

California Regional Water Quality Control Board
North Coast Region

1996 NCRWQCB

Resolution No. 95-96

ADOPTING THE 1996 REGIONAL WATER QUALITY ASSESSMENT, 303(d) LIST AND
PRIORITIZATION UPDATE

WHEREAS, Section 305(b) of the Federal Clean Water Act requires the State to prepare a biennial update of an assessment of the waters within the State; and

WHEREAS, Section 303(d) of the Federal Clean Water Act requires the State to prepare a biennial update of a list of waters within the State for which required point source effluent limitations are not stringent enough to meet water quality standards applicable to such waters; and

WHEREAS, On February 24, 1994, the North Coast Regional Water Quality Control Board (Regional Water Board) adopted a revised Water Quality Assessment and 303(d) list; and

WHEREAS, The Regional Water Board has been directed to review and revise the Water Quality Assessment and 303(d) list for waters within the Region for the 1996 305(b) Report; and

WHEREAS, The adoption of the Water Quality Assessment for the North Coast Region does not fit the definition of a "project" so as to be an activity subject to the requirements of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.); and

WHEREAS, On October 26, 1995, in Crescent City, California, and December 7, 1995, in Santa Rosa, California, the Regional Water Board conducted an extended public hearing and carefully considered all testimony and comments, both oral and written, received regarding the 1996 Water Quality Assessment and 303(d) list for the North Coast Region.

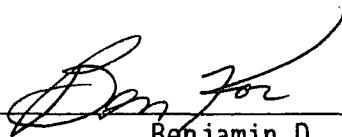
THEREFORE, BE IT RESOLVED that the North Coast Regional Water Quality Control Board, in fulfillment of the requirements described in Sections 305(b) and 303(d) of the Clean Water Act, hereby approves the update of the Water Quality Assessment as detailed in the November 7, 1995 Public Report.

ALSO, THEREFORE BE IT RESOLVED that the North Coast Regional Water Quality Control Board, in fulfillment of the requirements described in Sections 305(b)

and 303(d) of the Clean Water Act, hereby adopts the revised 303(d) Priority List, as detailed in Table 1 of this resolution.

Certification

I, Benjamin D. Kor, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, North Coast Region, on December 7, 1995.



Benjamin D. Kor
Executive Officer

California North Coast Regional Water Quality Control Board
Clean Water Act, Section 303(d) List of Impaired Waterbodies
as adopted by Resolution 95-96, as amended December 7, 1995

	<u>WATERBODY</u>	<u>POLLUTANT</u>
1.	Laguna de Santa Rosa....	Nutrients
2.	Stemple Creek.....	Nutrients
3.	Estero de San Antonio....	Nutrients
4.	Garcia River.....	Sediment
5.	Klamath River.....	Temperature, Nutrients
6.	Scott River.....	Sediment, Temperature
7.	Shasta River.....	Dissolved Oxygen, Temperature
8.	Beaughton Creek.....	Unpermitted discharge of waste
9.	Trinity River.....	Sediment
10.	South Fork Trinity River..	Sediment
11.	Americano Creek.....	Nutrients
12.	Estero Americano.....	Nutrients
13.	Eel River.....	Sediment, Temperature
14.	Tomki Creek.....	Sediment
15.	Van Duzen River.....	Sediment
16.	Noyo River.....	Sediment
17.	Mad River.....	Sediment, Turbidity
18.	Navarro River.....	Sediment
19.	Gualala River.....	Sediment
20.	Albion River.....	Sediment
21.	Big River.....	Sediment
22.	Redwood Creek.....	Sediment
23.	Mattole River.....	Sediment, Temperature

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
NORTH COAST REGION
5550 SKYLANE BLVD. SUITE A
SANTA ROSA, CA 95403
PHONE: (707) 576-2220



Interested Person

January 26, 1996

This letter serves as the transmittal of Clean Water Act Section 303(d) List of Water Quality Limited Waterbodies for California's North Coast Region

On October 26 and December 7, 1995, the North Coast Regional Water Quality Control Board held an extended public hearing to consider adoption of the biennial update of the list of water quality limited waterbodies, in compliance with Section 303(d) of the Clean Water Act. The Board adopted an amended resolution. Public testimony was received regarding Ten Mile River, the Navarro River, the Russian River, and named tributaries to the Eel River. Additional public testimony was received regarding the perceived inaction of the Region with respect to development of Total Maximum Daily Loads (TMDL's) for those waters listed on the 303(d) list. To this end, it is important to provide some background on the approach being pursued by Regional Board staff.

Regional staff are working closely with US Environmental Protection Agency to learn more clearly what is expected, in the near and long term, in meeting the obligation to comply with Section 303(d) of the Clean Water Act. The Region has developed TMDL strategies for high priority waterbodies, and is committed to further TMDL implementation in the near and long term.

At the same time, perhaps more critical to actual protection and enhancement of waters to ensure the full support of all designated beneficial uses, the Regional Board, and its staff, have followed an aggressive course of assessment, source reduction, enforcement, and regulatory activities for more than two decades. The challenge to secure resources for comprehensive assessment is consistently met by the Region, as is exemplified by the long record of non point source pollution source reduction activities partially described in Table 1 of Attachment 1 to this transmittal.

A new level of challenge arises from the need to fine tune the assessment approach, to better focus on delineation of water quality limited segments (WQLS), as described in Section 303(d). Future updates of the 303(d) list will include: (1) a longer public comment period on the list and priorities, and (2) a cutoff date for the public comment period, allowing staff time to address issues raised during public comment period.

With respect to prioritization of waterbodies for TMDL development, staff consider many factors. Some critical factors are the level or degree of impairment, the size or magnitude of the resource, the abundance or lack of empirical data or observations, presence or absence of local restoration and source reduction activities, landowner accessibility, access to the watercourse, and the perceived degree of potential for meaningful numeric application of the TMDL approach. For example, sustained yield plans (SYP's) and habitat conservation plans (HCP's) are being developed by major commercial timber interests. These plans, if prepared to the expected level of detail, should provide the factual basis for TMDL implementation. If this level of detail is provided, Regional staff will develop TMDLs for the subject waterbodies, on a priority schedule. However, if the SYPs and HCPs provide an inadequate level of detail or accuracy, Regional staff will be unable to develop TMDL implementation on the merits of the SYPs and HCPs, and will have to modify the priority schedule accordingly.

In addition to the TMDL effort, numerous other actions are underway to continue source reduction, resource enhancement, assessment, and pollution prevention. Staff to the Regional Board continue to place high priority on supporting these activities, such as the Coastal Salmon Initiative, the Klamath Project Operations Plan, the Klamath River Basin Assessment, and other activities, such as those funded through the US Environmental Protection Agencies 205(j) and 319(h) grant programs. While it is clear that these activities bring about measurable benefits, staff to the Regional Board will continue to balance these activities with the obligation under 303(d) to list water quality limited segments, and develop TMDLs for those where technological control of point source discharges will not attain full support of all beneficial uses.

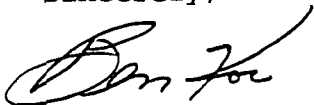
Two specific changes to the 1994 303(d) list were recommended by Regional Board staff: 1) The addition of temperature as a limiting factor on the Scott River, which was previously 303(d) listed for sediment; and 2) The addition of Ten Mile River to the 303(d) list, with sediment as the limiting factor. The Board elected to add temperature as a limiting factor on the Scott River. The Board elected to not list Ten Mile River for sediment impairment. The technical discussion supporting staff position to list, but not provided in testimony at the hearing, is provided in Part II of Table 2.

Enclosed is the Executive Officer's Summary Report and Resolution 95-96 approving the 303(d) list. Staff prepared the table titled "Expanded Details for Waterbodies on the Clean Water Act, Section 303(d) List of Impaired Waterbodies (based on the 303(d) list, as adopted by Resolution

95-96, as amended December 7, 1995)" (TABLE 1), based on the approved list of 303(d) waterbodies. A summary of documents submitted during the public comment period, staff response, and Regional Board file information used in developing staff recommendations are also provided (TABLE 2). Supporting documents are available for review or reproduction in the TMDL/303(d) file.

Should you have any questions regarding this matter, please call Bruce Gwynne, (707)576-2661, or Robert Klamt, (707)576-2693, of my staff.

Sincerely,



Benjamin D. Kor
Executive Officer

cc: Michael Perrone
Nancy Richard

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
NORTH COAST REGION**

5550 SKYLANE BLVD. SUITE A
SANTA ROSA, CA 95403
PHONE: (707) 576-2220



Interested Person

February 6, 1996

Errata and clarification for the transmittal of **Clean Water Act Section 303(d) List of Water Quality Limited Waterbodies for California's North Coast Region**, with corrected 303(d) list to Resolution 95-96

On January 29, 1996, Regional Board Resolution 95-96, adopting the 1996 update of the TMDL/303(d) list, was sent out with supporting information. The incorrect 303(d) list, which listed Ten Mile River, was mistakenly copied and mailed with the transmittal package. The correct list, attached, includes twenty-three waterbody listings. Ten Mile River was not listed. We apologize for any confusion or misunderstanding which this mistake may have generated.

In addition to the corrected list, we feel it is also appropriate to add clarification to the intended purpose of some of the information provided in the transmittal package.

-Table 1, the expanded detail on 303(d) waterbodies, was provided, with information on current and past activities, in order to document and demonstrate the prioritization of mitigation and assessment efforts during recent and future time periods. The Table represents Regional Water Board staff's priorities for work effort and TMDL development. It is intended to supplement and clarify the Regional Water Board's Section 303(d) listing (Resolution 95-96) and provides target dates for TMDL development.

-The 303(d) list (Resolution 95-95) reflects overall priority for attention. The Expanded Table 1 is intended to clarify the relationship between TMDL priorities and other work priorities. For example, while the Klamath River is a high priority for ongoing work, the TMDL completion is far into the future.


-The term "TMDL Questionable" appears on the expanded Table 1 in the column of dates for TMDL development. This label conveys existing technical and resource uncertainties about how to develop TMDLs for this type of problem.

-The data for the Navarro River, provided in the supplemental documents, is described in the Supplemental Documents and Comments Table 2 as being supportive of a temperature impairment listing. It is not clear what action or schedule will be pursued to this end.

-In addition to the prioritization detailed in the 303(d) list as part of Resolution 95-96 and the expanded Table 1, the reader is encouraged to become familiar with the Integrated Watershed Management Process. This initiative is a comprehensive, long-term planning effort, aimed at orderly assessment of regional resources, watershed by watershed. More information on the Integrated Watershed Management Process may be obtained by calling Robert Klamt of this office at (707)576-2693.

Should you have any questions regarding this matter, please call Bruce Gwynne, (707)576-2661, or Robert Klamt, (707)576-2693, of my staff.

Sincerely,



Craig Johnson
Assistant Executive Officer

cc: Michael Perrone
Nancy Richard
David Smith

California North Coast Regional Water Quality Control Board
Clean Water Act, Section 303(d) List of Impaired Waterbodies
as adopted by Resolution 95-96, December 7, 1995

	<u>WATERBODY</u>	<u>POLLUTANT</u>
1.	Laguna de Santa Rosa....	Nutrients
2.	Stemple Creek.....	Nutrients
3.	Estero de San Antonio....	Nutrients
4.	Garcia River.....	Sediment
5.	Klamath River.....	Temperature, Nutrients
6.	Scott River.....	Sediment, Temperature
7.	Shasta River.....	Dissolved Oxygen, Temperature
8.	Beaughton Creek.....	Unpermitted discharge of waste
9.	Trinity River.....	Sediment
10.	South Fork Trinity River..	Sediment
11.	Americano Creek.....	Nutrients
12.	Estero Americano.....	Nutrients
13.	Eel River.....	Sediment, Temperature
14.	Tomki Creek.....	Sediment
15.	Van Duzen River.....	Sediment
16.	Noyo River.....	Sediment
17.	Mad River.....	Sediment, Turbidity
18.	Navarro River.....	Sediment
19.	Gualala River.....	Sediment
20.	Albion River.....	Sediment
21.	Big River.....	Sediment
22.	Redwood Creek.....	Sediment
23.	Mattole River.....	Sediment, Temperature

(February 5, 1996)

California Regional Water Quality Control Board
North Coast Region

Resolution No. 95-96

ADOPTING THE 1996 REGIONAL WATER QUALITY ASSESSMENT, 303(d) LIST AND
PRIORITIZATION UPDATE

- WHEREAS, Section 305(b) of the Federal Clean Water Act requires the State to prepare a biennial update of an assessment of the waters within the State; and
- WHEREAS, Section 303(d) of the Federal Clean Water Act requires the State to prepare a biennial update of a list of waters within the State for which required point source effluent limitations are not stringent enough to meet water quality standards applicable to such waters; and
- WHEREAS, On February 24, 1994, the North Coast Regional Water Quality Control Board (Regional Water Board) adopted a revised Water Quality Assessment and 303(d) list; and
- WHEREAS, The Regional Water Board has been directed to review and revise the Water Quality Assessment and 303(d) list for waters within the Region for the 1996 305(b) Report; and
- WHEREAS, The adoption of the Water Quality Assessment for the North Coast Region does not fit the definition of a "project" so as to be an activity subject to the requirements of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.); and
- WHEREAS, On October 26, 1995, in Crescent City, California, and December 7, 1995, in Santa Rosa, California, the Regional Water Board conducted an extended public hearing and carefully considered all testimony and comments, both oral and written, received regarding the 1996 Water Quality Assessment and 303(d) list for the North Coast Region.

THEREFORE, BE IT RESOLVED that the North Coast Regional Water Quality Control Board, in fulfillment of the requirements described in Sections 305(b) and 303(d) of the Clean Water Act, hereby approves the update of the Water Quality Assessment as detailed in the November 7, 1995 Public Report.

ALSO, THEREFORE BE IT RESOLVED that the North Coast Regional Water Quality Control Board, in fulfillment of the requirements described in Sections 305(b)

and 303(d) of the Clean Water Act, hereby adopts the revised 303(d) Priority List, as detailed in Table 1 of this resolution.

Certification

I, Benjamin D. Kor, Executive Officer,
do hereby certify that the foregoing
is a full, true, and correct copy of
a Resolution adopted by the California
Regional Water Quality Control Board,
North Coast Region, on December 7, 1995.



Benjamin D. Kor
Executive Officer

TABLE 1.**North Coast Region Clean Water Act, Section 303(d) List of Impaired Waterbodies**

	WATERBODY	POLLUTANT
1.	Laguna de Santa Rosa	Nutrients
2.	Stemple Creek.....	Nutrients
3.	Estero de San Antonio	Nutrients
4.	Garcia River.....	Sediment
5.	Klamath River.....	Temperature, Nutrients
6.	Scott River.....	Sediment, Temperature
7.	Shasta River.....	Dissolved Oxygen, Temperature
8.	Beaughton Creek.....	Discharge of waste
9.	Trinity River.....	Sediment
10.	South Fork Trinity River	Sediment
11.	Americano Creek.....	Nutrients
12.	Estero Americano.....	Nutrients
13.	Eel River.....	Sediment, Temperature
14.	Tomki Creek.....	Sediment
15.	Van Duzen River.....	Sediment
16.	Noyo River.....	Sediment
17.	Mad River.....	Sediment, Turbidity
18.	Navarro River.....	Sediment
19.	Gualala River.....	Sediment
20.	Albion River.....	Sediment
21.	Big River.....	Sediment
22.	Redwood Creek.....	Sediment
23.	Ten Mile River.....	Sediment
24.	Mattole River.....	Sediment, Temperature

California North Coast Regional Water Quality Control Board
Expanded Details for Waterbodies on the
Clean Water Act, Section 303(d) List of Impaired Waterbodies
(based on the 303(d) list, as adopted by Resolution 95-96, December 7, 1995)

The following is an expanded detail of some representative activities on the affecting the waterbodies on the 303(d). The reference number in the first column refers to the position of the waterbody on the 303(d) list.

REFERENCE NUMBER WATERBODY POLLUTANT(S)	ACTIVITIES	PRIORITY PRODUCT TARGET
<p>1 Laguna de Santa Rosa -Nutrients (Toxics, not a listed concern.)</p>	<p>1) Late 1970's and early 1980's: North Coast Regional Water Quality Control Board (NCRWQCB) staff worked with dairies to contain waste, separate rainwater from waste containment areas, and dispose of wastes in agronomically beneficial ways. 2) 1973: NCRWQCB issued Cease and Desist order against the City of Santa Rosa, West College Avenue Sewage Treatment Plant. 3) 1975: Summertime discharge to the Laguna and Russian River ended. 4) 1986: NCRWQCB staff required improved treatment at Santa Rosa and Windsor treatment works. 5) 1985-86: US Environmental Protection Agency (USEPA) 205(j) grant funds used to investigate toxic contaminants potentially occurring at very low concentrations. 6) Hauser legislation provided resources for monitoring of stormwater runoff. 7) 1992: Statewide stormwater program began. NCRWQCB staff, together with the city closely monitored Santa Rosa stormwater. 8) 205(j) Stormwater study/City of Santa Rosa stormwater study. 9) 1993-current: NCRWQCB staff aggressively supported 319(h) funded source reduction efforts. City, the Gold Ridge Resource Conservation District, dairies, community, Regional Board cooperating. 10) March, 1995: TMDL in place. Staff will report to Board in Summer, 1996 on progress. 11) Regional Board staff have achieved elimination or reduction of discharge of petroleum and solvents through site cleanup activities, which are ongoing. 12) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead stocks at risk. This initiative is being developed to answer requirements of Endangered Species Act (ESA) and Clean Water Act (CWA). National Marine Fisheries Service (NMFS) is due to rule on petitions relative to the status of these coastal stocks at risk by July, 1996. 13) Targeted for NCRWQCB Integrated Watershed process: 1995-2000.</p>	<p>Work Priority: High</p> <p>TMDL priority: NA</p> <p>TMDL done 1995. Confirmation is ongoing.</p>
<p>2 Temple Creek Nutrients</p>	<p>1) Late 1970's and early 1980's: NCRWQCB staff worked with dairies to contain waste, separate rainwater from waste containment areas, and dispose of wastes in agronomically beneficial ways. 2) 319(h) funded source reduction activities, through the Gold Ridge Resource Conservation District. Agricultural community has targeted 75% reduction of nutrient loading. 3) Targeted for NCRWQCB Integrated Watershed process: 1995-2000. 4) Propose TMDL to Board in 1996.</p>	<p>Work Priority: High</p> <p>TMDL priority: High</p> <p>TMDL 1996</p>

California North Coast Regional Water Quality Control Board
Expanded Details for Waterbodies on the
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3 Estero de San Antonio -Nutrients	This is the estuary to which Stemple Creek flows. TMDL progress is subject to the same actions as described for Stemple Creek.	Work Priority: High TMDL priority: High TMDL 1996
4 Garcia River -Sediment	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: NCRWQCB staff participate in Timber Harvest Plan review teams. 3) DATE: Coast Forest Lands/NCRWQCB monitoring effort. 4) DATE: Garcia River Watershed Assessment Group developed enhancement plan. 5) Ongoing: Coast Forest Lands (timber operator) is performing restoration and sustained yield planning. 6) 1994: Mendocino Watershed Service trained to perform stream course assessment and restoration 7) 1994: Mendocino County Resource Conservation District targeted Garcia River as high priority for restoration activities. 8) May, 1995: NCRWQCB targeted Garcia River as high priority for TMDL completion. 9) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 10) Coastal Forest Lands and Louisiana Pacific Corp. Sustained Yield Plans. 11) Spring, 1996: USEPA/NCRWQCB partnership will focus on TMDL development for forestry sediment issues, using the Garcia River, beginning in 1996 (one year Interagency Personnel Agreement position). 	Work Priority: High TMDL priority: High SYP TMDL 1997

California North Coast Regional Water Quality Control Board
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<p>5a Upper Klamath River (including the Lost River, Tule Lake Basin , and the Klamath River from Oregon state line downstream to and including the Scott River)</p>	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participated in Timber Harvest Plan review teams. 3) 1974 - 1975: NCRWQCB Water Quality Control Plan, Klamath River Basin, California, July 1975 Abstract. The NCRWQCB identified communities in the Klamath River Watershed where wastewater did or might cause water quality impairments. NCRWQCB staff, together with State Water Resources Control Board (SWRCB) staff, secured grant funding and worked with communities to facilitate construction of improved wastewater treatment and disposal facilities, to ensure compliance with the prohibition to discharge waste. Communities included: Newell and the City of Tulelake. 4) 1991: 319(h) funded source reduction and public outreach ongoing. Partnership with Klamath River Basin Fisheries Task Force, others, in coordinating assessment and restoration efforts. 5) 1994: USEPA TMDL mini-grant (\$19,000) funded ongoing temperature assessment on mainstem below Iron Gate Dam. Progress report on historic data compilation and new data collection to USEPA: Feb. 1996. 5) 1995: USEPA grant for a NCRWQCB focussed assessment of Klamath Basin water quality conditions during the period from 1996 through 1998. 6) Coordination with US Bureau of Reclamation and Oregon Department of Environmental Quality ongoing in assessment of upper basin conditions. Coordination with California Department of Fish and Game, USFWS, USFS, Siskiyou Office of Education, College of Siskiyou, and the Yurok, Hoopa, Karuk, and Klamath tribes, among others, in working at solutions to the issues impacting tributaries to the Klamath River. 7) 1994: NCRWQCB acrolein study, in cooperation with US Bureau of Reclamation, Tulelake Irrigation District, Baker Chemical Company, and staff from SWRCB. 8) April, 1994: Following the guidelines outlined in the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (ROD-April, 1994), the US Forest Service and Bureau of Land Management began a Klamath River Basin Assessment, and numerous Watershed Assessments. Staff from the NCRWQCB Non Point Source/Forestry unit participated in several related Watershed Assessment activities for high priority watersheds. Staff from the NCRWQCB Surveillance, Monitoring and Planning unit participated extensively in the Klamath River Basin Assessment Team (KRBAT), facilitating inclusion of relevant water quality considerations in the KRBAT documents. 9) November, 1995: The Yurok Tribe and the US Bureau of Reclamation invited staff from the NCRWQCB to participate in the Klamath Project Operations Plan (KPOP) for 1996. This effort will establish operating scenarios which will dictate the quantity and timing of diversions, releases, and return flows to the Klamath River just upstream of the California state line. The process began in the spring of 1995. 10) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 11) NCRWQCB has issued Cleanup and Abatement orders and enforcement letters on Timber Harvest Plans (THPs) in violation of Basin Plan Standard since 1972. 	<p>Work Priority: High</p> <p>TMDL priority: Medium</p> <p>TMDL by 2004 (dependent on Federal Energy Regulatory Commission re-license process and quality of information developed).</p>
<p>5b Lower Klamath River (Below the Scott River downstream to the Pacific Ocean)</p>		
<p>Temperature Nutrients</p>		

California North Coast Regional Water Quality Control Board
Expanded Details for Waterbodies on the
Clean Water Act, Section 303(d) List of Impaired Waterbodies
(based on the 303(d) list, as adopted by Resolution 95-96, December 7, 1995)

TABLE 1

<p>6 Scott River -Sediment -Temperature</p>	<p>1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) 1991 - ongoing: 319(h) funded source reduction. Coordination with Siskiyou Resource Conservation District, Scott River Coordinated Resource Management Planning Group (CRMP). 4) NCRWQCB staff participation, together with commercial timber interests, US Forest Service, and California Department of Fish and Game, on French Creek Watershed Advisory Group (WAG), in place since 1992. This WAG has developed a monitoring plan, fire fuel management plan, sustained forestry plan, and a road management plan. NCRWQCB staff help in supporting annual field sampling effort. Sediment aggradation rates have trended significantly downward since 1992. 5) 1995: the CRMP developed and approved a Fall Flows Action Plan and a Fish Population and Habitat Plan. 6) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) since 1972. 7) Targeted for NCRWQCB Integrated Watershed process: 1995-2001.</p>	<p>Work Priority: High</p> <p>TMDL priority: Low</p> <p>2005</p> <p>Scott River watershed effort may satisfy TMDL.</p>
<p>7 Shasta River -Dissolved Oxygen -Temperature</p>	<p>1) 1989-1993: NCRWQCB performed water quality investigation. Data have been reported to local CRMP group, California Department of Fish and Game, and others. 2) 1991 -ongoing: 319(h) funded source reduction efforts targeting alternatives to in stream impoundments, tail water conservation, and riparian enclosures. 3) 205(j) funded investigation, by local CRMP with UCD, aimed at establishing a water budget balance. 4) Ongoing coordination with Siskiyou Resource Conservation District, Shasta River Coordinated Resource Management Planning Group, California Department of Fish and Game, and others. 5) Targeted for NCRWQCB Integrated Watershed process: 1995-2001.</p>	<p>Work Priority: High</p> <p>TMDL priority: Low</p> <p>2005</p> <p>Shasta River watershed effort may satisfy TMDL.</p>
<p>8 Beaughton Creek Unpermitted discharge of waste.</p>	<p>1) Regulation of International Paper facility in Weed, to reduce and eliminate discharge of waste and contaminated stormwater runoff. 2) 1986: Toxic Substances Monitoring Program was used by NCRWQCB staff to investigate bioaccumulation of industrial chemicals, metals. Tissue residue of copper was somewhat elevated at 53 ppm, wet weight. Organic chemicals were not detected. Sampled in 1988, tissue residues of endosulfan were found at 5.2 ppb, wet weight, in whole fish tissue, just above the detection limit, and 180.6 ppb, in lipid tissue. Sampled in 1989, copper residues in fish tissue were found at 94 ppm, wet weight. Sampled in 1990, copper residues in fish tissue were found at 56 ppm, wet weight. Sampled in 1991, copper residues in fish tissue were found at 52 ppm, wet weight. Organic chemicals were not detected in muscle or lipid tissue. 3) 1992: Cleanup and Abatement Order issued. NCRWQCB staff has taken enforcement action to achieve reduction in wood treatment chemical discharges at the Baxter and Roseburg facilities. Site Mitigation Unit continues to work with responsible parties to achieve compliance. The site remains listed until compliance is confirmed. 4) Targeted for NCRWQCB Integrated Watershed process: 1995-2001.</p>	<p>Work Priority: High</p> <p>TMDL priority: Low</p> <p>Delist 1998</p>

California North Coast Regional Water Quality Control Board
Expanded Details for Waterbodies on the
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9 Trinity River -Sediment	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) 1990: 319(h) funded source reduction on Willow Creek, tributary to the Trinity River. 4) 1991: Temperature objectives established. 5) The Trinity River Task Force, US Bureau of Reclamation, USFS, and Hoopa tribe are working to manage flows for improved sediment budget and restoration success. 6) Targeted for NCRWQCB Integrated Watershed process: 1998-99. 	Work Priority: Medium TMDL priority: Medium Existing efforts seem to be moving toward compliance. Delist ~ 2000
10 South Fork Trinity River -Sediment	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) Local group has begun to identify and pursue source reduction potential. 4) Targeted for NCRWQCB Integrated Watershed process: 1998-99. 	Work Priority: Medium TMDL priority: Low (2010) TMDL questionable
11 Americano Creek -Nutrients	<ol style="list-style-type: none"> 1) Late 1970's and early 1980's: NCRWQCB staff worked with dairies to contain waste, separate rainwater from waste containment areas, and dispose of wastes in agronomically beneficial ways. 2) 1991, 1992: 319(h) funded source reduction activities through grant to Gold Ridge Resource Conservation District. 3) Targeted for NCRWQCB Integrated Watershed process for assessment and implementation of additional waste reduction activities : 1995-2000. 4) Propose TMDL to Board in 1997. (Should benefit from activities on Stemple Creek Watershed.) 	Work Priority: Low TMDL priority: High TMDL 1997
12 Estero Americano -Nutrients	This is the estuary to which Americano Creek flows. TMDL progress is subject to the same actions as described for Stemple Creek, by way of NPS source reduction.	Work Priority: Low TMDL priority: High TMDL 1997

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Clean Water Act, Section 303(d) List of Impaired Waterbodies
(based on the 303(d) list, as adopted by Resolution 95-96, December 7, 1995)

13 Eel River -Sediment -Temperature	1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) 1994: 205(j) study of dairies in lower area of river by local Resource Conservation District. 4) 1995: 205(j) study for temperature, benthic macroinvertebrate assessment, and educational outreach. 5) 1996: 319(h) mitigation efforts have been directed into tributary (Tomki Creek) for source reduction and habitat restoration. (This grant is pending final approval. It is high on the list, but may fall victim to federal budget cuts.) 6) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 7) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards since 1972. 8) Targeted for NCRWQCB Integrated Watershed process: 1997-2002.	Work Priority: Medium TMDL priority: Low TMDL questionable (2015) (conditional on SYP's providing products which are supportive of TMDL development)
14 Tomki Creek -Sediment	1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) 1981: 208 grant-funded "Watershed Restoration Plan" report is released by NCRWQCB. 4) DATE: Mendocino County Enhancement Plan. 5) 1990, 1991: 319(h) mitigation efforts have been directed into tributary restoration for source reduction and habitat restoration. 6) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 7) Targeted for NCRWQCB Integrated Watershed process: 1997-2002.	Work Priority: Medium TMDL priority: low TMDL questionable (2015)
15 Van Duzen River -Sediment	1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. (NPS/Forestry focus.) 3) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 4) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards. 5) Targeted for NCRWQCB Integrated Watershed process: 1997-2002.	Work Priority: Medium TMDL priority: Low TMDL questionable (2020)

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<p>16 Noyo River -Sediment (Toxics not a listed concern)</p>	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) NCRWQCB Site Mitigation Unit staff are working on enforcement actions to reduce wood treatment chemical discharges at Parlin Creek Fork. 4) Non point source (forestry) unit is attempting to address impacts on the Noyo, through the Sustained Yield Planning process. (NPS/Forestry focus.) 5) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 6) Targeted for NCRWQCB Integrated Watershed process: 1995-2000. 7) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards. 	<p>Work Priority: High</p> <p>TMDL priority: Medium</p> <p>TMDL dependent on quality of SYP and Garcia River TMDL</p> <p>1999</p>
<p>17 Mad River -Sediment -Turbidity</p>	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. (NPS/Forestry focus.) 3) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 4) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards. 5) Targeted for NCRWQCB Integrated Watershed process: 1996-2000. 	<p>Work Priority: Medium</p> <p>TMDL priority: Low</p> <p>TMDL questionable (2015)</p>
<p>18 Navarro River -Sediment</p>	<ol style="list-style-type: none"> 1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) 1995: Coastal Conservancy and 205(j) funds being used by community group to perform watershed assessment and enhancement plan, including sediment budget. NCRWQCB staff participate on the Watershed Group. 4) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 5) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards. 	<p>Work Priority: High</p> <p>TMDL priority: Medium</p> <p>TMDL dependent on quality of SYP and watershed activities 2000</p>

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(based on the 303(d) list, as adopted by **Resolution 95-96, December 7, 1995**)

19 Gualala River -Sediment	<p>1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) 1995: Lawsuit filed against NCRWQCB. 4) NCRWQCB is providing assistance to local efforts to monitor and identify restoration potential. (NPS/Forestry focus.) 5) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 6) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards.</p>	Work Priority: Medium TMDL priority: Medium TMDL dependent on quality of SYP 2001
20 Albion River -Sediment	<p>1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. (NPS/Forestry focus.) 3) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 4) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards.</p>	Work Priority: Low TMDL priority: Medium TMDL dependent on quality of SYP 2011
21 Big River -Sediment	<p>1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. (NPS/Forestry focus.) 3) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 4) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards.</p>	Work Priority: Low TMDL priority: Medium TMDL dependent on quality of SYP 2010

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(based on the 303(d) list, as adopted by Resolution 95-96, December 7, 1995)

<p>22 Redwood Creek -Sediment</p>	<p>1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. (NPS/Forestry focus.) 3) Late 1995: NCRWQCB staff involved in multi-agency coastal salmon initiative, aimed at development of habitat conservation plans for the protection of coho and steelhead populations at risk. NMFS is due to rule on petitions relative to the status of these coastal stocks at risk. 4) Ongoing: impairment is being aggressively treated through National Park Service restoration plan. National Park Service has developed guidance document for resource conservation planning. 5) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards. 6) Targeted for NCRWQCB Integrated Watershed process: 1996-2000.</p>	<p>Work Priority: Low</p> <p>TMDL priority: Low</p> <p>TMDL ~ 1998 Highly studied by National Park Service; intensive restoration plan in effect.</p>
<p>23 Mattole River -Sediment -Temperature</p>	<p>1) 1972: Basin Plan prohibition for nonpoint source pollution discharge. 2) 1974 to present: Participate in Timber Harvest Plan review teams. 3) Community groups are involved in restoration and monitoring. (NPS/Forestry focus.) 4) Bureau of Land Management Bear Creek WA 5) NCRWQCB has issued enforcement actions on Timber Harvest Plans (THPS) in violation of Basin Plan Standards.</p>	<p>Work Priority: Low</p> <p>TMDL priority: Medium TMDL questionable 2002</p>

SUPPLEMENTAL DOCUMENTS AND COMMENTS

This report has two parts. Part I is a listing of written public comment, other supporting documents, and staff response. Part II is a NCRWQCB staff technical discussion of the Georgia Pacific Ten Mile River monitoring report for 1994.

PART I

DOCUMENTS

The information provided below reflects comments submitted during the extended hearing, and other documents which are relevant to specific 303(d) issues. Documents 1, 2, 3, 5, and 6 are included in the November 20, 1995 EOSR, as attachments to the public report, dated November 7, 1995.

Number 4 reflects the occurrence of a meeting between Joseph Brecher and staff to the NCRWQCB and USEPA Region IX. Number 7 reflects selected items from NCRWQCB files on Ten Mile River.

Numbers from 8 on reflect information obtained after the October 27, 1995 Board meeting and not included in the November 7, 1995 Public Report.

The information is grouped by waterbody, in the same order as they appear on the 1995 TMDL list, followed by general comments. Under each waterbody section, the related comments are listed, followed by a staff response. The source of each document is listed, along with any affiliation stated on the letterhead, when present. The document number has been assigned to each, roughly according to the overall chronology of their inclusion in this record.

Russian River, (Laguna de Santa Rosa)

**-Brenda Adelman (submitted Dec. 7, 1995)
Document Number 10**

Nov. 10, 1995- Memo from John Rosenblum to Brenda Adelman regarding a water balance model for the Russian River and Laguna de Santa Rosa. States that the model is inappropriate for evaluation of the impact of wastewater discharges on the Russian River and Laguna de Santa Rosa.

Staff response Laguna de Santa Rosa:

It is not clear how this item relates to the 303(d) Public Hearing. Nutrient loading from agriculture, urban runoff and wastewater has resulted in high ammonia levels as well as low dissolved oxygen. The Regional Board, the City of Santa Rosa, and local agricultural groups have targeted reductions in nitrogen compounds from point and nonpoint source contributions to achieve a net reduction in loading. A "Waste Reduction Strategy" (Phased TMDL) was approved by the Regional Board on October 27, 1994, and by the US EPA on May 4, 1995. It sets out an implementation strategy to achieve objectives compliance and reevaluate the strategy and update the Board in July 1996. Monitoring is under way to document any changes in nutrient and dissolved oxygen concentrations and provide a basis for any revision of the approach. See Table 1 of this transmittal for additional details.

Stemple Creek, Estero de San Antonio

**-Staff of the NCRWQCB
Document Number 27**

August 15, 1995 report from staff: "Stemple Creek Water Quality Characteristics and a Maximum Daily Load Process Marin and Sonoma Counties". This report provides the body of information needed to implement a TMDL. Staff will schedule a public hearing for consideration of this matter, and possible adoption of a TMDL for Stemple Creek in 1996.

Stemple Creek and Estero de San Antonio

Regional Board staff identified high ammonia and low dissolved oxygen. The agricultural community identified goals and proposed reduction of nonpoint sources of nutrients by 75%. This proposal is outlined in Stemple Creek Water Quality Characteristics and a Maximum Daily Load Process, prepared by staff of the Regional Board, August 15, 1995. Regional Board staff will bring this proposed phased TMDL to the Board for consideration for adoption under a separate agenda item at a future meeting.

Garcia River

**-Alen Levine for Coast Action Group
Document Number 1**

(Included as part of Public Report, Nov. 7, 1995) **ISSUE:** On November 6, 1994, the Coast Action Group addressed a letter to Mr. Seraydarian, Director of US EPA Region IX Water Management Division, which cited concerns related to the Garcia River. This letter was forwarded to the Regional Board staff by the Coast Action Group and US EPA staff. The letter acknowledges Garcia River sediment impairment, and adds the following concern: "We believe elevated temperatures are significantly impacting Salmonid fish populations and ask that temperature be added to the basis for listing under the Federal Water Pollution Control Act Section 303(d)." Temperature data were provided to support the concern.

**-Alen Levine for Coast Action Group
Document Number 24**

Feb. 23, 1995 February 23, 1995 letter accompanies data collected in the Garcia River and tributaries.

Staff Response Garcia River

The Garcia River was listed for sediment impacts to salmonids. A number of efforts aimed at restoring the fishery have been undertaken, including assessing conditions and the development of an enhancement plan, stream rehabilitation and habitat restoration activities, and landowner coordination. The Regional Board staff will begin the process of developing a phased TMDL in 1996 with the contracting of a staffer from USEPA for a one year assignment on the issue. A few of the data suggest the possibility that temperature conditions in some areas of the watershed may have temperature related limitations. The Garcia is currently listed for sediment. The NCRWQCB, together with the USEPA and key landowners, will be developing a TMDL for the Garcia River. During this process, temperature conditions will be assessed, and impairments will be noted. Regional Board staff did not find that the data provided presented a clear and compelling case for listing a temperature caused impairment of fisheries for the Garcia River at this time.

Scott River, Clear Creek; Dillon Creek; Grider Creek; Canyon, Boulder, Kelsey, Middle, Deep and Thompkins Creeks.

**-Felice Pace, Executive Director, Klamath Forest Alliance
Document Number 6**

On October 15, 1995, the Klamath Forest Alliance addressed a letter to Ben Kor, which letter cited topics for consideration in the 1996 WQA update.

Specific concerns raised were:**Topic 1: Scott River Impairments.**

- A. Inadequate Flows/Water Diversions
- B. Unscreened Water Diversions
- C. High Nutrient Loads
- D. Low Dissolved Oxygen
- E. High Temperature
- F. Sediment

Topic 2: High Quality Waters are Not In The 1994 Report.

- Clear Creek
- Dillon Creek
- Grider Creek
- tributaries to the Scott River: Canyon, Boulder, Kelsey, Middle, Deep, and Thompkins Creeks.

**-David Smith, United States Environmental Protection Agency, Region IX
Document Number 19**

Dec. 1, 1995 December 1, 1995 letter offers support for the listing of Ten Mile River and for the addition of temperature as a limiting condition on the Scott River. Provides clear explanation of 303(d) listing as a means for prioritization of NCRWQCB staff resources. Several questions are posed, with regard to the decision making process which resulted in the proposed update, such as information sources and criteria used for their evaluation. Second, the writer asks for more explanation of the basis for the responses given to various public comments. Third, the writer points out the concerns raised over the NCRWQCB level of commitment to develop TMDLs, and requests further clarification. Fourth, a request is made for further discussion (in writing) of progress, activities, and schedules for the Klamath River Basin. In summary, the letter concludes with a statement of support for the actions taken to date, and those proposed for the December 7, 1995 Board meeting.

Staff response Scott River

Topic 1 - A) Regional Board staff do not have direct authority over flows and diversions. Clean Water Act 319(h) grant monies have been directed by the Resource Conservation District (RCD) and Coordinated Resource Management Planning (CRMP) group, along with other funds, toward improved efficiencies of diversions, particularly stock water diversions. It is expected that more efficient diversions can improve flow quantities and qualities by leaving more water in the river.

1 - B) Regional Board staff has no direct authority over fish screen requirements. Unscreened diversions potentially impact survival of juvenile salmonids, and Mr. Pace's letter has been forwarded to California Department of Fish and Game staff.

1 - C) There is no information at this time to support nutrient impacts to beneficial uses.

1 - D) There is no information to support low dissolved oxygen as causing a beneficial use impairment.

1 - E) Temperature data indicate conditions in the Scott River which would prevent the full support of cold water salmonid fisheries. We propose adding temperature to the 303(d) listing.

1 - F) Sediment deposition is historically quite significant. Efforts at the reduction of sediment discharges continue throughout the Scott River watershed. The geology and history of the terrain prevent any swift resolution of the massive sediment issue, but progress at source reduction is being made. The Scott River is currently 303(d) listed for sediment.

The Board added temperature to the 303(d) list as a limiting factor on the Scott River.

Topic 2) Staff resources are not sufficient at this time to add unimpaired waterbodies to the WQA. However, we will contact Mr. Pace and begin the process of adding descriptions and/or additional waterbodies to the WQA within the next two years.

Noyo River

**-Roanne Withers and Ron Guenther, Friends of Fort Bragg
Document Number 20 (received Nov. 29, 1995)**

November 27, 1995 letter provides comment and documentation of the overdraft conditions in the Noyo River. Cites impacts on sediment accumulation, increased temperatures, and increased urban runoff effects, all in part related to increased diversion of Noyo River flows. Several supporting documents are provided. These are:

1. Addendum to Petition to Declare the Noyo River and its Tributaries Fully Appropriated, and to Add the Noyo River and its Tributaries to the Fully Appropriated Streams List; May 21, 1995.
2. Letter from SWRCB Division of Water Rights to Friends of Fort Bragg. Cites Preliminary Cease and Desist Order 11P, issued April 7, 1992, and the subsequently revised on June 30, 1993.
3. AMENDMENT TO WATER PERMIT NO. 02-91-007; California Department of Health Services, August 25, 1995. Describes conditions and limitations under which the system may deliver water, including limits to volume by season.

4. Engineering Report In the Matter of an Amended Permit.... California Department of Health Services, Office of Drinking Water. Explains how the City was out of compliance with the prior permit, the moratorium against new service commitments placed on the City, and the cities' efforts to have the moratorium lifted. Describes conditions under which City may operate system.

5. NOTICE OF VIOLATION OF PERMIT 11383 AND INTENT TO ISSUE A PRELIMINARY CEASE AND DESIST ORDER; SWRCB, Division of Water Rights. Describes violation of permit, reduction of flows below allowable minimum.

Staff response Noyo River

Staff notes the increasing need to look at flow as it relates to water quality. This is an issue which is relevant in numerous watersheds in the North Coast Region, and throughout California. It is not clear, at this time, how this issue will involve staff of the NCRWQCB in the near or long term.

Navarro River and tributaries

**-Dennis Slota, Mendocino County Water Agency
Document Number 8**

Dec. 19, 1995 - Complete compilation of water temperature collected by Mendocino County Water Agency and Louisiana Pacific in the Navarro Basin in 1995. This information is was originally provided on December 4, 1995, in raw form. No request is made in this letter, with respect to 303(d).

**-Daniel Myers
Document Number 9**

Dec. 12, 1995 letter with attachments of Mendocino County Water Agency temperature monitoring data (see Document Number 17, this report), and a June 29, 1995 memorandum from Mark Stretars, Senior Water Resource Control Engineer, Division of Water Rights Complaint Section, State Water Resources Control Board (Document Number 23, this report). Mr. Myers suggests that temperature concerns for the Navarro River are well documented, and requests the addition of temperature to the 303(d) list as an impairment on the Navarro River.

**-Diane Peget, Friends of the Navarro Watershed
Document Number 16**

A request is made to add temperature as a cause of impairment in the Navarro River Watershed. Mention is made of information submitted to this office by staff of the Mendocino Water Agency in July, 1994, and March, 1995. Further, mention is made of data collected in the summer of 1995, and submitted to this office by staff of the Mendocino County Water Agency.

**-Dennis Slota, Director, Mendocino County Water Agency
Document Number 17(submitted Dec. 7, 1995)**

December 1, 1995 letter reporting results of temperature monitoring during the summer, 1995. Request to list temperature as a cause of impairment in the Navarro River Watershed is made, based on the findings of this 1995 monitoring, as well as previously available information.

**-Mark Stretars, SWRCB Division of Water Rights Complaint Section
Document Number 23 (submitted Dec. 7, 1995)**

June 29, 1995 internal memorandum to Jerry Johns. Document states that in June of 1995, measured temperatures in major tributaries were above the stress level for coho and steelhead in early June, and had passed the lethal limit by the end of June. Temperatures recorded in the mainstem were high, despite the presence of flows exceeding 40 cfs.

Staff response Navarro River

Staff was directed, at the December 7, 1995 Board meeting, to review the data provided. Upon performing a summary review, it is the opinion of staff that temperature is exceeding the range which would be fully supportive

of salmonid survival? The Navarro River is currently 303(d) listed for sediment. Staff recommends adding temperature as a limiting factor on the Navarro River, and its' tributaries, at the soonest possible time.

Ten Mile River

**-NCRWQCB, NPS/Forestry Files:
Document Number 7**

The following documents provide background information regarding NCRWQCB staff participation in Timber Harvest Plan (THP) review on the Ten Mile River. The information illustrates staff concern over the condition of the watershed and potential impacts from proposed activities, and documents staff requests for monitoring.

- Nov., 1991 Preharvest Inspection Report - THP 1-91-397
- Feb. 14, 1994 Preharvest Inspection Report - THP 1-94-022
- Feb. 15, 1994 Georgia Pacific Memo to Mike Orme, CDFFP
- Feb. 22, 1994 NCRWQCB filing of non-concurrence - THP 1-94-022
- Dec. 22, 1994 Georgia Pacific 1994 Instream Monitoring Results
- Dec. 13, 1995 NCRWQCB Additional Comments on G-P's SYP No. 95-002

**-Judith Vidaver, Chair, Ten Mile River Watershed Association
Document Number 11**

Dec. 6, 1995 - Citation of public documents which indicate impaired habitat due to sediment quality, quantity, and size distribution. Includes map, developed by Regional Board staff demonstrating cumulative impacted land area, equivalent roaded acres (ERA's), and harvest. Photos of stream course damage and sediment aggradation are also included.

**-Judith Vidaver, Chair, Ten Mile River Watershed Association
Document Number 12 (submitted Dec. 7, 1995)**

January 27, 1995 letter from Jonathan Ambrose, Wildlife Biologist for Georgia Pacific, addressed to all potential readers. Indicates 1994 sediment monitoring results show fines (0.85 mm) exceeded 20% in the North Fork of Ten Mile River.

**-Jon Ambrose, Wildlife Biologist, Georgia-Pacific Corp.
Document Number 13 (submitted Dec. 7, 1995)**

December 6, 1995 letter from Jon Ambrose to the Regional Board. Describes that G-P is responsible for the conditions in 85% of the Ten Mile River watershed. Acknowledges long term concerns of Regional Board staff with respect to elevated sediment levels. Notes that, as a result of documented NCRWQCB staff concerns, G-P took following actions: 1993 - initiated a monitoring plan, as required; submitted results of required monitoring on time in 1993 and 1994, with a commitment to also submit required 1995 monitoring results on time. In this letter, Mr Ambrose suggest that 1) the fines are acceptable, and 2) they are doing a good job in the watershed. Mr. Ambrose acknowledges the inability of G-P to prevent aggradation from 1993 to 1994 (the sediment/fines load in 1994 covered gravels which had been of higher quality when assessed in 1993 than in 1994). Mr. Ambrose makes brief mention of the discrepancy between scientific opinions on sediment size, and concludes that this is a point of much debate between fisheries scientists and one that he considers irrelevant. Mr. Ambrose goes on to mention that, while G-P has performed the required monitoring in a good faith effort, G-P would not formally agree to the commitment by way of signing a Memorandum of Understanding (MOU). Mr. Ambrose goes on to conclude that the NCRWQCB staff pressure on G-P has resulted in G-P's monitoring plan being one of the most comprehensive plans currently implemented by a forest products company, and describes it as a model of public agency and private landowner cooperation. In conclusion, Mr. Ambrose notes that he probably does not understand the whole process behind the proposed 303(d) listing.

**-Erica Fielder, Friends of the Ten Mile River
Document Number 14**

Dec. 5, 1995 December 5, 1995 letter raising concern for health of Ten Mile River Estuary, and the importance of this resource as habitat for coho and steelhead.

**-Mary Pjerrou, Redwood Coast Watershed Alliance (also commented on Greenwood Creek)
Document Number 15**

December 5, 1995 letter strongly urging amending 303(d) list to include Ten Mile River. The writer cites similar conditions in Ten Mile River as in all other 303(d) listed Mendocino County streams, as documented in numerous sources, including Georgia Pacific monitoring reports. Also raises questions regarding Greenwood Creek, a 15,600 acre watershed draining to the Pacific Ocean. Eleven questions of various degrees of specificity are posed.

**-Lloyd I. Keefer, Region Chief, Coast/Cascade Region, California Department of Forestry and Fire
Protection, by : Marc J. Jameson, Division Chief, Forest Practice
Document Number 18 (submitted to staff Dec. 7, 1995)**

December 1, 1995 letter from Lloyd I. Keefer, Region Chief, by Marc J. Jameson of the CDFFP, formerly Georgia Pacific's Registered Professional Forester responsible for activities in the Ten Mile River Watershed. The writer provides conjecture that the condition of Ten Mile River watershed is greatly improved from the highly degraded conditions which he describes as having existed just 20 or 30 years ago. The writer then predicts, with no apparent substantiation, that the condition of fish habitat has improved greatly, and will continue to improve into the foreseeable future. At no point does the writer suggest that Ten Mile River watershed is free from impairment. Mention is made of the measurement of fines. The material counted by Georgia-Pacific as fines, that less than 0.85 mm diameter, is more mobile, and not as seriously incriminated in the impairment of salmon fry survival and emergence as the material between 0.85 mm and 3.5 mm. (A detailed discussion of sediment data comprises PART II of this paper, below.)

**-David Smith, United States Environmental Protection Agency, Region IX
Document Number 19**

December 1, 1995 letter offers support for the listing of Ten Mile River and for the addition of temperature as a limiting condition on the Scott River. Provides clear explanation of 303(d) listing as a means for prioritization of NCRWQCB staff resources. Several questions are posed, with regard to the decision making process which resulted in the proposed update, such as information sources and criteria used for their evaluation. Second, the writer asks for more explanation of the basis for the responses given to various public comments. Third, the writer points out the concerns raised over the NCRWQCB level of commitment to develop TMDLs, and requests further clarification. Fourth, a request is made for further discussion (in writing) of progress, activities, and schedules for the Klamath River Basin. In summary, the letter concludes with a statement of support for the actions taken to date, and those proposed for the December 7, 1995 Board meeting.

**-Judith Vidaver, Chair, Ten Mile River Watershed Association
Document Number 25**

Jan. 31, 1994 January 31, 1994 letter relates the fact that Ten Mile River was meant to be included on the USEPA 303(d) list revision in 1993. Writer urged the NCRWQCB to include Ten Mile River on the February 24, 1994 resolution to adopt the 1994 Water Quality Assessment and 303(d) list update.

Staff Response Ten Mile River

The 1994 update process received testimony related to Ten Mile River. Sediment impacts to salmonid habitat were described. Records subsequently reviewed include files of the Non Point Source/Forestry Unit of the NCRWQCB, including the Ten Mile River Watershed 1994 Instream Monitoring report from Georgia Pacific Corporation. This report documents fisheries habitat impaired due to historic logging activities, and details plans for instream fisheries habitat enhancement activities.

The Regional Board elected to not list Ten Mile River, based on the review of information made available at the

hearing, that although sediment may be a problem, Georgia-Pacific is taking actions to reduce impacts and improve the stream for anadromous salmonids. A review by Regional Board staff of the public record on this matter supports the perception that salmonid fisheries are impaired due to historic sediment deposition. While current efforts may be aimed at potentially reversing these impacts, it was the recommendation of staff that action be taken to add Ten Mile River to the Section 303(d) list due to sediment impairments. Technical discussion of the basis for this recommendation is detailed in NCRWQCB staff technical paper on the measurement of fines, included as "Expanded Technical discussion on Ten Mile River", below.

Greenwood Creek

**-Mary Pjerrou, Redwood Coast Watershed Alliance
Document Number 15**

December 5, 1995 letter raises questions regarding Greenwood Creek, a 15,600 acre watershed draining to the Pacific Ocean. Also strongly urges amending 303(d) list to include Ten Mile River.

Staff response: Staff does not have sufficient information to respond to specific questions about Greenwood Creek at this time. For information on other watershed activities, please refer to Table I of this transmittal.

General comments on 303(d) listing requirements

**-David Smith, United States Environmental Protection Agency, Region IX
Document Number 19**

December 1, 1995 letter offers support for the listing of Ten Mile River and for the addition of temperature as a limiting condition on the Scott River. Provides clear explanation of 303(d) listing as a means for prioritization of NCRWQCB staff resources. Several questions are posed, with regard to the decision making process which resulted in the proposed update, such as information sources and criteria used for their evaluation. Second, the writer asks for more explanation of the basis for the responses given to various public comments. Third, the writer points out the concerns raised over the NCRWQCB level of commitment to develop TMDLs, and requests further clarification. Fourth, a request is made for further discussion (in writing) of progress, activities, and schedules for the Klamath River Basin. In summary, the letter concludes with a statement of support for the actions taken to date, and those proposed for the December 7, 1995 Board meeting.

Staff note: provided for reader's information.

**-Alexis Strauss, Acting Director, USEPA Region IX
Document Number 21**

Oct. 11, 1995 Describes status of submitted updates, and current issues of concern, including potential litigation.

Staff note: provided for reader's information.

**-David Smith, USEPA, Region IX
Document Number 22, (Staff Report Supporting Final Action California 303(d) List)**

Oct. 5, 1995 Expresses general satisfaction with list update, overall. Raises continued concern in three areas: Biennial review of factors and waterbodies already on the list; Documentation of information and criteria used to reach listing and targeting decisions; Improved public participation in listing and prioritization of water quality limited segments.

Staff response Staff comment at the October 26, 1995 Board meeting indicated that clarification of NCRWQCB source reduction and TMDL related activities, together with a schedule for TMDL development, would be provided with the 303(d) list transmittal letter. These details are the body of Table I of this transmittal.

-Joseph Brecher

Document (Comment) Number 4 (Meeting with USEPA and NCRWQCB staff)

ISSUE: On August 29, 1995, Regional Board and USEPA staff met with Mr. Joseph Brecher to discuss his clients' concerns regarding Section 303(d) listed waterbodies. At that time Mr. Brecher requested that the Regional Board commit to a timely schedule (2-3 years) to develop TMDLs on the fifteen waterbodies listed for sediment impairment at that time.

Staff response: While we could not commit to a specific schedule due to uncertainties in staffing and the methodology for developing a sediment TMDL, we proposed ranking the Section 303(d) list to reflect relative priority. Additionally, we are committed to developing a TMDL approach for the Garcia River in conjunction with USEPA, State and local agencies, and the Garcia Watershed landowners. Work is scheduled to begin in March of 1996.

-Stephan Volker, Attorney for Sierra Club Legal Defense Fund, and others

Document Number 3 (Included as part of Public Report, Nov. 7, 1995)

ISSUE: On February 28, 1995, Stephan C. Volker addressed a letter to Ms. Carol Browner, US EPA Administrator. A copy of this letter was forwarded to Regional Board staff by US EPA staff. The letter comprised a "Notice of Intent to Commence a Civil Action Over EPA's Failure to Perform Nondiscretionary Duties Under Clean Water Act Section 303(d)". Cited in the Notice of Intent (NOI) was the perceived failure of the State to establish TMDL's for 17 North Coast Regional water body segments. The letter states that "Neither the EPA, nor the State Water Board has taken any action".

Staff response: A few examples summarizing actions on those waters by the Regional Board, in partnership with USEPA, are summarized in Table 1 this transmittal.

-Joseph Brecher

Document Number 2 (Included as part of Public Report, Nov. 7, 1995)

ISSUE: On December 23, 1994, Joseph J. Brecher addressed a letter to Ms. Carol Browner, US EPA Administrator. A copy of this letter was forwarded to Regional Board staff by US EPA staff. The letter comprised a "Notice of Intent to Commence a Civil Action Over EPA's Failure to Perform Nondiscretionary Duties Under Clean Water Act Section 303(d)". Cited in the Notice of Intent (NOI) was the perceived failure of the State to establish TMDL's for 17 North Coast Regional water body segments. The NOI states that "neither the State nor the EPA has taken any action to begin setting TMDLs for those waters."

Staff response: Again, a few examples of the actions on those waters by the USEPA and the Regional Board are summarized in Table 1 of this transmittal.

Various systems with stocks of anadromous fish at risk

-Roger Barnhart, President, Humboldt Chapter, American Fisheries Society

Document Number 5, (Included as part of Public Report, Nov. 7, 1995)

ISSUE: On October 5, 1995, the Regional Board office received a letter from the American Fisheries Society addressed to Ben Kor, raising general concerns about monitoring and data availability. Questions relative to Clean Water Act Sections 305(b) and 303(d) which are raised in this letter include:

- 1)"What steps are being taken to set TMDL's for sediment and temperature?"
- 2)"What is the time frame that we can expect standards to be set and compliance enforced?"
- 3)"We expect that if thresholds are exceeded, then activities such as timber harvest and road building in a watershed should be restricted until conditions improve. Are we correct in that assumption?"

Staff response: 1) Efforts at establishing a temperature TMDL are being undertaken currently for the mainstem Klamath River. Work on a model for a sediment TMDL is scheduled to begin on the Garcia River in January, 1996.

- 2) The TMDL process is not intended for setting standards. This is accomplished through amendment of the Water Quality Control Plan (Basin Plan). The Basin Plan contains standards for sedimentation and temperature increases. A high priority on the Triennial Review list is evaluation of a temperature objective for salmonid fishes. Each TMDL is waterbody specific, and details time lines for attainment and reassessment. We anticipate the first sediment TMDL on the Garcia River in the spring of 1997.
- 3) When a TMDL approach is developed for a waterbody, the amounts of a pollutant entering the waterbody may be reduced to meet a water quality standard. If during the TMDL assessment process it is determined that specific land uses (e.g., road building, grazing, timber harvest) are contributing sediment in quantities that affect the beneficial uses or impair their recovery, the contribution of sediment from those uses should be reduced through changes in practices or curtailing specific activities.

**-Soyka Dobush, David Fuller, and Patrick Higgins, American Fisheries Society, Humboldt Chapter
Document Number 26**

March 29, 1992 correspondence raising concerns and information relevant to numerous north coast anadromous fish stocks at risk of extinction. Introduces an attached report "STOCKS OF SALMON, STEELHEAD AND CUTTHROAT TROUT OF NORTHERN CALIFORNIA AT RISK OF EXTINCTION", by Patrick Higgins, David Fuller, and Soyka Dobush. Among the numerous stocks of coho, chinook, steelhead, and coastal cutthroat trout listed, Ten Mile River and Navarro River coho are listed as stocks of concern. Garcia River coho are listed as being in high risk of extinction.

Staff note: provided for resder's information.

PART II

EXPANDED TECHNICAL DISCUSSION

Ten Mile River

Background

The Ten Mile River supports a small population of coho salmon, believed to be the only "native" fish in the National Marine Fisheries Service's designated Central California Coast Evolutionarily Significant Unit (Weitkamp, et. al. 1995):

Of the naturally spawning coho salmon, 3880 were from tributaries in which supplementation occurs (Noyo River and coastal streams south of San Francisco). Only 160 fish in the range of this ESU (all in Ten Mile River) were identified as "native" fish, lacking a history of supplementation with non-native hatchery stocks. Based on redd counts, the estimated run of coho salmon in Ten Mile River during the 1991-92 spawning season was 14 to 42 fish (Maahs and Gilleard 1994).

Higgins, et. al. (1992) identified coho salmon in the Ten Mile River (and 11 other areas) as a stock of concern.

Given: 1) those estimates place coho salmon in the Ten Mile River as a stock of concern with about 4% of coho spawners and 100% of the native stocks in the Central California Coast ESU in the Ten Mile River watershed, 2) the river also supports a population of steelhead, 3) sections of the river and its tributaries are recovering from sedimentation caused in part by poor land use practices in the past, 4) the Water Quality Control Plan for the North Coast Region (Basin Plan) (NCRWQCB 1994) contains a water quality objective regarding sediment deposition, and 5) intensive timber and associated road activities occur and are planned in the watershed, staff expressed a high level of concern for the quality of habitat for those fish.

The most recent information for habitat conditions in the Ten Mile available to staff is from field observations of staff and a report on instream monitoring produced by Georgia-Pacific Corporation (GP), the primary landowner in the watershed (Ambrose and Dreier 1994). No information regarding rearing habitat for coho is presented in the report, however GP performed population surveys using electroshocking techniques in 1993 and 1994. Coho salmon were observed at six of 24 sites in 1993 and one site in 1994.

GP also collected stream substrate samples to evaluate conditions in the spawning gravels. Stream gravels are critical habitat for the sensitive egg, embryo, and alevin life stages of anadromous fish, and for aquatic macroinvertebrates that serve as food for those fish once they leave the gravels. Steelhead juveniles also utilize the larger streambed particles as cover. Sand and fine sediments deposited in and on the streambed can impair the utility of the streambed habitat for anadromous fish spawning, rearing, and food production (Klamt 1976, Bjornn, et. al. 1977, Reiser and Bjornn 1979, Waters 1995).

The Basin Plan (NCRWQCB 1994) contains water quality objectives for the protection of designated beneficial uses. The objectives that apply to protection of stream gravels from sediment deposition are:

Settleable Material

Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

Sediment

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Implicit in those objectives is the knowledge that sand and fine sediments in deleterious amounts affect the ability of a stream to support anadromous fish.

Section 303(d) of the federal Clean Water Act requires that the State list and prioritize for further action waterbodies where water quality objectives are not met after the application of conventional waste treatment technology. Pursuant to the Clean Water Act, staff evaluated the conditions in the Ten Mile River with respect to streambed substrate and the Basin Plan objective for sedimentation.

Analysis of Ambrose and Drier Data for the Ten Mile River Watershed

Georgia-Pacific personnel obtained streambed substrate samples at 21 sites in the watershed by McNeil core, wet sieved, and size fractions volumetrically determined per Valentine (1993). No correction factors for water retained on the particles were applied to the data. Raw data for the 1994 samples also were provided in the report. While the authors presented the data as percent fines (<0.85 mm), geometric mean diameter, and fredle index (a measure of central tendency, similar to geometric mean), the analysis of the data was not complete.

Staff's analysis of the Georgia-Pacific supplied data included those statistics for 1994 data only, since the 1993 raw data were not included in the report. Staff used the data from Table 1, p. 43-48, of the Georgia-Pacific report. (Note that although the table labels the values as "percent passing" a sieve size, the values are actually "percent retained" on a sieve size. Ambrose, personal communication.) We also used percent of particles in particular size classes (e.g., 1-3 mm, <6 mm) and compared all statistics to relationships of particle size to survival to emergence published in the scientific literature. Staff recognizes that the published data generally do not permit quantitative predictions of survival to emergence from streambed samples. However, the published studies do shed considerable light on the levels of fine particles that affect survival to emergence and the thresholds at which one could expect to see significantly increased mortality.

Staff recognizes that different investigators used variations of the methods employed by GP. Different methods may provide different results and cross comparison could result in differences up to 30% for the smallest particle sizes. Differences are much less as sizes increase and for those measures of central tendency like fredle index and geometric mean. Most of the data we have researched employed the wet methods similar to that used by GP, and our comparisons to their data are on the conservative side. It is not the intent of staff to misuse GP's data nor the conclusions of other investigators. It is the overall picture of streambed conditions observed and documented in several years of Timber Harvest Review activities and supported in the available data that resulted in the staff recommendation to place the Ten Mile River on the Section 303(d) list as impaired by sedimentation.

Percent Fines <0.85 mm

GP states a threshold of concern for "fines" of 20%, ostensibly as determined volumetrically, though not specified (Ambrose and Dreier 1994), citing Lisle and Eads (1991) as the basis. There is general agreement amongst investigators that the level of 20% fines less than 0.85 mm is a threshold above which significant mortality of eggs to emergent fry is expected (Waters 1995).

Of the 163 samples collected in 13 streams in the watershed in 1994, 57 samples (35%) equalled or exceeded the 20% threshold for fines less than 0.85 mm. Those exceedances were represented in 12 of the 13 streams (Appendix A).

While the finer particles (e.g., <0.85 mm) have a more pronounced effect on survival to emergence, larger particles, up to 6 mm, have negative effects on emergence (Bjornn 1969, Phillips et. al. 1975, McCuddin 1977, Shirazi and Seim 1979, Chapman 1988, Reiser and White 1988).

Percent Particles < 6.35 mm

Bjornn (1969) studied survival and emergence of steelhead and chinook eggs in gravel mixtures with varying amounts of "fines" less than 6.35 mm. Survival to emergence for steelhead dropped significantly with an increase in "fines" from 30% to 40%, and for chinook from 20% to 30% "fines." McCuddin (1977) recommended a threshold of 25% for particles less than 6.4 mm; Reiser and Bjornn (1979) suggested a threshold of 20%.

Of the 163 samples collected on 13 streams in the watershed in 1994, 157 samples (96%) equalled or exceeded 25% "fines" less than 6 mm. Those exceedances were represented in all of the 13 streams (Appendix A).

Percent Particles 1-3 mm

Hall and Lantz (1969) and Phillips et. al. (1975) conducted similar laboratory tests with steelhead and coho salmon fry using different levels of fine particles 1-3 mm in diameter. Hall and Lantz (1969) observed the same for coho and decreases for steelhead beginning at 20%. Phillips (1975) observed decreases in survival of steelhead and coho salmon between 10% and 20% "fines".

Of the 163 samples collected 13 streams in the watershed in 1994, 3 samples (1.8%) equalled or exceeded 20% "fines" 1-3 mm in diameter. Those exceedances were represented in 2 of the 13 streams (Appendix A).

Geometric Mean Particle Size

Shirazi and Seim (1979) developed a curve of percent survival to emergence from six authors for coho, cutthroat, sockeye, and steelhead. Chapman (1988) compared several authors' results for survival to emergence to the geometric mean particle size. Geometric particle size of samples was compared in the GP report to the data of Koski (1966) for coho salmon and Tappel and Bjornn (1983) for steelhead, however their plots did not include all the data. Geometric means of the same value were plotted only once. Staff plotted all the data, using the chart and geometric mean data provided in the report (Appendix B).

Half of the geometric means fall below 7.7 mm, corresponding to less than 55% survival to emergence for the Koski (1966) coho data and the Tappel and Bjornn (1983) steelhead data; less than 30% for the combined curve presented in Shirazi and Seim (1979).

Fredle Index

Chapman (1988) also compared several authors' results for survival to emergence to the fredle index, a measurement that integrates gravel permeability and pore size. He presents fredle index data for Koski (1966), Lotspeich and Everest (1981), and Tappel and Bjornn (1983). The GP fredle index data are compared as means for each of the 21 sites to Lotspeich and Everest (1981). Some data were missing from the GP plot, added by staff (Appendix C).

Half of the fredle index values fall below 2.3, corresponding to less than 62% survival for the Koski (1966) coho data; less than 40% survival to emergence for the Lotspeich and Everest (1981) coho data and less than 55% for their steelhead data; less than 58% for the Tappel and Bjornn (1983) steelhead data.

Conclusions

Though scientific evidence and observations substantiate that spawning salmonids cleanse the gravels to a certain extent, the overall effect of that cleansing has not been quantified to any degree or by species (Chapman 1988). While it might be argued that steelhead and coho salmon spawning in the Ten Mile River would make the conditions in the streambed gravels better than the observed sampling indicates, just how much is a guess and dependent on a variety of factors at the time of spawning. Additionally, estimates of spawner cleansing do not account for additions of sediment that occur after the spawning, nor changes in the streambed substrate itself during high flows.

Staff believes the data analyzed substantiate an overall condition in the streambed substrate of the Ten Mile River that adversely affects salmonid spawning success, beyond the threshold of concern for a variety of factors for close to 50% of the samples.

We recognize that there are unknowns and relationships that are not fully quantified, however given the data in hand and the studies presented in the scientific literature, it is our best professional judgement that streambed conditions in the Ten Mile River constitute a non-attainment of the Basin Plan objectives for deposition.

We believe a plan to reduce sediment inputs to the streams and enhance recovery of the streambed substrate in the Ten Mile River is appropriate and fitting. Georgia-Pacific should develop a framework that includes 1) an assessment of sediment sources, sensitive streams and stream reaches, 2) an evaluation of the potential for impacts to sensitive areas, and 3) a mechanism to implement special actions to reduce impacts to and enhance sensitive areas in keeping with the intent of the Clean Water Act Section 303(d).

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Ten Mile River
Georgia-Pacific Stream Substrate Data - Fall of 1994

APPENDIX A

Percent Passing Sieves * = value linearly interpolated from cumulative percentage plot

Lower Little N. Fork Ten Mile									
Sieve (mm)									
8	8.5	13.4	7.1	8	8.6	17.6	7.8	8.5	
6*	4.25	6.7	3.55	4	4.3	8.8	3.9	4.25	
4	6.6	8.6	5.2	5.8	7.1	14.5	4.1	5.9	
3*	3.3	4.3	2.6	2.9	3.55	7.25	2.05	2.95	
2	5.7	8.6	5.3	6.8	2.5	3.5	1.5	1.8	
1	0.8	1.2	1.6	1.3	0.5	1.3	0.4	0.3	
0.85	21.5	27.5	26.9	26.6	20.2	17.1	16.3	12.7	
< 6 mm	42.2	56.9	45.2	47.4	38.2	52.5	28.3	27.9	
1-3 mm	9.0	12.9	7.9	9.7	6.1	10.8	3.6	4.8	
Buckhorn Creek									
Sieve (mm)									
8	5.4	5.7	12.3	7.5	10.3	9.9	9.2		
6*	2.7	2.85	6.15	3.75	5.15	4.95	4.6		
4	4.8	3	11.1	6.2	8.6	6.6	7.9		
3*	2.4	1.5	5.55	3.1	4.3	3.3	3.95		
2	4.9	4.6	9.5	5.1	6.7	2.5	5.2		
1	1.8	1.3	2.1	1.7	6.7	2.5	5.2		
0.85	15	18.3	22.4	19.7	1.6	1.4	1.3		
< 6 mm	31.6	31.6	56.8	39.6	55.1	40.2	35.5		
1-3 mm	7.3	6.1	15.1	8.2	11.0	59.0	58.5		
N. Fork Ten Mile @ Camp 5									
Sieve (mm)									
8	7.8	7.2	7.8	9.9	3.9	10.4	4.1	2.9	
6*	3.9	3.8	3.9	4.95	1.95	5.2	2.05	1.45	
4	6.2	3.8	8.3	8.5	5.3	5.8	3	2.9	
3*	3.1	1.8	4.15	4.25	2.65	2.9	1.5	1.45	
2	10.3	4.1	7.5	8.8	9.8	5.4	4.9	4.3	
1	2.8	2.3	1.7	1.3	2	0.9	2.7	1.1	
0.85	18.7	26.4	13.7	18.5	21	11.6	23.2	19.2	
< 6 mm	44.8	41.8	39.3	46.3	42.7	31.8	37.4	30.4	
1-3 mm	13.4	5.9	11.7	13.1	12.4	8.3	6.4	5.8	
N. Fork Ten Mile @ Gulch 9									
Sieve (mm)									
8	7.9	6.7	7.1	7.7	4.8	6.6	10.1	6.1	
6*	3.95	3.35	3.55	3.85	2.4	3.3	5.05	3.05	
4	6.9	2.1	3.4	3.5	7.3	6.1	7.6	5.2	
3*	3.45	1.05	1.7	1.75	3.65	3.05	3.8	2.8	
2	11.4	1.2	1.6	3	5.7	4.9	6.5	2.7	
1	2.2	0.6	0.4	0.8	0.8	2.7	1.4	1.9	
0.85	26.5	25.7	21	17.4	12.7	14.1	19.5	12.5	
< 6 mm	54.4	34.0	31.7	30.3	32.6	34.2	43.9	28.0	
1-3 mm	14.9	2.2	3.3	4.8	9.4	8.0	10.3	5.3	
N. Fork Ten Mile @ Patsy Creek									
Sieve (mm)									
8	9.1	19.7	13	5.3	11	7.1	8.5	11.2	
6*	4.55	9.85	6.5	2.65	5.5	3.55	4.25	5.8	
4	9.8	15.8	7.7	6.1	11	7.5	7.4	8.8	
3*	4.9	7.9	3.85	3.05	5.5	3.75	3.7	4.4	
2	11.4	8.5	8.7	8.9	2.8	7.5	7.7	12	
1	2.1	1.2	1.9	1.8	28.4	1.2	1.5	2.1	
0.85	18.4	13.9	28.4	17.3	13.5	23.4	29.1	23.9	
< 6 mm	51.2	57.2	55.1	39.8	64.5	48.9	53.7	58.8	
1-3 mm	18.3	18.4	12.6	12.0	8.1	11.3	11.4	16.4	
Lower Clark Fork Ten Mile									
Sieve (mm)									
8	11	10	15	9	9	14	12	6	
6*	5.5	5	7.5	4.5	4.5	7	6	3	
4	9	8	7	7	5	9	6	8	
3*	4.5	4	3.5	3.5	2.5	4.5	3	4	
2	7	6	3	7	2	5	3	2	
1	3	1	1	1	0.4	1	0.8	1	
0.85	19	15	20	18	19	21	21	27	
< 6 mm	48.0	39.0	42.0	41.0	33.4	47.5	39.8	45.0	
1-3 mm	11.5	10.0	6.5	10.5	4.5	9.5	6.0	6.0	

Sieve (mm)	Bear Haven Creek								
8	8.6	11.7	9.1	9.2	17.4	7.5	9.9	8.5	
6*	4.3	5.85	4.55	4.6	8.7	3.75	4.95	4.25	
4	4.8	5.7	6.5	3.1	8.5	4.9	7.4	6.8	
3*	2.4	2.85	3.25	1.55	4.25	2.45	3.7	3.4	
2	1.3	2.1	1.9	1.2	9.6	4.9	6.6	6.2	
1	0.2	0.3	0.5	0.2	2.1	1.3	1.1	1.7	
0.85	16.2	20.8	13.7	10	14.5	13	8.6	16.1	
< 6 mm	29.2	37.6	30.4	20.7	47.7	30.3	32.4	38.5	
1-3 mm	3.7	5.0	5.1	2.8	13.9	7.4	10.3	9.6	

Sieve (mm)	Clark Fork Ten Mile @ Little Bear Haven								
8	5.8	3.4	4.7	2	7.5	9.6	7.1	6.1	
6*	2.9	1.7	2.35	1	3.75	4.8	3.55	3.05	
4	2.2	0.8	1.6	0.5	3.6	4.9	4.9	4.3	
3*	1.1	0.4	0.8	0.25	1.8	2.45	2.45	2.15	
2	1.4	0.8	0.6	0.6	4.5	6.2	5.1	6.1	
1	0.6	0.3	0.8	0.5	1.3	1.7	3.2	1.7	
0.85	19.2	13	19	13.9	25	24.9	28.2	21.7	
< 6 mm	27.4	17.0	25.2	16.8	40.0	45.0	47.4	39.0	
1-3 mm	2.5	1.2	1.4	0.9	6.3	8.7	7.6	8.3	

Sieve (mm)	Little Bear Haven Creek								
8	8.2	11.6	11.2	13.3	12	11.1	13.5	12.6	
6*	4.1	5.8	5.6	6.65	6	5.55	6.75	6.3	
4	5.1	9.4	9.6	12.3	7.7	7.7	9.2	9.7	
3*	2.55	4.7	4.8	6.15	3.85	3.85	4.6	4.85	
2	4.2	8.3	6.9	10.2	8.6	5.5	7.4	8.6	
1	0.8	1.2	1.5	1.7	2.4	1.9	1.7	1.6	
0.85	10.1	22.6	21.2	19.3	18.9	22.3	21.9	25.6	
< 6 mm	26.9	52.0	49.6	56.3	47.5	46.8	51.6	56.7	
1-3 mm	6.8	13.0	11.7	16.4	12.5	9.4	12.0	13.5	

Sieve (mm)	Booth Gulch				
8	9.3	10.5	8.2	6.1	
6*	4.65	5.25	4.1	3.05	
4	5.1	8	5.5	3.6	
3*	2.55	4	2.75	1.8	
2	5.4	5.9	4	4.1	
1	1.5	1.6	1.1	0.5	
0.85	21.3	15	10.7	15.2	
< 6 mm	40.5	39.8	28.2	28.3	
1-3 mm	8.0	9.9	6.8	5.9	

Sieve (mm)	Clark Fork Ten Mile @ Reynolds Gulch								
8	11.3	12	8.4	7.6	14.3	9.2	15.6	15.4	
6*	5.65	6	4.2	3.8	7.15	4.6	7.8	7.7	
4	8.5	10.3	7.2	5.7	10.5	5.2	15.2	14.2	
3*	4.25	5.15	3.6	2.85	5.25	2.6	7.6	7.1	
2	4.2	5.7	5.4	4	7.9	2.4	15.1	12.3	
1	0.7	0.8	0.3	0.6	1.9	0.5	0	6.2	
0.85	9.1	13.9	8.8	16.1	24.8	22.5	32.3	26.4	
< 6 mm	32.4	41.9	29.5	33.1	57.5	37.8	78.0	73.9	
1-3 mm	8.5	10.9	9.0	6.9	13.2	5.0	22.7	19.4	

Sieve (mm)	Mill Creek								
8	7.9	9.3	9.6	9.8	11	12.8	10.8	8.7	
6*	3.95	4.65	4.8	4.9	5.5	6.4	5.4	4.35	
4	5.5	6.9	7	5	8.8	9.9	8.6	8.7	
3*	2.75	3.45	3.5	2.5	4.4	4.95	4.3	4.35	
2	5.2	7.4	6.8	5.5	7.2	8.1	7.4	6.7	
1	1.3	1.9	1.4	1.5	2.2	1.8	2.3	1.3	
0.85	11.7	12.1	10	14.6	25.6	21.5	20.4	19	
< 6 mm	30.4	36.4	33.5	34.0	53.7	52.7	48.4	44.4	
1-3 mm	8.0	10.9	10.3	8.0	11.6	13.1	11.7	11.1	

Lower Smith Creek									
Sieve (mm)									
8	10.8	10.2	13.2	15.5	10.8	10.6	8.2	9.4	
6*	5.4	5.1	6.6	7.75	5.4	5.3	4.1	4.7	
4	4.1	6.5	7.4	9.6	9.8	6.2	6.2	8.3	
3*	2.05	3.25	3.7	4.8	4.9	3.1	3.1	4.15	
2	1.3	4.1	4.6	5	10.2	4.1	8	8.6	
1	0.3	0.7	1.3	0.7	1.4	1.4	1.2	1.6	
0.85	9.2	9	19.3	14.3	14.6	17.7	15.9	17.6	
< 6 mm	22.4	28.7	42.9	42.2	46.3	37.8	38.5	45.0	
1-3 mm	3.4	7.4	8.3	9.8	15.1	7.2	11.1	12.8	
Campbell Creek									
Sieve (mm)									
8	11.4	18.8	8.9	10.2	13.2	15.1	13	11.9	
6*	5.7	9.4	4.45	5.1	6.6	7.55	6.5	5.95	
4	7.9	8.8	8.1	8.2	8.6	10.4	10.1	13.5	
3*	3.95	4.4	4.05	4.1	4.3	5.2	5.05	6.75	
2	6.5	9.2	12.2	11.9	7.8	11.3	7.9	8.2	
1	1.2	3.3	2.3	2.5	1.5	2.6	1.4	1.3	
0.85	33	12.8	27	29.9	21	23.2	17	29	
< 6 mm	58.3	47.9	58.1	61.7	49.8	60.3	48.0	64.7	
1-3 mm	10.5	13.6	16.3	16.0	12.1	16.5	13.0	15.0	
S. Fork Ten Mile @ Brower's Gulch									
Sieve (mm)									
8	6.9	10.6	8.8	11.7	10.5	7.3	10.2	8.2	
6*	3.45	5.3	4.4	5.85	5.25	3.65	5.1	4.1	
4	5.4	9.1	8.4	8.8	6.6	6.5	7.3	3.9	
3*	2.7	4.55	4.2	4.4	3.3	3.25	3.65	1.95	
2	3.5	8.7	7.9	3.8	4.2	5.9	5.7	4	
1	1.1	1.7	1.6	1.9	0.9	1	0.6	0.7	
0.85	20.3	20.8	22.4	14.4	17.8	9.1	8.2	13.7	
< 6 mm	36.5	50.2	48.9	39.2	38.1	29.4	30.6	28.4	
1-3 mm	6.2	13.3	12.1	8.2	7.5	9.2	9.4	5.9	
S.Fork Ten Mile @ Churchman Crk									
Sieve (mm)									
8	17.8	19	12.8	17.7	9.3	20.1	14.1	4.7	
6*	8.9	9.5	6.4	8.85	4.65	10.05	7.05	2.35	
4	14.3	17.1	6.4	15.9	0.2	8.6	3.3	0.1	
3*	7.15	8.55	3.2	7.95	0.1	4.3	1.65	0.05	
2	7.8	16.8	4.3	15.6	0	1.8	0.3	0	
1	1	1.9	0.8	2.6	0	0	0	0	
0.85	10.5	19.4	7.8	22.6	7.6	13.5	14.1	6	
< 6 mm	49.7	73.3	28.9	73.5	12.6	38.3	26.4	8.5	
1-3 mm	15.0	25.4	7.5	23.6	0.1	6.1	2.0	0.1	
Churchman Creek									
Sieve (mm)									
8	10.9	12.3	9.7	11.6	12.3	15.3	15.2	13.4	
6*	5.45	6.15	4.85	5.8	6.15	7.65	7.6	6.7	
4	6.4	7.7	8.1	5.8	10.2	8.8	7.8	11.3	
3*	3.2	3.85	4.05	2.9	5.1	4.4	3.9	5.65	
2	6.4	6.7	8.7	5.3	10.6	7.8	6.3	10.4	
1	1.8	1.7	3	1.9	2.2	1.9	2.2	3.1	
0.85	12.9	20.2	15.2	19.7	13.2	9.3	13.6	22	
< 6 mm	36.2	46.3	43.9	41.4	47.5	39.9	41.4	59.2	
1-3 mm	9.6	10.6	12.8	8.2	15.7	12.2	10.2	16.1	
S. Fork @ Buck Matthews Gulch									
Sieve (mm)									
8	14.3	10.5	12.4	9.5	17.2	10.3	18.5	13.3	
6*	7.15	5.25	6.2	4.75	8.6	5.15	9.25	6.65	
4	9.5	7.4	4.5	4.1	6.8	6.5	4.4	6.8	
3*	4.75	3.7	2.25	2.05	3.4	3.25	2.2	3.4	
2	5.7	3.5	0.7	1	1.4	4.3	2	3	
1	0.8	0.4	0.1	0.2	0.1	0.6	0.6	0.2	
0.85	13.2	15.2	16	19.3	6	11.6	16.1	8.1	
< 6 mm	41.1	35.5	29.8	31.4	26.3	31.4	34.6	28.2	
1-3 mm	10.5	7.2	3.0	3.0	4.8	7.6	4.2	6.4	

S. Fork Ten Mile @ Camp 28									
Sieve (mm)	8	8.1	12.1	8.8	7.7	10.7	8.6	6.6	7.8
6*	4.05	6.05	4.4	3.85	5.35	4.3	3.3	3.9	
4	7.3	8.2	8.2	5.9	9.2	7.4	6.6	6.8	
3*	3.65	4.1	4.1	2.95	4.6	3.7	3.3	3.4	
2	5	6.5	8.1	5.4	9.9	9.6	6.8	6.4	
1	1.6	1.7	0.8	1.2	1.4	1.5	0.7	1.2	
0.85	15	19.1	14.7	15.4	16	14	16.3	14.3	
< 6 mm	36.6	45.7	40.3	34.7	46.5	40.5	37.0	36.0	
1-3 mm	8.7	10.6	12.2	8.4	14.5	13.3	10.1	9.8	

Upper Redwood Creek									
Sieve (mm)	8	11.9	10.7	9.2	10.4	9.4	9.3	12.3	11.1
6*	5.95	5.35	4.6	5.2	4.7	4.7	4.65	6.15	5.55
4	7.7	5.9	4.1	3.9	5.8	4.7	7.4	4.4	
3*	3.85	2.95	2.05	1.95	2.9	2.35	3.7	2.2	
2	3.9	2.4	1.8	4.2	4	3.3	3.6	4.7	
1	0.8	10	0.4	0.3	0.9	0.6	0.7	0.6	
0.85	20.9	17.1	21.5	18	17.2	14.7	19.2	21.1	
< 6 mm	43.1	43.7	34.5	33.6	35.5	30.3	40.8	38.6	
1-3 mm	7.8	5.4	3.9	6.2	6.9	5.7	7.3	6.9	

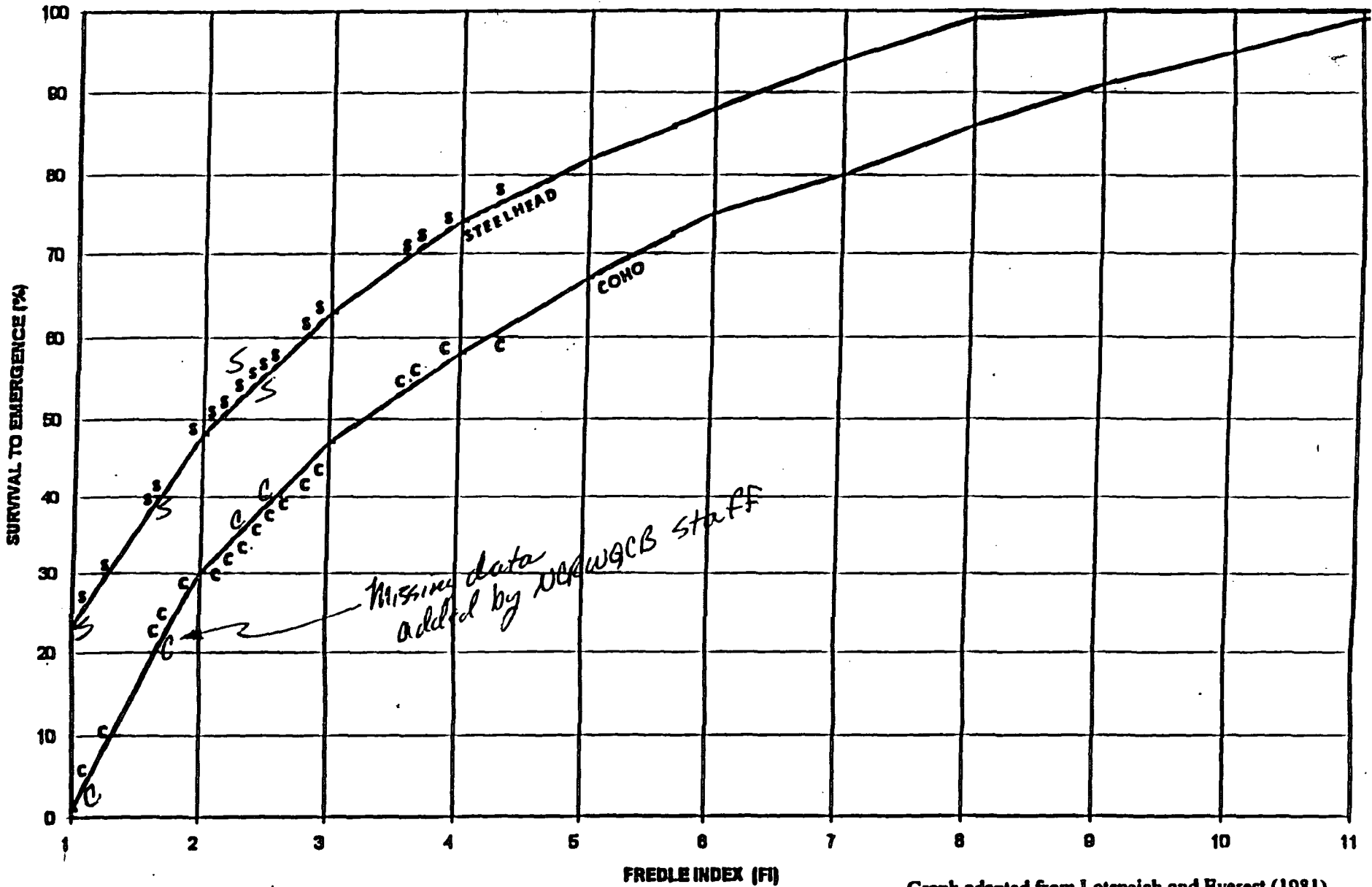
Upper SFk Ten Mile									
Sieve (mm)	8	8.4	13.8	4.6	7.8	10.1	7.2	10.6	13.6
6*	4.2	6.9	2.3	3.9	5.05	3.6	5.3	6.8	
4	4	8.4	2.5	9.2	6.6	3.7	6	7.6	
3*	2	4.2	1.25	4.6	3.3	1.85	3	3.8	
2	4	5.7	3.8	6.4	4.3	2.9	4.3	3.6	
1	0.9	1.6	1.9	1.4	0.7	0.8	1.4	0.7	
0.85	12	27.5	23.7	21.4	17	15.8	15.9	16.9	
< 6 mm	27.1	54.3	35.5	46.9	37.0	28.7	35.9	39.4	
1-3 mm	6.0	9.9	5.1	11.0	7.6	4.8	7.3	7.4	

"tenmile.wk4"

Figure 7:

PERCENT SURVIVAL TO EMERGENCE FOR COHO AND STEELHEAD AGAINST THE FREDLE INDEX. SITE FIGURES PLOTTED ON THE CURVES.

1994



APPENDIX C

Graph adapted from Lotspeich and Everest (1981)

Ten Mile Geometric Mean Particle Size - 1994

Georgia-Pacific Corp. Data (Ambrose & Dreier 1994)

