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# 2006 Humboldt Bay Clean Water Act Section 303(d) Listing for Dioxins

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## PRESENTATION TEAM

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- **David Hull**, Chief Executive Officer, Humboldt Bay Harbor, Recreation and Conservation District
  - **Edward P. Conti**, CEG, CHG. Principal Geologist, Geomatrix Consultants, Inc.
  - **Russell S. Gans**, Attorney at Law, Mitchell, Brisso, Delaney & Vrieze
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# GOAL

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- We respectfully request that the State Water Resources Control Board request SWRCB Staff to place the 303(d) impairment listing for dioxin in Humboldt Bay on the SWRCB March agenda for reconsideration of the listing.
  - We believe that there were a number of procedural and technical flaws and inconsistencies in the 2006 listing that throw doubt on the results of this listing.
  - Removal from the list at this time would allow a more technically and procedurally acceptable process to be followed and instill confidence that the process and evaluation were inclusive, and transparent.
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Taking Humboldt Bay off the 303(d) list for dioxins  
until more adequate analysis can be completed

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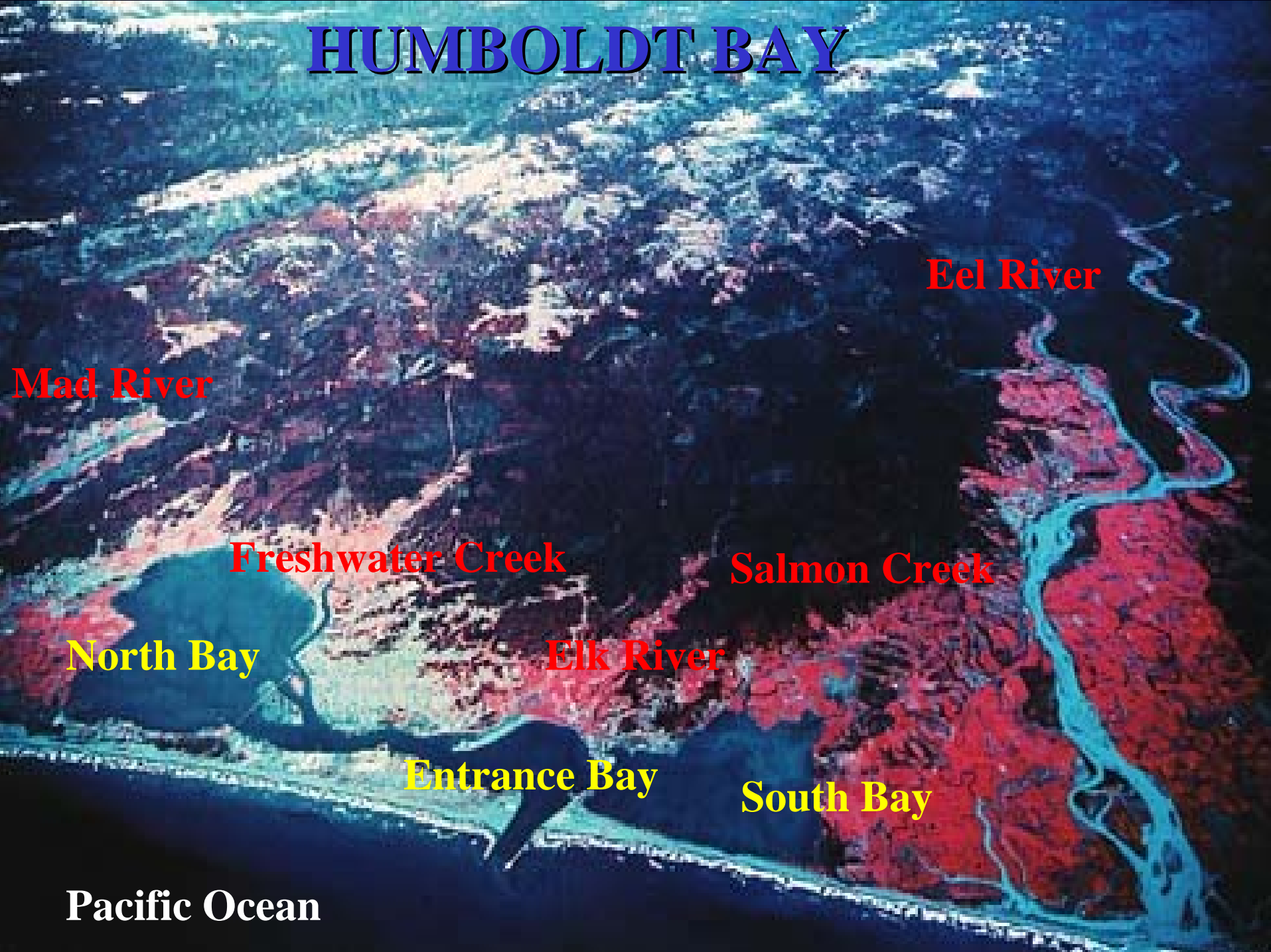
- Humboldt Bay Harbor, Recreation and Conservation District
  - County of Humboldt
  - City of Arcata
  - City of Eureka
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## Concerns over Process

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- Process didn't follow State's own guidelines
  - All data not fully and objectively reviewed and analyzed
  - No collaborations with local government, land owners or local resource managers.
  - No socio-economic considerations given to the process
  - No known impacts to beneficial uses of Humboldt Bay to trigger this listing action
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# HUMBOLDT BAY



**Eel River**

**Mad River**

**Freshwater Creek**

**Salmon Creek**

**North Bay**

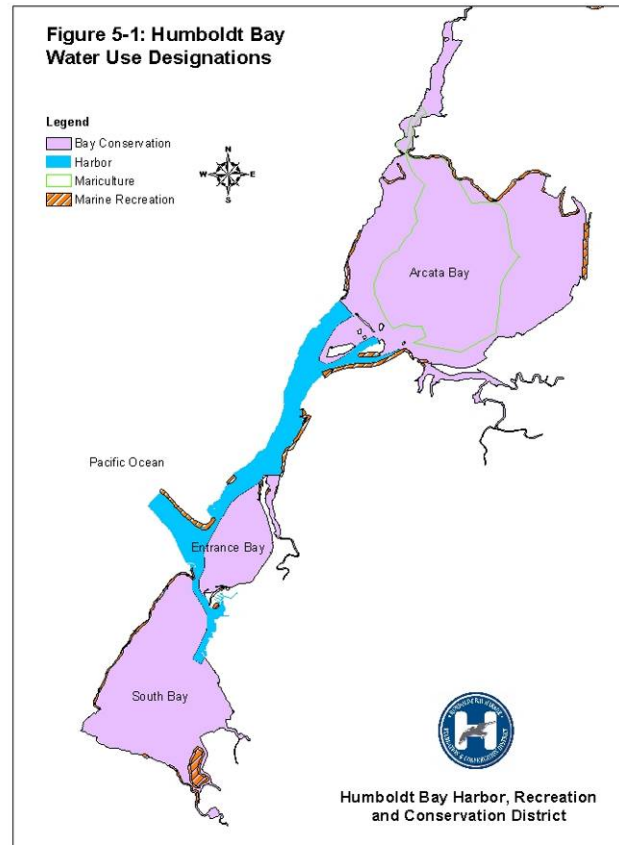
**Elk River**

**Entrance Bay**

**South Bay**

**Pacific Ocean**

**Figure 5-1: Humboldt Bay Water Use Designations**



## Beneficial Uses - Mariculture

- More than 50 percent of the oysters grown in California come from Humboldt Bay
- The vast majority of oysters grown in Humboldt Bay are grown for raw, human consumption, requiring compliance with food health standards





## Beneficial Uses – Wetlands and Wildlife

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- Tens of thousands of migratory waterfowl and shorebird utilize Humboldt Bay annually.
- Habitats of Humboldt Bay are adequate for Humboldt Bay to provide feeding, breeding or resting habitat for more than 300 bird species



## Beneficial Uses – Aquatic Habitat

- Humboldt Bay contains more than 45 percent of all of the state of California’s eelgrass resources – a species that is sensitive to water quality and vital to the existence various waterfowl and many of the 530 species of aquatic invertebrates that use the bay



## Beneficial Uses – Commercial Fishing

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- Humboldt Bay is home to more than 121 species of fish and provides important nursery habitat for many commercially and recreationally important fish and invertebrate species.
- Humboldt Bay's commercial fishing fleet is one of the largest on the north coast and accounts for landings of ~12 million pounds of seafood each year.



## Beneficial Uses – Recreation

- Humboldt Bay is used by thousands of people each year for various forms of recreation including:
  - Kayaking
  - Birdwatching
  - Surfing
  - Sport fishing
  - Sport Clamming
  - Hunting
  - Cruising and touring
  - Sailing
  - Education



# Beneficial Uses – Summary

- The management of Humboldt Bay over the past 20 years has resulted in the improvement of a variety of bay “health” indicators that are dependent on water quality; namely
  - Extensive mariculture industry
  - Productive commercial fishing industry
  - More than 5,000 acres of seagrass beds
  - Wide variety of water contact recreation available



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# Perceived Procedural and Technical Flaws in Listing Process

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## Review of SWRCB Staff Analysis

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- The Harbor District supports a complete, correct evaluation of all available data to develop a scientifically defensible listing decision.
  - Geomatrix reviewed the SWRCB staff technical analysis .
  - Request March agenda item for reconsideration, removal from 2006 303(d) list, and a transparent, complete and defensible analysis in the 2008 listing cycle.
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## SWRCB Notice of Public Solicitation (4/30/04)

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- “The final list will be based on data and information available to SWRCB no later than the final day of this solicitation period, June 14, 2004.” [underline used in original]
  - “All readily available data and information submitted pursuant to this solicitation will be reviewed and assessed using the final approved Listing Policy.”
  - Data submitted subsequent to June 2004 was used by the SWRCB staff, but there was no solicitation for the 2006 list. This is inconsistent with Section 6.1 of the Listing Policy.
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## Listing Policy (9/30/04)

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- “When data and information are available, each RWQCB shall prepare a standardized fact sheet for each water and pollutant combination that is proposed for inclusion in or deletion from the section 303(d) list.” (Section 6.1.2.2)
  - “At a public hearing, the RWQCB shall consider and approve each proposed list change as documented in water body fact sheet.” [Section 6.2]
  - “Advance notice and opportunity for public comment shall be provided.” [Section 6.2]
  - “Requests for review of specific listing decisions must be submitted to the SWRCB within 30 days of the RWQCB’s decision.” [Section 6.3]
  - **“During development of the 2004 section 303(d) list, SWRCB shall perform all tasks required by this Policy.” [Section 6.3]**
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# 2006 Humboldt Bay Listing Chronology

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- 9/05 Draft Fact Sheets – No listing proposed
- 1/31/06 – 1<sup>st</sup> Baykeeper letter
- 9/06 Draft Final Fact Sheets – Response to Baykeeper comments: no listing is proposed
- 10/20/06 – 2<sup>nd</sup> Baykeeper letter
- 10/25/06 – SWRCB staff recommends and Board members approve the new listing recommendation
- 10/25/06 – At the hearing, Board member notes that this listing constitutes a reversal of what was sent out for public comment
- 11/06 – Humboldt Bay Fact Sheet first published, subsequent to listing decision

*This is inconsistent with Section 6.1 (fact sheets) and Section 6.3 (SWRCB obligations) of the Listing Policy.*

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## October 25, 2006 Board Meeting

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Board Member to Staff: “And I just want to go on the public record to state that we need to move forward with some improvement in this process, because there’s a lot of time that was spent here that hasn’t been thoroughly reviewed by this particular Board member and I don’t feel right about that.” “And I realize in this month as well there was an exception to procedure for reasons beyond anyone’s control.”

Board Member: “But you’re proposing little something different than what was sent out for comment, is that right?”

Staff: “Yeah, completely different that was sent out for comments.”

Board Member: “Reversed, right.”

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# Procedurally and Technically Flawed Listing

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- The Listing Policy (Chapter 6) creates a logical, transparent process for development, review, and incorporation of public input into the listing decisions.
- The 9/06 Fact Sheet Response to the Baykeeper Comment states the following:
  - “The completion of fact sheets for these data and information are being delayed until the next listing cycle to avoid further delay in the completion of the 2006 section 303(d) list and to avoid using data and information that may be only a subset of all data (i.e., to avoid bias).”
  - “Completing fact sheets without the time to look for supporting evidence could lead to errors in our recommendations. Errors in listing or delisting may be avoided by completing the assessment in the next listing cycle because a more complete assessment can be made.”

*The actual process was not transparent, not consistent with the Listing Policy, and consisted of using a subset of available data without consideration of the limitations of those data. The listing decision was biased.*

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# Procedurally and Technically Flawed Listing (cont'd)

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- Mad River Slough studies conducted 2002-2007
- Agencies involved – RWQCB, OEHHA, DFG, DHS, and NOAA Fisheries
- Third party scientists – Environ, TetraTech MFG, Geomatrix, Pacific Shellfish Institute
- Conclusion – Data Indicates Not A Risk

*How do SWRCB staff, in 5 days, reverse this conclusion without inter-agency collaboration or public input?*

*None of these agencies, including SWRCB, have looked at all the Humboldt Bay sediment, tissue and water quality data, as should be done as part of the 2008 listing cycle.*

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## Pacific Shellfish Institute (2/12/07)

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- “We conclude that available literature indicates there is no risk of contamination from consuming shellfish grown in Humboldt Bay. In fact, dioxin concentrations in Humboldt Bay shellfish are similar to or lower than the background levels found in foods throughout the U.S.”
  - “Because of this, the Pacific Shellfish Institute believes that current shellfish production in Humboldt Bay – valued at over \$5.5 million in 2004, and accounting for nearly 64% of the entire state of California’s \$8.6 million shellfish industry – should not be jeopardized by an inaccurate label of ‘impaired for dioxin’.”
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**Table 1**  
**California Department of Health Services**  
**Dioxins in Molluscan Shellfish<sup>1</sup>**  
**Humboldt Bay Sampling**  
**April 15-18, 2003**

SHELLFISH		
Sample Area	Sample	Total Toxic Equivalence (parts per trillion)
E	Pacific Oyster	0.000
SB <sup>2</sup>	Wild Clam	0.000
SB	Wild Clam	0.000
NB <sup>3</sup>	Wild Clam	0.000
NB	Wild Clam	0.000
NB	Wild Clam	0.000
D	Mussel	0.000
C	Pacific Oyster	0.003
B	Pacific Oyster	0.003
C	Pacific Oyster	0.004
C	Pacific Oyster	0.004
B	Pacific Oyster	0.004
B	Kumomoto	0.004
SB	Wild Clam	0.004
C	Pacific Oyster	0.005
B	Pacific Oyster	0.006
C	Clam	0.007

SHELLFISH		
Sample Area	Sample	Total Toxic Equivalence (parts per trillion)
A	Pacific Oyster	0.010
E	Pacific Oyster	0.010
E	Pacific Oyster	0.020
B	Kumomoto	0.024
C	Pacific Oyster	0.027
A	Kumomoto	0.028
C	Pacific Oyster	0.028
B	Kumomoto	0.029
B	Pacific Oyster	0.030
B	Pacific Oyster	0.031
B	Pacific Oyster	0.037
B	Pacific Oyster	0.039
B	Pacific Oyster	0.039
B	Pacific Oyster	0.043
C	Pacific Oyster	0.070
A	Pacific Oyster	0.150
A	Pacific Oyster	0.170

SEDIMENT	
Sample Area	Total Toxic Equivalence (parts per trillion)
C	0.000
A	0.000
E	0.000
SB	0.000
B	0.000
B	0.000
C	0.000
C	0.001
B	0.001
B	0.002
B	0.003
A	0.004
NB	0.059
C	0.550

**Notes:**

<sup>1</sup> Dioxin analyses were conducted by the U.S. Food and Drug Administration.

<sup>2</sup> SB = South Bay

<sup>3</sup> NB = North Bay

## Readily Available Data Not Evaluated

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- “RWQCBs and SWRCB shall actively solicit, assemble and consider all readily available data and information. Data and information that shall be reviewed include, but are not limited to: submittals resulting from the solicitation, selected data possessed by the RWQCBs, and other sources.” [Listing Policy, Section 6.1.1]
  - SWRCB used a subset of tissue data from a single table in the 2004 report. Additional tissue and sediment data in the same table were not considered. Report text discussions of data quality problems with the use of whole fish instead of filet for the 2002 data were not considered. Fin fish tissue data compared to screening levels should represent edible portions of fish not whole fish. (US EPA, 2000 and OEHHA, 2003)
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## Readily Available Data Not Evaluated (con't)

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- SWRCB files contain a Geomatrix report with 2005 tissue data that was submitted by Baykeeper on 1/31/06 and these data were not considered. These data were also omitted from SWRCB subsequent analysis.
- SWRCB staff did not actively solicit the Regional Board staff for tissue, sediment, or water quality data in their files, or the DHS for tissue and sediment data in their files. Also omitted from SWRCB subsequent analysis.

## Readily Available Data Not Evaluated (con't)

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- “At a minimum, readily available data and information includes paper and electronic copies of: water quality problems and existing and readily available water quality data and information reported by local, state and federal agencies...” [Listing Policy, Section 6.1.1]
  - Extreme case of absence of interagency communication: RWQCB, DHS, OEHHA all had relevant data but were not consulted.
  - March 2006 inquiry by RWQCB into 303(d) listing process underway by SWRCB: No new data or requests for listings for Humboldt Bay or Arcata Bay.
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## Data Quality

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- “Data supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 are acceptable for use in developing the section 303(d) list.” [Listing Policy, Section 6.1.4]
  - “The data from the major monitoring programs in California and published U.S. Geological Survey (USGS) reports are considered of adequate quality.” SWAMP, Southern California Coastal Water Research Project, USEPA’s Environmental Monitoring and Assessment Program, SF Bay Regional Monitoring Program, BPTCP. (Listing Policy, Section 6.1.4)
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## Data Quality (con't)

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- “If the data collection and analysis is not supported by a QAPP (or equivalent) ..., then the data and information should not be used by itself to support listing or delisting of a water segment.” [Listing Policy, Section 6.1.4]
- “All data of whatever quality can be used as part of a weight of evidence determination (Sections 3.11 or 4.11).” [Listing Policy, Section 6.1.4]

***The data collected as part of the Mad River Slough investigations met project-specific requirements but were not supported by a formal QAPP and do not meet the data quality standards of Section 6.1.4 of the Listing Policy.***

## Inappropriate Selection of Evaluation Guideline for Tissue

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- SWRCB staff selected an OEHHA (1999) guideline developed for fin fish.
- SWRCB staff compared the predominantly shellfish data set against this fin fish criterion.

*More recent guidance (US EPA, 2002) differentiates consumption for fin fish and shellfish, and this allows for an appropriate, apples to apples analysis*

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## Published Tissue Screening Levels for Dioxins

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	Consumption Rate	Screening Level
OEHHA (6/99)	21 grams/day	0.3 ppt
USEPA (11/00)	17.5 grams/day	0.256 ppt

*These criteria are based on consumption of fin fish by recreational fisher but can be conservatively applied to shellfish. However, there are more appropriate and scientifically defensible approaches*

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# Application of Tissue Screening Levels

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- Use of the fin fish criterion for shellfish data intentionally over simplifies policy and is inappropriate when predominant data are not fin fish tissue data.
- US EPA (2002) has published values for shellfish consumption, and these values are approximately 10 to 100 times lower than the fish consumption rates used to develop the screening level used by SWRCB staff.

# Appropriate Shellfish Tissue Screening Levels for Dioxins

	Consumption Rate	Appropriate Screening Level	SWRCB Selected Screening Level
Oysters	0.17 grams/day	32 ppt	0.3 ppt
Crab	0.30 grams/day	18 ppt	0.3 ppt
Shrimp	2.6 grams / day	2.1 ppt	0.3 ppt



## SWRCB Staff Letter Dated 2/5/07

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*It was our understanding that SWRCB staff were performing an objective review of the concerns raised in the Geomatrix White Paper. However, the concerns raised in the White Paper remain valid. For instance:*

- 2005 Data are in the SWRCB Files - Based on Geomatrix 12/06 review of SWRCB files, Baykeeper submitted the Geomatrix 2005 data on compact disc.
- SWRCB staff state that “Data in State Water Board files and posted on Water Board web sites were all readily available.” This definition of “readily available” conflicts with the Listing Policy. [Section 6.1.1]
- Evaluation Guideline and Consumption Information - SWRCB staff rely on the older screening criteria approach and fail to take into account the more recent US EPA (2002) study indicating significantly different levels of consumption of shellfish relative to fin fish.

*The 2007 SWRCB Staff analysis appears rushed; it sheds light on the flawed 2006 analysis but does not provide a complete, objective assessment.*

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## Summary

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- The original listing is procedurally and technically flawed.
  - The January 2, 2007 SWRCB response to the Harbor District was neither substantive nor accurate.
  - The February 5, 2007 SWRCB response to the Geomatrix White Paper is a hurried and incomplete justification of the original, hurried and incomplete analysis, which, if accepted but the Board, will effectively deny the public an opportunity to substantively participate in the listing process for this water body.
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# Conclusion

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We respectfully request that this issue be placed on the agenda for reconsideration at the March meeting, and at that meeting the Board remove the Humboldt Bay dioxin listing from the 2006 303(d) list.

We support and encourage conducting a transparent, complete and defensible analysis in the 2008 listing cycle.

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