD's "current PCBs loads" than would have resulted from using the average (6,800 pg/L) of the two data points from EBMUD's facility. In fact, the RWQCB's response to EBMUD's comment on this point was, "We acknowledge that this might not reflect the current loading of PCBs to the Bay from the EBMUD discharge." Responses to Comments, p. 177. More generally, the RWQCB admitted, "we acknowledge that the individual wasteload allocations are based on a limited dataset. We have insufficient or no data to calculate wasteload allocations for individual facilities based on	This comment was received by the SF Bay water Board, and it was responded to under EBMUD comment No. 6.4. Please see Response to Comment 0.1. The Regional Board acknowledged the limited dataset in the response to EBMUD's similar comments submitted during the Regional Board's comment period. While the allocations may not reflect "current performance levels" from EBMUD, there will be no regulatory consequences during the adaptive implementation phase of this TMDL. The Regional Board expects future discharger collected data will result in recalculation of individual wasteload allocations and consideration of Basin Plan revisions after 10 years. It may be that some POTWs current performance, for example, EBMUD, could be improved upon. EBMUD data indicate that this facility has one of the highest loads among POTWs. State Board staff does not recommend a remand as a result of the limited data from individual dischargers. The suggestion that the State Board remand the TMDL in order to collect more data is not acceptable because it does not achieve the objectives of the project within a reasonable time frame as required by Section 303 (d) of the Clean Water Act. The TMDL has included a significant data collection timeframe. The Regional Board plans to revisit the TMDL allocations after 10 years using collected data and current relevant scientific information to determine progress towards meeting the fish tissue targets. If

		individual facility performance at this time. Therefore, individual load al1ocations are based on each facility's fraction of the total yearly wastewater discharged from this source category using average annual flow data from 1999 through 2002. The resulting individual wasteload allocations do not represent individual facility actual discharge performance and do not account for variability in discharge performance." Response to Comments, p. 3. And finally, the RWQCB assured EBMUD, "there will be no regulatory consequence since the TMDL implementation requirements call for EBMUD to collect additional data on PCBs in effluent [using] low detection methods and for permit limits based on actual performance. We expect these data will result in recalculation of individual wasteload allocations and consideration of Basin Plan revisions." Responses to Comments, p. 177. In essence, the RWQCB is saying that it is acceptable to knowingly assign an incorrect allocation to EBMUD because it can always be corrected later. This is improper. How other dischargers, who did not get the opportunity to provide the RWQCB with data points, are dealt with is not an EBMUD issue but EBMUD's "performance-based" allocation should be based on EBMUD's data points. While the collection of more data in the future should lead to greater accuracy, this is no excuse not to use the best evidence available now. Therefore, the SWRCB should decline to approve those portions of the proposed Amendment that relate to, depend on or are derived from the individual wasteload allocations for municipal wastewater dischargers. Those portions should be remanded with instructions to either delete those wasteload allocations or adjust them as follows: (1) where possible, assign waste load allocations based on actual data from the facilities in question (i.e., the facilities that provided the 23 data points shown at Staff Report p. 44) and (2) adjust all other wasteload allocations accordingly.	necessary, the Regional Board will make modifications to the targets, allocations, and implementation plan through the Basin Planning process.

22.)	10, 7	The proposed Amendment should be modified to clarify that compliance determinations must be made using Method 608 and the 41 PCB congeners that were analyzed to produce the 23 data points (from 1999-2001) upon which POTW wasteload allocations were based. The Amendment (at p. A-7) states, "Compliance with effluent limits shall be determined using a Title 40, Code of Federal Regulations, Part 136 analytical method." The currently prescribed method is Method 608. There are 209 PCB congeners. Staff Report, p. 14. Only 41 of these were analyzed to produce the 23 data points (from 1999-2001) upon which the POTW wasteload allocations were based. Future study may determine that a new method (Method 1668 is the most likely candidate) should be used and additional (or different) congeners should be analyzed. If so, the results will not be comparable to the results upon which the POTW wasteload allocations were based. Therefore, to avoid "apples-to-oranges" compliance-determination errors, the above quoted language should be changed to read, "Compliance with effluent limits shall be determined using the Title 40, Code of Federal Regulations, Part 136 analytical method 608 and analyzing for the same PCB congeners that were analyzed to produce the data points on which the relevant wasteload allocation was based."	See response to comment No. 15
23.)	3,	We agree that reducing impairment of the Bay's beneficial uses by PCBs should be a high priority to all Bay Area public agencies and citizens. As public agencies we recognize the importance of this task, and therefore seek a fair, objective, and transparent PCBs TMDL. A TMDL development process based on the best available information, sound science, feasibility, and cost-effectiveness will help establish the legitimacy and legality of the TMDL and inspire the public's confidence.	Comment Noted
24.)	3,	The proposed BPA calls for evaluation of new information and incorporation into the TMDL as needed any time within ten years. Furthermore, the proposed BPA states that San Francisco Bay Water Board staff will present an annual progress report to the San	An annual progress report would be included on the agenda of the San Francisco Bay Water Board's monthly meetings. Those meetings are publicly noticed and public input will be solicited and

		Francisco Bay Water Board on implementation of the TMDL that includes evaluation of new and relevant information that becomes available through implementation actions, monitoring, special studies, and the scientific literature. BASMAA requests public noticing of the annual updates and that stakeholders be given the opportunity to present new information at the annual updates and request modification of the TMDL as appropriate.	welcomed.
25.)	3, 14,	Clean up of On-Land PCBs sites BASMAA requests that the proposed BPA clarifies the roles of agencies in investigating and abating private properties that are potentially releasing soils/sediments containing PCBs to the storm drain system. Stormwater runoff management agencies and municipalities should not be held responsible for abatement of such properties. Instead, municipal agencies would be available to assist with identification of private properties with potential PCB contamination, and would report investigation results, including property locations and/or potentially responsible parties, to the San Francisco Bay Water Board and/or other appropriate regulatory agencies. These agencies would be expected to follow up on further investigation and oversee any necessary abatement.	This comment was received by the SF Bay Regional Water Board during their second comment period, and it responded under BACWA comment No. 4.1. See above response to comment 0.1. SF Bay Regional Water Board amended the Staff Report to include more specifics about the roles of agencies investigating and abating on-land PCBs sites. The BPA does not require stormwater management agencies to be responsible for abatement of PCBs on private properties.
26.)	3, 14,	Stormwater Runoff Implementation Cost Estimate San Francisco Bay Water Board staff has presented Bay Area municipal wastewater management costs of approximately $500 million annually as an upper-bound cost for stormwater dischargers to address PCBs and other pollutants of concern. This highly speculative estimate represents an annual cost well beyond anticipated future municipal resources and, according to estimates presented in the PCB TMDL staff report, is a factor of five higher than estimated total current costs associated with all aspects of urban stormwater pollution management in the Bay Area. We would like to emphasize that municipal actions to address PCBs in stormwater runoff will be constrained by available funding and that Proposition 218 severely limits the ability of local government to generate additional revenues for urban stormwater runoff programs	This comment was received by the SF Bay Regional Water Board during their second comment period, and it was responded to under BACWA comment No. 3.3. See above response to comment 0.1. Also, please see above response to comment 3.
27.)	3,	Load Reductions Table A-5 (p. A-6) in the proposed BPA shows stormwater runoff wasteload allocations for each Bay Area county, but does not	This comment was received by the SF Bay Regional Water Board during their second comment period, and it was responded to under BACWA comment No. 3.4.

		include associated load reductions, as was done in the San Francisco Bay mercury TMDL Basin Plan amendment. BASMAA requests inclusion of these load reductions by county to potentially compare to loads avoided that may be calculated by each countywide stormwater program. Calculating loads avoided on a countywide basis will be a possible means of demonstrating compliance with the wasteload allocations.	See above response to comment 0.1.
28.)	3,	BASMAA requests to Investigate Potential PCBs Sites BASMAA agencies previously identified several potential PCBs release sites and requested that San Francisco Bay Water Board staff work with appropriate parties (e.g., PG&E, the Department of Toxic Substances Control and the Toxics division within the San Francisco Bay Water Board) to investigate the possibility that PCBs from these sites had entered storm drains. One example is the Delta Star site in the City of San Carlos in San Mateo County. Relatively high levels of PCBs were found in a storm drain sediment sample collected by BASMAA agencies downstream of this site. Electrical equipment containing PCBs was formerly manufactured at the Delta Star property and PCBs have been found in soil and groundwater at the site. Thus this site may be a source of PCBs in storm drain sediments. The San Francisco Bay Water Board is the lead agency overseeing an ongoing site cleanup. BASMAA provided San Francisco Bay Water Board staff with this information six years ago, but to the best of our knowledge actions have not been taken to further investigate and abate potential releases of PCBs to storm drains from these sites. BASMAA strongly requests that the San Francisco Bay Water Board raise its priority for addressing such sites to expedite reducing impairment of the Bay's beneficial uses by PCBs.	This comment was received by the SF Bay Regional Water Board during their second comment period, and it was responded to under BACWA comment No. 3.5. See above response to comment 0.1. In addition, Regional Board staff has followed up on the information provided by BASMAA and is working with the discharger as part of an existing cleanup and abatement order for Delta Star. As part of implementation of the TMDL we will work with storm water management agencies, DTSC, and local agencies to establish protocols for addressing cleanup of upland sites and the associated potential for discharge to stormwater.
29.)	9,	The biggest impact to the aquatic environment in the San Francisco Bay (Bay) is not current discharges of these persistent, bioaccumulative and toxic substances, but the legacy left behind by their use. Rather than subject local and state publicly-funded entities with the burden of cleaning up the Bay sediments and/or using Publicly-Owned Treatment Works to treat urban stormwater, (the latter likely to present its own fiscal and environmental challenges), the State Water Resources Control Board (SWRCB) and SFBRWQCB should pursue remediation of the Bay under the	Staff recognizes that legacy impacts are indeed the source of PCBs to the San Francisco Bay. The State and the San Francisco Bay Regional Board will continue to use Cleanup and Abatement Orders as a regulatory framework to address several legacy impacts around the bay. These site-specific cleanup orders will provide effective means of addressing these impacts while ensuring the progress of the TMDL.

		Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the state corollary rather than through the TMDL process. Since the primary concern comes from the human consumption of fish from the Bay, there is also a case for the pursuit of natural resources damages under either CERCLA or the state corollary. Caltrans suggests that the SFBRWQCB consult with the Environmental Protection Agency (EPA) Region IX, and with the federal trustee agencies such as the National Oceanic and Atmospheric Administration-Fisheries (NMFS), the U.S. Fish and Wildlife Service (FWS) and with the state trustee agency the California Department of Fish and Game (DFG) to begin the process of real long-term remediation of the PCB contaminated Bay sediments. Caltrans strongly suggests that the legacy contamination be addressed under CERCLA or other applicable state statutes first.	The TMDL also includes actions in the implementation plan to investigate and identify locations within the municipalities' watersheds with elevated concentrations of PCBs. These investigations will lead to the identification of areas where PCBs were either applied in the landscape, on buildings, or spilled from contained or semi contained uses. The regulatory mechanism to require remediation of these areas will be determined on a case by case and may involve federal, state, or local authority. Regardless, the Water Board has the authority to approve, disapprove or condition remediation actions, and the TMDL requirements provide sufficient cause and transparency to ensure that remediation requirements will be adequate to protect water quality.
30.)	9,	Caltrans therefore requests that the SWRCB remand back to SFBRWQCB the proposed BPA for consideration of these alternative approaches. Only after exploring the various cleanup actions described above, should the SFBRWQCB and SWRCB consider a TMDL.	State Board Staff does not support a remand for this TMDL. The SF Bay Regional Board has shown due diligence with this extremely complex TMDL, using sound science and public participation. State Board Staff feels that it is an economically feasible project that will provide pollution reduction benefits beyond the scope of just PCBs. The adaptive implementation approach is based on taking immediate actions commensurate with available information, reviewing new information as it becomes available, and modifying actions as necessary based on the new information. Taking immediate action makes progress at the same time while more and better information is collected, and the effectiveness of current actions is evaluated.
31.)	9,	The decision to implement this TMDL should be based upon reliable data and scientific conclusions. The TMDL lists Caltrans as one of the stakeholders. Caltrans is not aware of any monitoring studies attributing higher than background levels of PCB present in highway run off. If the TMDL is adopted as written, Caltrans will be one of the implementing parties and will be required to undertake onerous and unnecessary monitoring of highway runoff to determine the presence of PCBs in highway runoff to even know where to begin to implement the proposed TMDL. Instead, the	Caltrans is included as a source due to its status under a permit covering Caltrans' municipal stormwater activities. Caltrans is an implementing party due to its possible conveyance of stormwater to San Francisco Bay. In addition, removing Caltrans as an implementing party would result in Caltrans receiving a zero allocation for PCBs, therefore not allowing any

		absence of any evidence that Caltrans stormwater discharges have PCB loads should be used to exempt Caltrans from this BPA.	discharges of stormwater containing any levels of PCBs. This TMDL treats Caltrans as a stormwater entity with the potential to discharge stormwater into San Francisco Bay and must provide them with an allocation.
32.)	9,	The intent of this BPA is to reduce stormwater runoff waste load allocations (WLA) over 20 years and to implement this TMDL through the NPDES stormwater permits issued to the Bay area stormwater runoff management agencies and the Caltrans. The urban stormwater runoff waste load allocations implicitly include all current and future permitted discharges, not otherwise addressed by another allocation, and unpermitted discharges within the geographic boundaries of stormwater runoff management agencies including, but not limited to, Caltrans roadway and other facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites. As such, the proposed TMDL places Caltrans in a subordinate position within the geographic boundaries of each municipal stormwater program. As part of the TMDL, these municipal programs are directed to begin implementation of a pilot program to address PCB hot spots. This hot spot effort and the other specified activities may not be appropriate for Caltrans' transportation system in the Bay Area.	The Basin Plan Amendment only requires that "Control measures implemented by stormwater runoff management agencies and other entities (except construction and industrial sites) shall reduce PCBs in stormwater runoff to the maximum extent practicable" (Page A-7 BPA). The TMDL through its adaptive implementation program is an iterative process. Pilot studies to determine the effectiveness and feasibility of such projects will be done in the beginning phase of the TMDL and will be assessed through the adaptive implementation plan.

33.)	9,	We specifically request that the SFBRWQCB modify the BPA to provide the same flexibility incorporated in the adopted San Francisco Bay Area Mercury TMDL. The Mercury TMDL includes a provision allowing Caltrans to implement a regional program focused directly on Caltrans roadways and facilities. Alternatively, Caltrans could choose to implement load reduction actions on a watershed or region wide basis in lieu of sharing a portion of an urban runoff management agency's allocation. In such a case, the SFBRWQCB would impose a separate WLA for Caltrans and permit Caltrans to demonstrate progress toward attaining an allocation or load reduction in the same manner mentioned previously for municipal programs. This change would allow Caltrans to implement a consistent region wide PCB control program. In addition, it may enable Caltrans to better coordinate its activities to address the PCB TMDL, as well as the Mercury TMDL and other related TMDLs that may be adopted for the Bay in the future. Caltrans submitted a similar request to the SFBRWQCB during development of this TMDL. In response, the SFBRWQCB pointed out that the phased adaptive implementation plan allows for the requested flexibility and that it "may consider a separate allocation for Caltrans in the future based on a demonstration by Caltrans that it is needed for implementation" In light of this response, Caltrans requests that the SFBRWQCB clearly incorporate the option of a separate Caltrans compliance effort in this BPA as was incorporated into the San Francisco Bay Mercury TMDL.	This request was received by the SF Bay Regional Water Board during their second comment period, and it was responded to under Caltrans comment 2.2. How the SF Bay Regional Board determines their allocations is at their discretion. Caltrans has not provided any compelling evidence to prove that this approach is inappropriate and State Board Staff is in agreement with the current allocation structure. The TMDL is an iterative process and the Regional Board has already agreed that they would be open to this change during the timeframe of the TMDL. Nothing is preventing Caltrans at this time to take this approach and present it to the Regional Board as an option during early implementation phase of the TMDL as a viable alternative.
34.)	9,	In addition, Caltrans is concerned that the PCB TMDL does not provide clear goals for determining compliance compared with the Mercury TMDL. For example, it would help structure control activities if the TMDL prescribed a target for suspended sediment in storm drains. According to the draft Board agenda item (page 3), the sediment concentration goal is 1 µg/kg, "which will result in attainment of the fish tissue target of 10 µg/kg." This same goal would be appropriate for storm drain discharges. In addition, the inclusion of a specific target would facilitate compliance.	The Draft Board Agenda Item the commenter referenced is only for informational purposes. It is only an executive summary of the Regional Board staff report and BPA and does not have any regulatory language or authority for this TMDL. State Board Staff disagrees that a sediment target is necessary for this TMDL. The fish tissue target is a direct expression of desired conditions in the Bay that will protect sport fish consumers. A target for sediment is unnecessary because attainment of the TMDL and water quality standards will require, and in fact is based on, reducing concentrations of PCBs in Bay sediments. The TMDL is based on attainment of a sediment concentration that will result in

			attainment of the fish tissue target (see section 9 (Linkage Analysis) of the Staff Report). Establishing a sediment target provides no added value.
35.)	9,	One of the provisions of the TMDL lists possible diversion of the urban stormwater run off to POTW. Caltrans strongly believes that sending the entire highway run off to POTW s is not feasible nor is it desirable. The POTWs would likely be overwhelmed by such flows and this would increase the probability of a sewage overflow during the storms.	See above response to comment No. 3 Regional Board Staff agrees that the diversion of all stormwater is not a foreseeable method of compliance nor would it be desirable. The implementation plan calls for studies and pilot projects to determine the potential success and feasibility of such projects and does not include any requirements for implementation.
36.)	9,	It is certain that significant additional resources will be needed to implement the provisions of this TMDL. In the absence of an increase in state gas tax, subject to legislative and voter approval, Caltrans cannot unilaterally impose user or utility "fees" upon ourselves to pay for the TMDL implementation.	Comment Noted Staff recognizes that there may or may not be cost associated with the implementation of this TMDL. However, Staff does not see how this TMDL creates extraordinary circumstances outside of the statewide stormwater permitting process. Adaptive implementation will allow sufficient flexibility and time to ensure that funding is met.
37.)	19,	Hi, this is a great idea to identify the PCB levels in water. However, I don't see much in the research and removal of said contaminants. We have already removed PCB's in the lab. We would appreciate the opportunity to obtain funding to document and demonstrate our processes. Where might we look?	Comment Noted
38.)	20, 21	This TMDL does not establish truly protective fish tissue targets. Our organizations represent people who depend on healthy fish populations for a variety of uses: food, recreation, and commercial activity. However, the human health risk numbers in this TMDL are more reflective of how sport fishers consume fish rather than how subsistence fishers consume fish. The Regional Board must take into better account the fact that many people in the Bay Area eat fish from San Francisco Bay because of economic need or because of their family and cultural traditions. The Bay has a large community of subsistence fishers who rely on Bay fish as a critical source of food and protein to feed their families every week and often eat whole parts of the fish, including the parts that are known to be most contaminated. By failing to adequately account for these	A similar comment was received by the SF Bay Regional Water Board during their first comment period, and it was responded to under Baykeeper et al. Comment 7.9 See above response to comment 0.1 Water Board staff followed EPA guidance in developing the fish tissue targets and used locally available consumption data. The approach used to develop the target does not go against EPA guidance. The US EPA level for unlimited fish consumption is based on consumption rates for the United States

		frequent consumers of Bay fish, the TMDL calculations lead to targets and goals which will fail to protect those communities most likely to be harmed by PCBs pollution in the Bay. For 15 years, California's fish advisory has cautioned people to limit their consumption of fish caught in San Francisco Bay because of chemical contamination. But warning our sport and subsistence fishing populations about contaminated fish is not the ultimate answer—reducing the pollution is.	population as a whole. The Regional Board considered local data from a 2001 San Francisco Bay Seafood Consumption Report Study (SFEI, Department of Health and Safety (now part of the Department of Public Health)) when deriving the fish tissue numeric target for Bay-specific fish consumption rates. However, this study only evaluated the consumption rate of local anglers who catch and eat fish from the Bay, which is a subpopulation of the Bay Area population. Subsistence fishers represent a small fraction of that already small subpopulation of consumers. USEPA guidance clearly states that subpopulations do not need to be protected at a risk level of 1 in a 1,000,000, but rather at a maximum risk level of 1 in 10,000 for subsistence fishers. The Regional Board derived a fish tissue target at a 1 in 100,000 risk level to protect the subpopulation of Bay area sports fishing consumers who actually consume fish they catch from the Bay so it affords an even higher level of protection for the general Bay area population, most of which does not eat fish caught in the Bay. Attainment of the proposed fish tissue target and resulting TMDL and allocations will already be very challenging. Adding more restrictive protections, at this time, may ultimately hinder the goal of this TMDL. Also, the adaptive implementation plan is designed to track attainment of allocations and ultimately the target in phases and will result in knowledge and insight as to the most protective levels that are attainable. The adaptive implementation approach will address any uncertainties that do exist. The Regional Board plans to revisit the validity of the results within ten years of adoption of the TMDL. If necessary, they will revise the fish tissue target based on new understanding of sport fish consumption rates.

39.)	20,	This TMDL does not contain an implementation plan to meaningfully reduce PCBs pollution. The implementation plan requires few reductions from controllable sources of PCBs within the Bay and assumes large reductions from external sources without actually imposing controls on them. This TMDL fails to require adequate clean up actions from the Central Valley and city stormwater runoff—the largest sources of PCBs to the Bay watershed. The Delta is not on California's 303(d) list for PCBs, so there is no requirement that holds the Central Valley Regional Water Board accountable for identifying the sources of PCBs in the Delta or to come up with a plan to remove PCB loadings within any reasonable timeframe. Stormwater runoff of PCBs will also continue largely unregulated. Neither the TMDL nor the Draft Municipal Regional Permit for San Francisco Bay contains adequate stormwater runoff reduction requirements to reduce PCBs pollution to the Bay.	Recent monitoring shows that the sediments currently entering the Bay from the Central Valley have lower PCBs concentrations than in-Bay sediments. There are no identified controllable sources of PCBs associated with the Central Valley load. Verification of ongoing Central Valley loads and load reductions will be a regular component of the Regional Monitoring Program. Accordingly, natural attenuation and loads monitoring provide reasonable assurance that the Central Valley allocation will be achieved, and there is no need for further regulatory assurance. Staff disagrees with the comment that states "Stormwater runoff of PCBs will also continue largely unregulated." This is incorrect, because Stormwater Permits will provide reasonable assurance that the load allocations will be met. The TMDL has an implementation plan that drives a better and timely understanding of loading to the Bay and its uncertainties. The Regional Board does not have the authority to require specifics when it comes to implementation measures and the design, location, type, or particular manner of compliance. However, it can require dischargers to implement sediment and erosion controls such as BMPs necessary to attain the water quality standards through its regulatory authority. The Water Board has regulatory authority to require implementation of this TMDL. This authority includes adopting waste discharge requirements (WDRs) (storm water and construction permits to control sediment discharges), and waivers of WDRs and prohibitions. Enforcement actions may be used to address water quality problems when Basin Plan provisions, WDRs, or waivers are violated. These include Notices of Violation, Cleanup and Abatement Orders, Cease and Desist Orders, and monetary penalties (administrative civil liability).
40.)	20,	Addressing the Bay's PCBs pollution requires that the San Francisco Bay Regional Water Board implement an aggressive	See above Response to comment No. 38

		TMDL framework based on sound science—this TMDL falls far short. We urge the State Water Board to ensure that this TMDL includes a higher margin of safety to protect the most vulnerable populations exposed to PCBs through their regular consumption of Bay fish and that the TMDL include a strong action plan that sets interim as well as final targets for reducing PCB loading to the Bay.	The San Francisco Bay Regional Board has incorporated an appropriate margin of safety into this TMDL (using an upper bound consumption rate) and through an adaptive implementation plan will ensure that the beneficial uses are attained in a reasonable timeframe.
41.)	21,	PCBs are potent, persistent, and bioaccumulative toxins that have been polluting our waterways and wildlife, and threatening the health of our communities for far too long. We therefore support the San Francisco Bay Regional Water Quality Control Board's ("Regional Board") efforts to complete an overdue TMDL for PCBs. However, the TMDL is flawed and significant changes must be made to the BPA and accompanying staff report to ensure that this TMDL and implementation plan are based on sound scientific, legal and policy principles.	Comment Noted
42.)	21,	The Fish Tissue Target is not sufficiently protective because it inappropriately uses the lowest possible consumption rate from the Seafood Consumption Report. The TMDL uses a consumption rate of 32 $g \cdot d^{-1}$ instead of the range of rates provided in EPA's guidance (54, 63, 70-170 g·d-1). The justification for this consumption rate was that the rate of 32 g/d was based on local research and that it reflects the 95th percentile of actual consumption in the Bay Area and thus is protective of the vast majority of consumers in the Bay Area. However, a close inspection of the TMDL's supporting document, The San Francisco Bay Seafood Consumption Report ("Consumption Report"), shows that the Regional Board has chosen the least conservative consumption rate available in the Consumption Report. Rather than using the consumption rate that the Consumption Report identifies as the most accurate and representative of Bay fish consumption, the Regional Board inexplicably chose to use the lower, and therefore less protective, rate that contained more bias.	See above response to comment No. 38 Furthermore, the fish consumption rate of 32 g/day is the same as that used in the water quality objective in the San Francisco Bay Mercury TMDL. That TMDL was approved by the US EPA in February 2008, and it is also protective of beneficial uses in the Bay.
43.)	21,	The authors of the Consumption Report classify the study subjects into two main categories: recent consumers and consumers. *Recent consumers* are "anglers who reported consuming fish caught from SF Bay in the four weeks prior to the date they were interviewed." *Consumers* are "anglers who report consuming fish caught from SF Bay (no time period specified)". The study authors note the distinction is important because the four week recall time period	The commenter misrepresents the consumption study data by implying that the numbers are by default "biased". The "recent consumers" are a subset of consumers who reported consuming Bay fish in the last four weeks while "consumers" represent all anglers who consume fish in the Bay. Regardless, the chosen consumption rate is consistent with CTR

		used to define *recent consumers* was done "to maximize the time period over which a consumption rate estimate could be made while minimizing recall bias." Thus the Consumption Report indicates that the rate that would be the most accurate and have the least bias would be the one calculated for *recent consumers*. According to the Consumption Report, the 95th percentile consumption rate for *recent consumers* is 80 g·d-1 4. The 32 g·d-1 used by the TMDL is the 95th percentile for the *consumer* group. Thus, the screening value of 32 g/d used by the Regional Board in the TMDL is one that has greater uncertainty and is least representative of actual San Francisco Bay fish consumption rates.	standards. The chosen rate of consumption uses a very ambitious endpoint with conservative uncertainty factors.
44.)	21,	The use of a 10^{-5} risk level is not justified. The screening value for the TMDL used a maximum acceptable risk level of 10^{-5}. EPA guidance recommends using a maximum acceptable risk level ranging from 10^{-4} to 10^{-6}, thus 10^{-5} is the middle value of this range. The staff report does not explain why the Regional Board has chosen a "middle of the road" instead of using the maximum risk level. The Regional Board used this less protective risk level despite the fact that one of the peer reviewers of this TMDL emphasized that the 10^{-6} is the 'desirable' level and the 10^{-5} risk level, while allowable, is not 'ideal'.	See above response to comment No. 38 The commenter is referring to a comment submitted Dr. David O. Carpenter, M.D. who peer reviewed the TMDL. The Regional Board has adequately responded to said comment in the staff's responses to peer review comments. The commenter has not explained how the response or explanation that the Regional Board provided was allegedly inadequate. See Response to comment No. 0.1 above.
45.)	21,	The fish screening value inappropriately assumes that all fish consumers will eat only the skinless fillet, but in reality all parts of the fish are consumed including those that tend to accumulate the highest levels of PCBs. In developing this TMDL, the Regional Board assumed that all consumers would eat fish fillets with the skin off. However, this scenario does not reflect the way a large portion of Bay area fish consumers actually eat their fish – subsistence fishing groups in the Bay Area, which make up a very large portion of Bay fish consumers, tend to eat fish with the fat and skin intact. PCBs bioaccumulate in the fatty tissues of fish. Davis et al 2002 demonstrated that the total concentration of PCBs in fish measured with the skin on is significantly higher than fish that are measured with the skin off. Therefore, eating fish prepared with a cooking method that drains the fat and without the skin on minimizes a person's exposure to PCBs. However, due to a lack of knowledge, cultural or personal preference, and daily dietary requirements, many people consume the whole fish or consume the fish with the	Attainment of the fish tissue target is based on comparing the concentration of total PCBs in the edible portion of two fish species, white croaker and shiner surfperch to the target concentration. The edible portion is measured with the skin-on for these two species. This is how the Regional Monitoring Program has measured fish tissue concentrations in the past and will be the protocol into the future.

		skin on. The Consumption Report found that, particularly among Asian ethnic groups, consumers will regularly eat fish with the skin on. For example, among Bay Area pier anglers, consumers of striped bass and white croaker ate skin 40% and 52% of the time respectively. Furthermore, these rates were slightly higher (49% and 56%, respectively) for Asians who consumed these species. Other studies of subsistence fishing in the Bay have found similar patterns of fish consumption habits. A study of pier fishers reported that 49% of consumers of striped bass ate the skin and 36% of white croaker consumers ate the skin in the previous 30 days. The majority of the participants in this study were African American and Asian Americans. Anecdotal reports and focus groups in other regions also point to consumption by various ethnic groups of other fatty parts of locally caught fish, including the head and inner organs. Dr. Rogers' review clearly articulates the role that ethnicity plays in fish consumption in the Bay Area and how that should be taken into consideration in a TMDL process.	

46.)	21,	Taken together, these three flaws indicate that this TMDL does not provide a margin of safety adequate to meet the requirements for TMDLs. The Regional Board argues that the use of the 95th percentile consumption rate of fish consumers combined with the 10-5 risk level provide an adequate margin of safety for the population *as a whole*, which includes people who do not eat fish. But the purpose of this TMDL should not be to protect those who will not be eating fish from the Bay; instead it must be designed to specifically protect those at greatest risk of exposure. The main driver behind this TMDL is a fish consumption advisory, it therefore is completely illogical to provide a margin of safety for the portion of the population that will not be eating fish from the Bay. Without adequate protections for the most vulnerable populations, and especially given the long and uncertain timeline for attainment of this TMDL, we are deeply concerned about the serious environmental justice issues raised by this TMDL. The TMDL cannot rely solely on exposure reduction through education and outreach to change the way people consume fish as in OEHHA's fish consumption advisory recommendations. Education and outreach are not the long-term solution to protecting our most at-risk consumers – using the TMDL as the intended regulatory tool to ensure our ecosystem is healthy and free of toxic pollution is the only way to protect our communities. The State Board should require the Regional Board to craft a fish tissue target based on the most defensible consumption rate available – 80 $g \cdot d^{-1}$, including a risk level of 10^{-6}, and on patterns of fish consumption that reflect the way the most at risk groups eat fish (whole and with the skin on).	State Board Staff does not support a remand for this TMDL. The SF Bay Regional Board has shown due diligence with this extremely complex TMDL, using sound science and public participation. State Board Staff feels that it is an economically feasible project that will provide pollution reduction benefits beyond the scope of just PCBs. The adaptive implementation approach is based on taking immediate actions commensurate with available information, reviewing new information as it becomes available, and modifying actions as necessary based on the new information. Taking immediate action makes progress at the same time while more and better information is collected, and the effectiveness of current actions is evaluated.
47.)	21,	Not all ecological receptors are appropriately considered in this TMDL The fact that PCBs are both persistent and tend to biomagnify up the food web makes their presence in the San Francisco Bay ecosystem particularly alarming. Marine mammals are particularly susceptible to exposure given their life history, their long life span and position at the top of the food web. Similarly, fish eating birds also have a risk of high exposure to PCBs. Research in the Bay has borne this out – PCBs are already accumulating and potentially harming more than just the fish in the Bay….	The fish-tissue target contained in the TMDL was, as explained in Section 8.1 of the Staff Report, set at a level that is protective of human as well as wildlife that consume Bay fish. Staff recognizes the limitations of the steady-state food web model. However, this model provides estimates of site-specific concentrations of PCBs in the food web based on water and sediment data. The model input uses congener-specific data in water and sediment to estimate the concentration in fish and other aquatic species. It is a state of the art model that

		…The Regional Board's stated assumption that a TMDL that will protect human health will automatically protect ecological receptors is not justified. This TMDL is based in large part on the food web model developed by Gobas and refined by Gobas and Arnot. We recognize that Gobas and Arnot followed specific criteria for selecting the fish species to be included in the food web model. However, the model overall leaves out several important key trophic components that can affect the final conclusions about how much biomagnification of PCBs occurs in the San Francisco Bay food web. The food web model as described by Gobas and Arnot (2005) does not include two trophic levels for zooplankton – one for microzooplankton such as rotifers and a separate trophic level for macrozooplankton such as copepods. Furthermore, the food web model also indicates that energy flows from phytoplankton to bivalves but does not include a consumer of bivalves. Research on the trophic relationships in the Bay has clearly demonstrated that key fish species regularly consume bivalves as prey items… …the TMDL assumes that because the Continuous Chronic Concentration (CCC) is set at a higher concentration than the human health standard, that wildlife will necessarily be protected by the use of this human health standard. The TMDL Staff Report does not provide sufficient support for this assertion. The human health criterion is designed to protect humans and is based on a very low consumption of fish. But many wildlife species have diets that are largely made up of fish and thus their exposure rate can be much higher than for humans. For example, harbor seals in the Bay eat a diet largely made up of fish so it stands to reason that their consumption rates might actually be much higher than what is used to determine the CTR's human health criterion. Additionally, Bay birds are particularly susceptible to the estrogen-mimicking dangers of PCBs and often experience reproductive harms at levels much lower than human risk levels. It is also important to note that wildlife do not remove the fat, skin or organs before they consume fish and thus ingest the parts of fish that have the highest PCBs concentration. Recommendation: The Regional Board should be required to update the food web model to include all appropriate wildlife endpoints and revise calculations accordingly.	has been peer reviewed by the scientific research community and the regulatory community. Furthermore, the State selected this model by for the development of sediment quality objectives. However, we still expect to improve on this model in the future if it becomes necessary and appropriate. In a recent report, USFWS suggested that piscivorous birds feeding in the Bay's shallow waters, such as the Caspian terns, Forster's terns, and the federally endangered California least tern, are the primary wildlife foraging guild at risk in the Bay. As such, impairment of wildlife, aquatic habitat, and rare and endangered species beneficial uses cannot be dismissed and has been included in the analysis of this TMDL. In order to adopt a TMDL, a demonstration that all applicable beneficial uses will be attained is required. In this TMDL, the Regional Board included that demonstration. While the commenter has provided interesting information addressing the levels required to protect beneficial uses, any changes to the beneficial uses outlined in the SF Bay Region's Basin Plan are outside of the scope of this TMDL.
48.)	21,	The TMDL does not contain a meaningful implementation plan and	See Response to comments No. 38-40 above

		fails to identify how the most uncontrollable sources (Central Valley and municipal stormwater) will achieve load reductions. Even if the TMDL had no flaws in the underlying science, this TMDL would still be wholly inadequate as it does not provide any kind of meaningful action plan for achieving the load reductions. The Regional Board has not provided any justifiable reason for not including a real action plan for implementation that includes required actions. Instead, this TMDL relies almost entirely on natural processes to reduce loading from the Central Valley and on vague and unspecified actions by the stormwater agencies to reduce the loadings from stormwater. As win the mercury TMDL, developing a detailed, lengthy TMDL to then simply rely on Mother Nature to naturally remove pollution from the Bay seems like a waste of staff resources, time and energy and risks not fulfilling the purpose of TMDLs, and the mandates of the Clean Water Act. In addition to the lack of a real plan of implementation, the potential success of this TMDL is further hampered by several key weaknesses: • The TMDL relies most heavily on reductions from urban stormwater, which is one of the least controllable sources and results in great uncertainty about whether TMDL targets will be achieved within the already lengthy timeframe; • Given the unreliability of depending on stormwater control, the TDML fails to include necessary specificity on addressing land sources of contamination that impact stormwater; • The TMDL relies heavily on reductions from the Central Valley without any assurances that the Central Valley is prepared to achieve those targets; • The TMDL does not require permits to contain numeric effluent limits for wastewater permittees, instead permits are based on their current performance; • Wastewater permittees are not required to use analytic methods with the lowest detection limit, which will make it extremely challenging, if not impossible, to determine whether they are in compliance with their wasteload allocations;	

		• There is no load-allocation for erosion, dredging or in-Bay contaminated sites (hotspots) and no timeframe for clean-up of in-Bay hotspots. These points were thoroughly detailed in our January 22, 2008 comment letter and in our opinion are still major causes for concern.	
49.)	21,	Improved implementation for urban stormwater -- Urban stormwater is by far the largest Bay Area source of PCBs and though it is an unwieldy non-point source, it has the potential for the greatest reductions in loading. For the TMDL to be successful, therefore, loading from urban stormwater must be dramatically reduced and that reduction must be quantifiable and demonstrable. Yet this TMDL only requires that municipal stormwater permittees monitor and quantify how much PCB their current management practices remove from the system. Even the BPA recognizes that the implementation plan for MS4s may be inadequate to achieve the required reductions and states that the assigned load reductions will be revised if allocations cannot be achieved. Furthermore, the requirements laid out in the most recent draft of the San Francisco Bay Area's Municipal Regional Permit do not improve upon this weakness as the stormwater permittees are only asked to conduct pilot projects and do not contain any meaningful actions that will actually lead to a reduced loading of PCBs. As Dr. Rogers notes in his review, the Regional Board can provide strategies and technologies that can guide responsible parties towards achieving their load allocations and offers an example of a TMDL that specifically incorporated implementation guidance and a detailed implementation schedule (see Dr. Rogers General Comment 7 regarding the Aquilla TMDL). He attributes the success of that TMDL largely to these detailed components. We fully recognize that there is still much work to be done to understand how PCBs move through the San Francisco Bay watershed and its ecosystem. However, we feel that there are several concrete actions that the Regional Board could require that would immediately start the process of reducing and removing PCBs in our environment. For example, as Dr. Rogers points out, this TMDL fails to address a large potential reservoir of PCBs on land – transformers and capacitors that contain <50ppm PCB. This	Please see response to comment No. 39 above The TMDL implementation plan calls for implementation of control measures to manage PCBs in stormwater. The supporting staff report identifies these control measures as including abatement of PCBs in runoff by controlling/overseeing removal and disposal of PCBs-containing equipment. Further, permit requirements in the first NPDES stormwater permit term are to include ensuring that inspectors identify the locations of PCBs-containing equipment. The second permit term would focus on removal actions that would reduce loading to the Bay. This requirement includes transformers containing less than 50 ppm PCBs.

		TMDL could incorporate a plan of action for identifying where these transformers are located and a plan for their removal. In addition, the TMDL Staff Report identifies on-land areas with high concentrations of PCBs in stormwater conveyance systems. It is unclear why this TMDL could not describe an immediate course of action that would immediately require the clean-up and removal of these sites. The implementation plan should require stormwater permitees to expand their industrial inspections program to include inspections of inactive industrial sites and a description of what will be done at such sites when PCBs pose a threat to Bay water quality. Then TMDL should specify the regulatory actions the Water Board and permittees will take to ensure all sites which are potentially significant sources of PCBs (i.e., industrial sites active at any time from the 1940s through the early 1980s) will be identified, investigated, prioritized for sampling and inspection, and followed up with appropriate cleanup action.	
50.)	21,	The Regional Board has the regulatory authority to investigate and abate on-land contaminated properties. The TMDL Staff Report does not identify how the Regional Board plans to exercise this authority to assist municipalities and other agencies in identifying and abating sites. For example, the implementation plan should, at the very least, outline a program for (1) using section 13267 requests for information to assist municipalities in gathering information about potentially contaminated sites, (2) tracking and prioritizing sites requiring remediation, (3) using Cleanup and Abatement and Cease and Desist Orders to clean up privately-owned sites, and (4) working with other regulatory agencies to ensure that on-land cleanups occur to a level and in a manner that does not frustrate TMDL implementation.	The authority for these actions is implicitly required in the implementation plan. The proposed phased implementation plan calls for municipalities to investigate on-land PCBs contaminated soils and/or sediments whether from active or abandoned sites. The regulatory mechanism to require remediation will be determined on a case by case and may involve federal, state, or local authority. State Board Staff does not see that it is necessary to express these in the Basin Plan Amendment nor would it be ideal.
51.)	21,	Failure to provide reasonable assurances that nonpoint source reductions will be met -- When all of these factors are taken together, we believe that this TMDL does not provide the necessary reasonable assurances that implementation of waste load allocations will occur. Federal law requires that TMDLs must require point sources to bear the burden of all necessary load reductions unless the State can provide "reasonable assurance that nonpoint source controls will be implemented and maintained." When point sources	This issue was raised by the US EPA during the first Regional Board comment period. It was responded to under "USEPA Comment Cover Letter 1". The commenter states that Federal law requires that TMDLs must require point sources to bear the burden of all necessary load reductions unless the State can provide "reasonable assurance that nonpoint source

		such as municipal and industrial wastewater dischargers receive less stringent wasteload allocations because nonpoint source reductions are expected, the TMDL must include a demonstration that the nonpoint source controls are practicable and "reasonably assured of being implemented in a reasonable period of time." Reasonable assurances must include an "actual demonstration that the measures identified will result in the predicted reductions and that the State is able to assure this result." Assurances include "the application or utilization of local ordinances, grant conditions, or other enforcement authorities."	controls will be implemented and maintained." In response to US EPA's comments the Basin Plan was revised to incorporate new load estimates for both Central Valley and stormwater sources. In addition, the Regional Board responded to US EPA's satisfaction providing sufficient reasonable assurance that load reductions would be met.
52.)	21,	Unjustifiably long timeframe -- All of the above described weaknesses are compounded by the excessively long timeframe to attainment of this TMDL. EPA policy requires that TMDL implementation plans "be sufficient to implement all wasteload and load allocations in a reasonable period of time". Our understanding of the mass budget model is that the TMDL will not result in achievement of the sediment "goal" until at least 2060 – that is assuming that the MS4s can meet their load allocation, which seems unlikely. Again, the success of this TMDL seems to rest almost entirely on the shoulders of the MS4s, yet even the MS4s do not believe that they will be able to meet their load allocations in the allotted timeframe: "The proposed urban runoff allocation of 2 kg/year represents a 95% reduction in PCBs loads, based upon the estimated existing urban runoff load of 40 kg/year. Two kg/year is also estimated to be the resulting load when all sediment in urban runoff has a concentration of 1 ug/kg, the sediment PCB concentration goal. Meeting this allocation and sediment target in the proposed 20-year time frame is almost certainly unrealistic, impracticable and infeasible." We respectfully submit that this TMDL will only continue to allow humans and wildlife to be exposed to the harmful effects of consuming PCBs for far too long a period of time.	The commenter states that the current estimate of existing loads is 40 kg/yr, which is incorrect. Current existing loads are estimated at 20 kg/year which is a 90% reduction. The Regional Board recognizes that there are uncertainties associated with estimates of stormwater loads and allocations, and they used an upper bound for their estimates of stormwater runoff. The TMDL calls for meeting the allocations within 20 years and attainment of the fish tissue target within 40 years. This is a reasonable period of time given the complexities involved in addressing the impairment. Implementation of the TMDL relies on an adaptive implementation approach, which is based on taking immediate actions commensurate with available information, reviewing new information as it becomes available, and modifying actions as necessary based on the new information. Taking immediate action makes progress at the same time while more and better information is collected, and the effectiveness of current actions is evaluated.
53.)	21,	Conclusion We do not need more vague promises of further study or claims about the complexity of a difficult situation. **We need clean water, sediment and, most of all, clean fish**. We are therefore asking the State Board to require the San Francisco Bay Regional Board to assure that: 1. The fish tissue target incorporate a much more stringent margin	See above responses to comments No. 38-53

		of safety to ensure that the TMDL is protective for those people who are at greatest risk of exposure, 2. To ensure that wildlife will be adequately protected by these targets, and 3. To require that the Regional Board provide an adequate implementation plan to ensure that the goals of this TMDL are met and met in a timely manner.	
54.)	16,	GE appreciates the opportunity to provide comments to the State Water Resources Control Board (the State Board) on the proposed Regional Water Quality Control Board's (the Regional Board) Basin Plan Amendment for San Francisco Bay establishing a total maximum daily load (TMDL) for PCBs and an Implementation Plan for PCBs in San Francisco Bay (collectively the "TMDL"). GE commends the Regional Board Staff and members of the State Board for the effort they have put into development of the TMDL, their willingness to discuss and entertain potential solutions, and to resolve certain issues of concern. GE provided comments to the Regional Board on August 20, 2007 and January 22, 2008. All of GE's prior comments, testimony and submittals, are fully incorporated by reference herein. GE focuses its comments today to new information not previously considered during the Regional Board process.	GE asks that the State Water Board take notice of all the comments that the commenter (previously submitted by Latham & Watkins) made with respect to previous drafts throughout the administrative history of this TMDL, and purports to incorporate all of those comments by reference in its most-current comment letter. This request is inappropriate. The proceedings before the Regional Water Board included opportunities to comment, and for the Regional Board to respond to those comments. In some instances, the Regional Board made changes to the regulation based upon the comments received. In others, the Regional Board did not. Some of the old comments may have relevance to the latest iteration of the TMDL, and some may not. This global "incorporation by reference" ignores the process undertaken by the Regional Board, and fails to articulate any grievance that the Commenter currently has with that process or with the substance of the regulation. Specifically, where the Regional Board made changes in response to a comment, the Commenter has failed to explain how the changes were allegedly inadequate. Likewise, where the Regional Board did not make changes, the Commenter has failed to explain how the response or explanation that the Regional Board provided was allegedly inadequate. The State Water Board cannot divine which of the many comments made by the Commenter have been adequately satisfied through the process of consideration and reconsideration by the State and Regional Board, and which comments the Commenter does not. Most importantly, the State Water Board cannot determine the reason for any

			remaining dissatisfaction. Without that information, the State Board does not have a fair opportunity to address any remaining concerns. Interested persons were asked to comment to the State Water Board on the latest version of the TMDL, which was adopted by the SF Bay Water Board, so that the comments can assist the State Water Board's review of whether to approve the TMDL. The comment period was May 5, 2009 to June 4, 2009. Any comments that the Commenter has not presented to the State Board, including those purportedly incorporated by reference, must be deemed waived. Also, please see comment 0.1 above.
55.)	16,	In sum, GE believes that the TMDL as proposed has several significant flaws that, if not ordered by the State Board to be corrected on remand, could lead to enormously costly decisions that are not supported at this time by good science, good economic analysis, or applicable law. At any time, these circumstances could lead to serious missteps. In this nation's and this State's current precarious, economic climate, a $10,000,000,000 misadventure would be far worse.	Comment Noted.
56.)	16,	GE is prepared to continue to work collaboratively with the Regional Board, the State Board, and affected stakeholders. GE respectfully asks the State Board to deny approval of the PCBs TMDL as proposed on the ground that, after the correction of certain erroneous scientific assumptions, the TMDL is unnecessary. The alleged impaired use will self-correct itself within a timeframe similar to what the TMDL proposes to achieve. Implementing the TMDL as it now stands will alternatively be costly and burdensome to the regulated community with little to no commensurate benefits. In the alternative, GE requests that the State Board remand the TMDL back to the Regional Board with instructions to modify it to correct its defects, consistent with GE's prior and current comments. If remanded, the State Board should further order the Regional Board to present a revised PCBs TMDL in accordance with the State Board's instructions to the Board Members at a public hearing, after adhering to proper notice and comment procedures called for by the Water Code.	Comment Noted. Note: State Board Staff has appropriately responded to the attached letters from Dr. Sunding and Dr. Connolly separately below.

		GE believes there are five remaining economic, technical, and procedural issues regarding flaws in the PCBs TMDL, any or all of which support GE's request for denying as proposed, or remanding, the PCBs TMDL back to the Regional Board. A brief summary of each issue is presented here. For more detailed explanation, please see the attached expert technical comment letters by Dr. David Sunding, economist and from Dr. John Connolly of QEA Anchor (Attached hereto as Appendices A and B respectively).	
57.)	16,	***The Regional Board has not met its burden under Porter-Cologne* to *properly consider economics in the development* of *the TMDL.*** Dr. Sunding's prior comments on the Regional Board's draft TMDL demonstrated that the Regional Board failed to adequately incorporate a solid economic analysis in developing the TMDL. He pointed out that the Board failed to adequately characterize or analyze potential compliance costs or discuss them rigorously in relation to expected benefits. "All of these errors and omissions place the [Regional Board's] Staff Report analysis outside the bounds of any form of standard economic analysis." (Appendix A, Dr. Sunding Comments at page 1.) He further noted that true TMDL costs could be in the hundreds of millions or billions of dollars (id. at page 2), and would result in an unacceptably high level of costs compared to benefits achieved. The Regional Board has stated that TMDL compliance costs could be $500,000,000/year over a twenty-year period (SF Bay PCB TMDL Feb. 2008 Staff Report, pages 123-124), a cost that Dr. Sunding regards as wholly disproportionate to any little benefit that might be achieved. (Dr. Sunding Comments at pages 2 and 4.) In his new comments here, Dr. Sunding brings to the State Board's attention three new developments since August 2007 that further support his prior opinions: the State Little Hoover Commission report, The *Arcadia II* decision, and new data on angler fisherman in the Bay. First, he discusses the State's Little Hoover Commission ("Commission") report finding that the State Board and Regional Boards should employ a more rigorous approach to estimating and analyzing costs and comparing them with the expected benefits of improvements in water quality. (Id. at page 2.) In fact, the Commission cites a recent article co-authored by Dr. Sunding, as a	State Board staff disagrees with this statement. The Regional Board is required under Porter-Cologne to consider economics only when adopting or revising water quality objectives. (See Watt. Code §13241.) The Regional Board did not adopt or revise objectives as part of this TMDL. The Regional Board is required under the California Environmental Quality Act (CEQA) to consider a reasonable range of economic factors when adopting a regulation establishing a performance standard. (See Pub. Resources Code §21159.) However, neither Porter-Cologne nor CEQA requires that the Regional Board conduct a "cost-benefit" analysis as part of the basin planning process for TMDLs. Public Resources Code §21159 requires that the Regional Board: "perform, at the time of the adoption of a rule or regulation requiring the installation of pollution control equipment, or a performance standard or treatment requirement, an environmental analysis of the reasonably foreseeable methods of compliance. In the preparation of this analysis, the agency may utilize numerical ranges or averages where specific data is not available; however, the agency shall not be required to engage in speculation or conjecture." Regional Board staff included an economic analysis for the reasonably foreseeable means of compliance with the proposed TMDL in the Staff Report. In this

		"roadmap for how to better incorporate economics into the regulatory process." (Id.) A copy of Dr. Sunding's and Dr. David Zilberman's article, "Consideration of Economics Under the California Porter-Cologne Act" Hastings West-Northwest Journal of Environmental Law & Policy (2007): 73-116, is attached hereto with Appendix A and incorporated by reference. Second, he discusses the recent Arcadia II decision mandating that the State and the Los Angeles Regional Water Quality Control Board consider economic factors when adopting or refining water quality standards. City of Arcadia v. State Water Resources Control Board, No. 06CC02974 (Orange County Super. Ct., July 2, 2008). Dr. Sunding summarizes the meaning of the Little Hoover Commission's Report and the *Arcadia* decision as follows: Both ... are supportive of the basic theses of my earlier testimony, namely that some robust form of economic analysis of proposed water quality standards is required under Porter-Cologne. Further, the Little Hoover Commission Report finds that increased use of economic analysis, as required by the Legislature, will improve the performance of the water boards by allocating scarce resources to the water quality problems that pose the greatest threat to the public, and by avoiding large expenditures on compliance with regulations that have little public benefit. (Dr. Sunding's comments at page 3.) Third, he also describes, as does QEA in its comments, new angler and PCB fish tissue concentration data that has become available and is relevant to the PCBs TMDL. He notes that, based on new information received from the Recreational Fishing Network (RECFIN) on particular species actually sought and caught by anglers in San Francisco Bay, the benefits of the proposed TMDL are "insubstantial" and "miniscule", because less than one percent of anglers are seeking the two specific reference species used to develop the TMDL. (Id. at pages 3-4.) Dr. Sunding concludes, similarly to QEA, that "the Regional Board's use of these two reference species does more than provide a margin of safety, rather it is wholly unrealistic as the basis for public decision-making, particularly in view of the likelihood of large compliance costs ... " (Id. at page 3.)	analysis, the Regional Board was not required to compare “costs to benefits achieved.” GE discusses the more recent Arcadia case which is in the appellate court and is not binding on the Regional Board. In addition, the Arcadia case holds the opposite of what the commenter claims (also further discussed in Dr. Sunding’s attached comment letter). The court in Arcadia stated that the economic analysis required by Water Code section 13241is similar in scope to the CEQA requirement that we use to analyze the costs of the reasonably foreseeable alternative methods of compliance. Since this TMDL does not establish any new water quality objectives, the Regional Board has followed proper protocol in their economic considerations. Also, the State Water Board is familiar with the State Little Hoover Commission Report, and it has taken its findings into consideration. The commenter describes recent information received from the Recreational Fishing Network (RECFIN) on species caught in San Francisco Bay alternate to those considered in the TMDL (shiner surfperch and white croaker). The Regional Board has recognized in previous responses to comments that recreational anglers eating fish caught from San Francisco Bay consume a variety of species of fish, not exclusively shiner surfperch or white croaker. There are valid reasons for choosing the two species including the incorporation of a margin of safety. The Regional Board followed US EPA guidance and readily available data, including local seafood consumption surveys. Nevertheless, through adaptive implementation and the collection of additional information, Regional Board staff will evaluate whether fish species other than shiner surfperch or white croaker should be considered to evaluate

			attainment of the fish tissue target during the life of the TMDL. If the commenter is arguing that the two species consumption rates are related to costs-benefits because the benefits are “insubstantial and miniscule” then that argument is invalid because 1) The regional board is not required to do a cost-benefit analysis as explained above and 2) the species were chosen to incorporate a margin of safety. Further, the wasteload allocations were calculated based on the TMDL and a protective fish tissue target; there is no relationship to specific fish species.
58.)	16,	***The PCBs TMDL does not properly account for the ongoing natural recovery* of *San Francisco Bay.*** QEA's technical memorandum makes use of new Regional Monitoring Program (RMP) data to show that, due to the ongoing natural recovery of the Bay, the northern portion of the Bay has already reached the sediment target level of 1 microgram per kilogram (equivalent to one part per billion ("ppb")) PCBs, while the average sediment concentrations in the central and southern portions of the Bay have declined on average from 3 to 5 ppb. The additional data provided by the 2006 RMP data "provide further evidence that surface sediment PCB concentrations in the central and southern parts of the Bay drop in half approximately every 10 years" (Appendix B, QEA Comments at page 2), rather than the 56 years used by Regional Board Staff. Moreover, QEA analyzes the new and existing data to show that the natural sediment recovery trends are consistent with decline rates seen in Bay mussels, the Bay's water column and in shiner surfperch data. (Id. at pages 3-5, accompanying figures 1 through 3.)	A similar comment was received by the SF Bay Regional Water Board during their first comment period, and it was responded to under Cal. Chamber/GE Comment 3 and QEA Comment No. 6. Commenter is only using selected data. Concentrations in 2007 were higher in all Bay segments than in 2004-2006.
59.)	16,	***The PCBs TMDL does not properly characterize the assimilative capacity* of *San Francisco Bay.*** QEA renews its earlier comments regarding a major flaw in the 1-Box Model used by the Regional Board, explaining that it results in an "arbitrary adjustment to PCB outflows" and thus "inaccurately predicts that current PCB loadings will delay recovery of the Bay by 100 years." (ld. at page 5.) QEA opines that, without correcting the 1-Box Model to apply a scale factor to the Bay outflow volume	The Regional Water Board justifies use of the 1-Box Model developed by the San Francisco Estuary Institute (SFEI) including the scaling factor used. A similar comment was received by the SF Bay Regional Water Board during its first comment periods and it was responded to under Cal. Chamber/GE Comments 2 and 49.

		to reduce the PCB loss through outflow and exchange (id. at page 5, footnote 3), the model utilized by the Regional Board does not "closely match what is happening in the Bay" (id. at page 5, see also Comment No.1, above). QEA concludes, "Given that the current loading is estimated at 33 kg/yr, the corrected 1-box model suggests Bay sediments will [naturally] reach the target at the current loading in approximately 40 years ... even if no regulatory-required actions are taken to reduce PCB load." (Id. at pages 6 and 7, see also figure 4.) Finally, QEA notes: While the corrected [by QEA] 1-box model is better able to represent actual observed rates of PCB declines, we understand a multi-box model is under development to improve the understanding of the long-term fate of PCBs in the Bay (SFEI 2008b). When the multi-box model has undergone the sufficient quality assurance/quality control (QAlQC) validation, it should be considered in future analyses (e.g., if the TMDL moves into the Adaptive Implementation (AI) process. (Appendix B, QEA Comments at page 6.) In summary, and regarding the critical importance of the two above-described technical issues, QEA states: The first two issues are important because they impact the PCB load allocation and our technical opinions regarding the timeframe for recovery of the Bay. By failing to properly account for natural recovery and the assimilative capacity of the Bay, the necessity and benefit of the TMDL has been significantly overestimated. Thus, the [Regional Board] has overestimated the time benefit of the prescribed TMDL (i.e., the extent to which loading reductions will accelerate achieving the goals of the TMDL.) Further, the [Regional Board] has overestimated the extent to which PCB loads need to be reduced. (Id. at page 1.)	
60.)	16,	***The PCBs TMDL uses two species* of *fish that are rarely consumed by anglers,* to *assess current and future attainment* of *the already conservative PCBs TMDL fish tissue target concentrations.*** As noted in Dr. Sunding's expert opinion, summarized above, the "TMDL's usage of white croaker and shiner surfperch to evaluate achievement of the TMDL target means that the TMDL is requiring	A similar comment was received by the SF Bay Regional Water Board during their first comment period, and it was responded to under Cal. Chamber/GE Comment 75.

		exposure concentrations lower than deemed necessary to achieve its stated objectives. Current data suggest that the more commonly-consumed species of Bay fish have either already met the target or are much closer to meeting the TMDL target than these two rarely-consumed specifies (Id. at pages 1-2 and 6-7; see also David Sunding's comments below, re angler data.) In addition, QEA opines that the fish tissue target chosen by the Regional Board goes far beyond permissible margin of safety analyses: The [Regional Board's] final Staff Report revisions indicate that the TMDL is intended to be protective of one allegedly impaired beneficial use - commercial and sports fishing (COMM) - while maintaining all existing beneficial uses.... In order to protect the impaired COMM beneficial use, the fish tissue target derived by the [Regional Board] used several conservative assumptions (QEA 2007). Thus, it is already conservative. However, and most significantly, the [Regional Board's] use of two rarely-consumed species further introduces additional and unnecessary conservatism that constitutes a misuse of the TMDL's permissible margin-of-safety analysis. (Appendix B, QEA Comments at pages 7-8; see also footnote 6, noting that State Board Staff has apparently gone beyond the Regional Board's findings in the final Staff Report, in an attempt to claim that three other beneficial uses are impaired, a finding which the Regional Board could not make and took out of its final Staff Report.)	
61.)	16,	***The public is not afforded an opportunity* to *comment on the Regional Board's decision, up* to 10 *years after implementation* of *the Basin Plan,* to *either modify the TMDL or not modify the TMDL.*** The Regional Board stated in the February 2008 Basin Plan Amendment that, within 10 years of the effective date of the TMDL, the Regional Board "will consider a Basin Plan Amendment that will reflect and incorporate the data and information that is generated [during the Adaptive Implementation process] in the intervening years. Regardless of how the State Board resolves the substantive TMDL issues before it, the TMDL should be remanded and the Regional Board should be ordered to modify the Basin Plan Amendment to provide affected stakeholders with adequate procedural protections and judicial review of a Regional Board decision to continue or modify the proposed TMDL. This	An annual progress report would be included on the agenda of the San Francisco Bay Water Board's monthly meetings. Those meetings are publicly noticed and public input will be solicited and welcomed. In addition, the Regional Water Board will comply with the applicable public participation requirements should it determine the revisions are needed as part of the adaptive implementation.

		comports with Porter-Cologne's typical administrative or judicial processes. GE believes that these procedural due process guarantees could be assured on any remand with the State Board's direction to the Regional Board to proceed through a formal notice and comment process when it determines whether to amend the PCBs TMDL in the future, based upon new information developed during the Adaptive Implementation process. Thus, at the end of that evaluative process, the Board Members of the Regional Board would have to issue a formal resolution if they decide not to amend the PCBs TMDL at that time, just as they would have to do in order to approve an amendment to it. We believe that all affected Stakeholders would benefit from this clarified and enhanced procedure. In addition, we trust that Staff and Board Members would appreciate and support a more transparent and fair process with full opportunity for public comment and debate, rather than a decision made solely by Staff.	
62.)	16,	GE appreciates the opportunity to provide the State Board and the public with these comments, and the attached expert opinions of QEA and Professor Sunding. GE is prepared to work with State Board Staff and Board Members to address the PCBs TMDL issues outlined in this letter and in our earlier comments to the Regional Board.	Comment Noted
63.)	17,	I am pleased to submit these comments regarding the TMDL for PCBs proposed for the San Francisco Bay region. My background and qualifications are listed on the curriculum vitae attached as an exhibit to this comment. Currently, I am the Graff Professor of Natural Resource Economics and Policy at UC Berkeley, and the Co-Director of the Berkeley Water Center. I have worked in these areas for approximately the past 20 years. I am also a director of Berkeley Economic Consulting, Inc., an independent economic research firm specializing in energy, labor, environmental and natural resource economics. I have written over one hundred articles and reports in the areas of water resources, land use, and environmental policy. From 1996 to 1997, I served as senior economist at President Clinton’s Council of Economic Advisers, where I had responsibility for environmental, agricultural, natural resource and energy policy.	Comment Noted

64.)	17,	On August 20, 2007, I submitted written comments to the San Francisco Regional Board concerning the economics of the draft TMDL under consideration at that time. In that testimony, I offered several observations that are summarized as follows: Regional Board staff had not met its burden under Porter-Cologne to properly consider economics in the development of the TMDL. The plan for implementing the proposed regulation was not described in enough detail to permit an adequate calculation of costs. The report made no mention of who will bear the costs of complying with the regulation (for example, public or private entities), or of the potential regional economic implications of the action. The report did not acknowledge the potential employment impacts of the proposed TMDL, or the effect of the cleanup plan on competitiveness of California businesses. It did not attempt to gauge the significance of the action and did not discuss costs in relation to the level of benefits likely to be achieved. There was no mention of discounting, let alone any actual attempt to control for the fact that positive and negative impacts will occur over a period lasting perhaps decades into the future. All of these errors and omissions placed the Staff Report analysis outside the bounds of any form of standard economic analysis.	Please see response to comment No. 57 above
65.)	17,	The costs of the proposed regulation were not adequately described in the staff report. Available information demonstrated that the assertions of the Staff Report regarding the costs of compliance were significantly understated and misleading. For example, the report did not accurately reflect dredging costs at other locations in the Bay and nationwide. The report also mischaracterized the actual costs of impounding and treating stormwater to the levels required by the TMDL. Using more accurate information, the costs of the TMDL could reach into the hundreds of millions or billions of dollars.	Please see response to comments No. 3 and 57 above

66.)		The Regional Board staff erred in its description of the benefits of the proposed TMDL. The proposed screening levels were based on a flawed survey of recreational anglers, and the survey results were misapplied to the problem at hand. Controlling for actual exposure to PCBs in fish tissue, and recognizing that the proposed TMDL is designed to benefit only a small group of people engaging in an assumed, wholly unrealistic behavior, I concluded that the action would not significantly reduce human health risk, and therefore would not result in significant benefits. This circumstance would be in violation of the State requirement that major regulations are subject to a demonstration of economic value.	Please see response to comments No. 3 and 57 above
67.)	17,	The proposed action was likely to result in an unacceptably high level of costs in relation to the actual benefits achieved. The staff report failed to demonstrate that the Regional Board considered alternatives to the proposed TMDL that would be less burdensome, or that it considered the relative cost effectiveness of alternative standards. This was inconsistent with basic principles of economic analysis of regulation, and in contradiction to established federal guidelines promulgated by the US Environmental Protection Agency and the Office of Management and Budget. It was also inconsistent with the stated objectives of the proposed action listed in the staff report.	Please see response to comments No. 3 and 57 above
68.)	17,	Since I submitted my testimony in August 2007, there have been some significant developments with respect to consideration of economics under Porter-Cologne that I would like to bring to Staff's and the Board's attention. Earlier this year, the State's Little Hoover Commission released a report detailing the results of its investigation into the performance of the SWRCB and Regional Water Quality Control Boards. One of the Commission's principal findings was that the State should employ a more rigorous approach to estimating the costs of compliance with proposed water quality standards, and compare these costs with the expected benefits of improvements in water quality. The Commission cited to my recent article on consideration of economics under Porter-Cologne as a roadmap for how to better incorporate economics into the regulatory process. A copy of that article is attached as an exhibit to this letter, and is incorporated into my testimony by reference.	The Little Hoover Report is informational in nature and does not impose binding requirements on the Regional Board. In any event, the Regional Board conducted the economic analysis required under CEQA and met its burden to consider economics prior to adopting the TMDL.

69.)	17,	In addition, the recent Arcadia II Court decision mandated that the SWRCB and Los Angeles Regional Water Quality Control Board consider economic factors when adopting or refining water quality standards. The Arcadia II case, City of Arcadia v. State Water Resources Control Board, No. 06CC02974 (Orange Co. Sup. Ct.), was brought by a group of Southern California cities and building industry groups that opposed the application of numeric water quality standards to stormwater runoff. The plaintiffs argued that the water quality standards contained in the Basin Plan were not intended to apply to stormwater and that the Los Angeles Regional Water Quality Control Board had implemented the standards without reviewing their reasonableness, as required by State law. According to the plaintiffs, the Los Angeles Regional Board should have conducted this analysis during its 2004 Triennial Review of the Basin Plan. The Regional Boards, however, have long contended that the Triennial Review process is not the proper venue for evaluating the reasonableness of water quality standards. The Court agreed with the plaintiffs, finding that the Regional Board should have included consideration of the factors set forth in Water Code sections 13241 and 13000, including the practicability and economic impact of the water quality standards. The court ordered the Regional Board to set aside the order concluding the 2004 Review. During the reopened 2004 Review, or during the next scheduled Triennial Review, the Los Angeles Regional Board must review and revise the Basin Plan's stormwater quality standards in light of the above described statutory factors. A stakeholder process is now underway to provide technical and economic information to the Los Angeles Regional Water Quality Control Board on water quality standards and other basin planning issues as directed by the Court.	This decision is currently on appeal, and it is not binding on the Regional Board. Please see above response to comment No. 57
70.)	17,	Both the Little Hoover Commission report and the Arcadia II decision are supportive of the basic theses of my earlier testimony, namely that some robust form of economic analysis of proposed water quality standards is required under Porter-Cologne. Further, the Little Hoover Commission report finds that increased use of economic analysis, as required by the Legislature, will improve the performance of the water boards by allocating scarce resources to the water quality problems that pose the greatest threat to the public, and by avoiding large expenditures on compliance with regulations that have little public benefit.	Please see responses to Comments no 68-69 above.

71.)	17,	In the months following my previous testimony, new information relevant to the economic impacts of the TMDL for PCBs has become available. For example, the Recreational Fishing Network (RECFIN) has released new information on particular species actually sought and caught by anglers in the San Francisco Bay. This data strengthen my previous conclusion that the benefits of the proposed TMDL are insubstantial. RECFIN data indicate that only a small percentage of anglers in the San Francisco Bay are seeking the two specific reference species used to develop the TMDL: shiner surfperch and white croaker. Table 1 provides data on species sought from 2006 to 2008 (the 2008 data was just released). In all three years, shiner surfperch and white croaker are sought by only a small minority of anglers, less than one percent of all anglers according to the most recent data from 2008. Similarly, newly released RECFIN data displayed in Table 2 show that few anglers in the San Francisco Bay actually catch the two particular reference species. In 2008, less than one percent of Bay anglers report catching either the shiner surfperch or white croaker. Thus, the Regional Board's use of these two reference species does more than provide a margin of safety, rather it is wholly unrealistic as the basic for public decision-making, particularly in view of the likelihood of large compliance costs, as I discuss below. Newly released information on PCB concentrations in the reference species also reinforces my earlier conclusion that the actual benefits of the proposed TMDL are miniscule. The San Francisco Estuary Institute (SFEI) catalogs all Regional Monitoring Program results on their website. The data contain the PCB concentration levels for the shiner surfperch and white croaker, among other species. 3 As a result the average PCB concentrations can be calculated for the reference species. The most recent data, for 2006, reports an average tissue concentration for shiner surfperch of 94.2 ng/g wet weight, and white croaker 323.7 ng/g wet weight. This information is generally consistent with earlier estimates of PCB concentrations used in my previous testimony. Available information, including the recently released data described above, overwhelmingly suggests that human exposure to PCBs in fish tissue is minimal. The proposed TMDL is designed to	The TMDL is by design, adaptive in nature and will be revisited within a 10 year time frame. The kind of information presented by the commenter will be evaluated under this implementation framework. In addition, the TMDL acknowledges that more information regarding patterns of fish consumption will be required as part of the adaptive implementation of the TMDL. (See page A-2of the Basin Plan amendment)

		benefit only a small group of people engaging in a behavior that is more hypothetical than real. Indeed, there is no evidence to suggest that any recreational anglers are exposed to the levels of PCBs assumed in the Final Staff Report. Therefore, the proposed TMDL does not significantly reduce human health risk, and does not result in significant benefits. This circumstance is in violation of the State requirement that major regulations are subject to a realistic demonstration of economic value.	
72.)	17,	There is also new information available in the Final Staff Report that is relevant to the potential costs of the TMDL. The Final Staff Report accompanying the proposed Basin Plan Amendments states that substantial load reductions are required to attain wasteload allocations for stormwater. Specific best management practices (BMPs) and control measures to be considered include the following: Abatement of PCBs in runoff from areas with elevated PCBs in soils/sediments: o Investigate on-land PCBs contaminated soils and/or sediments; o Improve system design, operation, and maintenance to increase capture of fine sediments; o Strategic runoff treatment retrofits; and o Urban stormwater runoff treatment via municipal wastewater treatment systems. Abatement of PCBs in runoff from all areas: o Control/oversee removal and disposal of PCBs-containing equipment; and o Control/manage removal and disposal of PCBs from building materials and waste during demolition/remodeling. These BMPs and control measures are expected to be implemented in phases as NPDES permits are issued and reissued over the 20-year life of the implementation plan. In the first five-year permit term, stormwater permittees will be required to implement control measures on a pilot scale to determine their effectiveness and technical feasibility. Pilot-scale implementation costs are not discussed in the Final Staff Report. The Final Staff Report simply acknowledges that the largest implementation costs are anticipated to result from implementation of the stormwater runoff allocation portion of the TMDL, but does not contain any meaningful estimate	Please see response to comments No. 3 and 57 above

		of what those costs would be. Nonetheless, it is clear from the above list of actions that the actual implementation costs associated with the TMDL could be enormous and out of proportion to any benefits achieved.	
73.)	18,	The purpose of this letter is to summarize the major outstanding technical issues associated with the San Francisco Bay (Bay) Total Maximum Daily Load (TMDL) for polychlorinated biphenyls (PCBs) for the State Water Quality Control Board (SWRCB) to consider in its decisions regarding San Francisco Bay Regional Water Quality Control Board's (SFBRWQCB) PCBs TMDL, including proposed modifications to the Basin Plan Amendment and the SFBRWQCB's Implementation Plan. In addition, we provide updated information and analysis - to bring the latest technical information since our last comments on these subjects to the SFBRWQCB - to the attention of the SWRCB. Anchor QEA previously commented on many PCB TMDL issues before the SFBRWCB (see, e.g., QEA 2004, QEA 2007, QEA 2008). Anchor QEA focuses here on three issues for which updated analyses are presented: 1. The TMDL does not take proper account of ongoing natural recovery of the Bay 2. The TMDL does not properly characterize the assimilative capacity of the Bay 3. The TMDL uses two species of fish that are rarely consumed and have unusually high PCB levels to assess attainment of the already overly-conservative TMDL fish tissue target The first two issues are important because they impact the PCB load allocation and our technical opinions regarding the timeframe for the recovery of the Bay. By failing to properly account for natural recovery and the assimilative capacity of the Bay, the necessity and benefit of the TMDL have been significantly overestimated. Thus, the SFBRWQCB has overestimated the time benefit of the prescribed TMDL (i.e., the extent to which loading reductions will accelerate achieving the goals of the TMDL). Further, the SFBRWQCB has overestimated the extent to which PCB loads need to be reduced. The third issue is important because the TMDL's usage of white croaker and shiner surfperch to evaluate achievement of the TMDL	This is an introductory comment that presents three issues for which further discussion is provided in comments 73-86. All three issues were considered by the Regional Board. The first two regarding natural recovery and assimilative capacity pertain to the mass balance model the Regional Water Board used to establish the TMDL. The Regional Water Board has justified use of the model that was subjected to scientific peer review. Similar comments were received by the Regional Water Board during its first comment period and were responded to under Cal Chamber/GE Comments 2, 3, and 49 and QEA Comments No. 6. Please see above response to comment No. 0.1 In these new comments, the Commenter presents additional analysis of selected data to support its perspective on the issues. They represent a subjective adaptation of the model that the Regional Water Board chose to not accept and do not discredit the Regional Water Board's justification for use of the model. The third issue pertains to use of two species of fish to assess attainment of the TMDL fish tissue target. A similar comment was received by the SF Bay Regional Water Board during their first comment period, and it was responded to under Cal. Chamber/GE Comment 75.

		target means that the TMDL is requiring exposure concentrations lower than deemed necessary to achieve its stated objectives. Although the Regional Monitoring Program (RMP) data are limited, the data suggest that the more commonly-consumed species of Bay fish have either already met the target or are much closer to meeting the TMDL target than these two rarely-consumed species. In summarizing the technical issues, this memo incorporates evidence from new data that have become available, as well as a revision of the San Francisco Estuary Institute (SFEI) 1-Box Model used to determine the TMDL and the time to achieve compliance with the objectives of the TMDL. The new data include 2006 sediment, water, and fish monitoring data made available through the RMP.	
74.)	18,	**The TMDL does not properly account for natural recovery** In the TMDL for PCBs in the San Francisco Bay Final Staff Report for Proposed Basin Plan Amendment (Staff Report), the SFBRWQCB estimated that the Bay-wide average sediment PCB concentration is 4.6 micrograms per kilogram (µg/kg) (SFBRWQCB 2008a). Based on this average, Bay surface sediment PCB concentrations are within a factor of five of the sediment target. The new 2006 RMP data indicate that the northern part of the Bay has already reached an average surface PCB sediment concentration of 1 µg/kg, and thus meets the sediment target. These data also indicate further declines in average PCB surface sediment concentrations in the central and southern parts of the Bay to values of 3 and 5 µg/kg in 2006, respectively. Prior to the addition of the 2006 RMP data, we calculated that surface sediment PCB concentrations have been dropping in half every 12 and 9 years in the central and southern portions of the Bay, respectively (QEA 2007). With the addition of the 2006 RMP data, sediment trends indicate that average sediment PCB concentrations in these parts of the Bay drop in half every 8 to 11 years (Figure 1). Thus, the addition of the 2006 data provide further evidence that surface sediment PCB concentrations in the central and southern parts of the Bay drop in half approximately every 10 years.	See response to Comment 73. Comment reflects subjective analysis of just selected data. Concentrations in 2007 were higher in all Bay segments than in 2004-2006. The Bay-wide average for 2007 was 8.7 µg/kg in 2007 well above the overall long-term average of 5.7 µg/kg.
75.)	18,	The rates of decline seen in Bay sediments are consistent with the decline rates seen in mussels. Mussel PCB concentrations drop in half every 6 to 12 years (Figure 2a). To demonstrate that the rates of decline are similar, regardless of the data source, Figure 2a shows	Comment reflects subjective analysis of just selected data. However, PCBs concentrations in sediment and fish are not dropping in half every 6 to 12 years. See response to Comments 73 and 74.

		the rates of decline calculated in three ways: based on the State Mussel Watch (SMW) data only, based on the RMP data only, and based on the RMP and SMW data combined. That the rates of decline are similar, regardless of whether they are calculated from the older SMW data alone, the new RMP data alone, or the combined data set, shows that the measured declines are not merely a "problem of inter-calibration between the old mussel data and the new mussel data" as stated by Board Member McGrath at SFBRWQCB's February 13, 2008 Hearing to adopt the PCBs TMDL (McGrath statement to SFBRWQCB, 2008b). If Board Member McGrath was correct, we respectfully submit that we would not see similar rates of decline measured from the older SMW data and the more recent RMP data alone.	
76.)	18	At the same hearing, Board Member McGrath compared our analysis to the analysis presented in the Staff Report (SFBRWQCB 2008b). However, while mussel data are presented in the SFBRWQCB's Staff Report, there is no attempt to measure or assess data trends. To estimate the rate at which mussel PCB concentrations are declining, we aggregated the data spatially and took annual averages to minimize the noise in the data expected from spatial and seasonal variations. On a specific location basis, as presented in the Staff Report, you can still observe that more recent concentrations are lower than historical concentrations, but it is harder to estimate at what rate these concentrations have been declining, due to the noise in the data, which our analysis controls for.	Comment noted.
77.)		Board Member McGrath also expressed concern that the log-based presentation of these data somehow compromised its "robustness" (SFBRWQCB 2008b). The same data we present on Figure 2a are presented on a linear scale on Figure 2b; this plot shows a clear difference in historical concentrations and recent concentrations, but it is hard to see more recent changes in concentration due to the scale on the vertical axis. The large range in concentration from the historical data to the more recent data requires a large range on the vertical axis; this is the reason we presented the data on a log scale. The more recent RMP mussel data are presented alone on Figure 2c on a linear scale; as shown, these data still show a clear decline.	Comment noted.
78.)		New 2006 RMP PCB data are also available for the water column. The addition of these data to the RMP water column data set reveals declines at rates similar to those seen in sediments and mussels; water concentrations drop in half every 6 to 13 years (Figure 3).	Comment reflects subjective analysis of just selected data. See response to Comments 73 and 74.

		These rates are consistent with those measured previously, and thus further support a finding of continued downtrend in water column PCB concentrations.	
79.)		The above-cited rates of decline are consistent with those reported by the SFEI, on the basis of long-term trends in PCB concentrations in sediments and water at individual fixed monitoring stations (SFEI 2007). Significant declines with half-lives ranging from 10 to 25 years in water column PCB concentrations were measured at all 5 stations with continuous data. Half-lives ranging from 5 to 40 years were measured for sediment PCB concentrations at 7 stations with continuous data, and the declines were statistically significant for 6 of these stations. Differences in the number of years it takes for sediment and water concentrations to drop in half indicate that concentrations are declining faster in some locations than others.	Comment reflects subjective analysis of just selected data. See response to Comments 73 and 74.
80.)		Board Member McGrath contended at the February 13, 2008 SFBRWQCB Hearing that he had "spent 15 years in the RMP working with the data" but did not "read this as a steady downtrend." Presumably, this statement refers to our earlier analysis of the RMP data. However, SFEI has since conducted a detailed analysis on the same data, and has measured significant declines at nearly all locations with continuous records, at rates that bracket the rates that we have calculated and described above. These declines make sense, as our estimates represent averages in each of the three regions of the Bay that we looked at. Thus, it is true that PCB concentrations may not be dropping by half every 6 to 12 years at every location in the Bay; the SFEI analysis suggests that the Bay-as-a-whole range may be as wide as 5 to 40 years. However, the fact that we see significant declines at every location, and at similar rates in sediment, water, and mussels, provide irrefutable evidence of a steady downtrend in PCB levels in the various sampled Bay media.	There are not significant declines at every location, and at similar rates in sediment, water, and mussels as stated. See response to Comments 73 and 74.
81.)		The decline is also seen in recent shiner surfperch data; from 2003 to 2006, PCB concentrations dropped at a rate indicating a halving of concentration every 9 to 14 years in this species. Changes in monitoring locations confound interpretation of data collected before 2003. Recent data do not show declines in PCB concentrations; however, this could be due to natural variability during this time period. New 2006 RMP fish data are limited; several of the monitored species were dropped from the program "in favor of a greater emphasis on select indicator species for the different contaminants of concern" (SFEI 2008a). Discontinued	Comment reflects subjective analysis of just selected data. Commenter argues new shiner surfperch data illustrate a decline in PCB levels, but attributes lack of decline in white croaker PCB levels to natural recovery. See response to Comments 73 and 74.

		species include jacksmelt, leopard shark, and California halibut, any of which would be better indicator species for the Bay's recovery, as described below. In 2003, these species were either at or approaching the TMDL PCB target concentration for fish. Moreover, the most commonly-consumed species, striped bass, was collected but inexplicably was not analyzed for PCBs. Thus, due to the RMP's apparent decision to stop continuous monitoring of species other than the two that the SFBRWQCB has arbitrarily chosen to base TMDL success on, sufficient monitoring data are not available to measure trends in the commonly-consumed species.	
82.)		**The TMDL does not accurately characterize the assimilative capacity of the Bay.** As we have commented previously, the 1-box model used in the TMDL Staff Report to project the recovery of Bay sediments is flawed because of an arbitrary adjustment to PCB outflow (Connolly et al 2005; QEA 2007). This adjustment causes the model to trap PCBs in the Bay and under-predict the rate at which surface sediments are recovering. With this methodological flaw, the I-box model inaccurately predicts that current PCB loadings will delay recovery of the Bay by 100 years (Figure 28; SFBRWQCB 2008a). This iteration of the presentation of the model is new to the revised TMDL. While no documentation is provided, Figure 28 of the Staff Report clearly shows the model has been adjusted to incorporate the revised average PCB concentration in the active layer of 4.6 µg/kg. In the previous version of the TMDL Staff Report the 1-box model relied on an average PCB concentration of 31 µg/kg in the active layer.	See response to Comments 59 and 73. The Regional Water Board justifies use of the 1-Box Model developed by the San Francisco Estuary Institute (SFEI) including the scaling factor used.
83.)		Based on information provided in the comment responses to the 2007 Staff Report, the model has also been revised to incorporate an attenuation rate of 56 years for PCB external loads, but has not been revised to eliminate the arbitrary PCB outflow adjustment. Only by eliminating the methodological flaw, does the model closely match what is happening in the Bay (Figure 4). The vertical axis shows PCB mass in kilograms (kg). This is arrived at by taking the PCB concentration in the active layer (surface sediments) and multiplying it by the amount of sediments in the active layer. Thus, the TMDL sediment target of 1 µg/kg is equivalent to a Bay-wide PCB mass in sediments of 160 kg; this is shown as the dotted horizontal line. The horizontal axis refers to time in years. Year 0 represents the current condition; at year 0, the PCB mass in the Bay	See response to Comments 59 and 73. The Regional Water Board justifies use of the 1-Box Model developed by the San Francisco Estuary Institute (SFEI) including the scaling factor used that commenter calls methodological flaw.

		is approximately 650 kg, which is equivalent to a PCB sediment concentration of 4.6 µg/kg. The average 6- to 12-year half-lives that bracket the declines seen in the RMP data are shown on this plot as dotted and dashed lines, respectively. For example, the line representing the 6-year half-life is 650 kg at year 0, and in 6 years, it is 325 kg; 6 years after that, at year 12, it is 162.5, and so on. The solid blue and green lines represent the output of the corrected 1-box model at 20 and 30 kg/year (yr) PCB loading, respectively. The corrected model shows that 20 and 30 kg/yr loadings are approximately equivalent to the 10 and 20 kg/yr loadings, respectively, of the uncorrected model. The green line representing the 30 kg/yr loading crosses the dotted line representing the TMDL sediment target in about 35 years (Figure 4). Given that the current loading is estimated at 33 kg/yr, the corrected 1-box model suggests Bay sediments will reach the target at the current loading in approximately 40 years.	
84.)		While the corrected I-box model is better able to represent actual observed rates of PCB decline, we understand a multi-box model is under development to improve the understanding of the long-term fate of PCBs in the Bay (SFEI 2008b). When the multi-box model has undergone the sufficient quality assurance/quality control (QNQC) validation, it should be considered in future analyses (e.g., if the TMDL moves into the Adaptive Implementation (AI) process).	Comment noted

85.)		**Misuse of the TMDL "Margin of safety"** Given that the current Bay monitoring program has been refocused by the RMP on fish that make up a small fraction of actual angler consumption, attainment of the fish target by the Bay fish that people eat most frequently may not be correctly recognized because the monitored species have the highest PCB concentrations. In 2003, average PCB concentrations in the most commonly-consumed species, striped bass, ranged from 5 to 7 times the TMDL target in the northern, central, and southern regions of the Bay, while PCB concentrations in white croaker and shiner surfperch ranged from 20 to 50 and 5 to 20 times the target in these regions. The RMP collected striped bass data in 2006, but they were not analyzed for PCBs. However, average concentrations measured in 5 out of 6 species collected as part of a special study were at or below the TMDL target. Based on the average decline rates measured in sediment, mussels, and water of 6 to 12 years, 2003 average striped bass PCB concentrations of 50 to 70 parts per billion (ppb) should reach 10 ppb in approximately 12 to 30 years, from 2003. Data are insufficient to measure declines directly in this species. However, the weight-of-evidence suggests that striped bass PCB concentrations will reach the TDML target, without any of the actions called for by the TMDL, in less than 40 years, the timeframe in which the sediment target is further expected to be achieved, based on the above-described trends in sediments, water, and mussels, and the corrected projections of the 1-box model. The SFBRWQCB's Final Staff Report revisions indicate that the TMDL is intended to be protective of one allegedly impaired beneficial use - commercial and sports fishing (COMM) - while maintaining all existing beneficial uses, such as estuarine habitat (EST), preservation of rare and endangered species (RARE), and wildlife habitat (WILD). In order to protect the impaired COMM beneficial use, the fish tissue target derived by the SFBRWQCB used several conservative assumptions (QEA 2007). Thus, it is already conservative. However, and most significantly, the SFBRWQCB's use of two rarely-consumed species further introduces additional and unnecessary conservatism that constitutes a misuse of the TMDL's permissible margin-of-safety analysis.	See above response to Comment No. 59. The Regional Water Board justifies use of just the two species. Commenter argues that using just the two species with high concentrations of PCBs to demonstrate attainment of the TMDL fish target rather than species with lower concentrations of PCBs is overly conservative. A similar comment was received by the SF Bay Regional Water Board during their first comment period, and it was responded to under Cal. Chamber/GE Comment 75. Also, see above response to comment No. 0.1 Commenter also incorrectly states there is no impairment of rare and endangered species and wildlife beneficial uses. Although there is no direct evidence of impairment of these uses, there are concerns that there is risk to fish eating birds and impairment to these uses cannot be dismissed. The questioned margin of safety obviates concern regarding protection of rare and endangered species and wildlife beneficial uses. See response to USEPA Comment 6.a submitted during the Regional Water Board's first comment period.
86.)		In summary, due to the outstanding, remaining technical issues described and updated herein, the Bay PCBs TMDL, as adopted, is	This is a summary comment restating Comment 73 and ensuing detailed comments. See above responses.

		scientifically unsound and unnecessarily overprotective. Given that Bay surface sediment PCB concentrations are clearly declining and are approaching the goal of the TMDL, the TMDL would be more scientifically defensible if this natural recovery was taken into account. The 1-box model used in the TMDL Staff Report to project the recovery of Bay sediments, when corrected for a mass balance flaw, predicts trends in line with those seen in sediment, water, and mussels and indicates that the TMDL sediment target will be met within 40 years, even if no regulatory required actions are taken to reduce PCB load. Thus, if a corrected and validated multi-box model that reproduces the observed trends in the data was used to predict the time to achieve the sediment target, the TMDL would be more realistic. Additionally, the use of more commonly-consumed fish species is essential to the evaluation of whether the TMDL's PCBs target has been achieved. Finally, properly addressing and analyzing these issues within the AI phase of the TMDL through a plan that relies initially on natural recovery, accurate modeling, and monitoring of consumed species would likely result in lower net costs to achieve the benefits sought.	