California Regional Water Quality Control Board
Colorado River Basin Region

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
Governor

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TO: Craig J. Wilson, Chief
Monitoring and TMDL Listing Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

FROM: Jose Angel
Supervising WRCE
Watershed Protection / Support
COLORADO RIVER BASIN REGION

DATE: May 21, 2002

SUBJECT: DELISTING THE NEW RIVER FOR NUTRIENTS IN THE REGION'S 303 (D) LIST

Dear Mr. Wilson:

The purpose of this letter is to address State Board staff's recommendation not to de-list the New River for Nutrients. State Board staff's reasoning is as follows:

> No data available on which to base delisting. Staff report states that, RWQCB has no data showing that...nutrients are...violating water quality standards in the New River, however the River carries large amounts of nitrogen and phosphate which are causing eutrophic conditions [and] fish die-offs in the [Salton] Sea. Water quality conditions in the New River will need to be incorporated into TMDL for Salton Sea, so retain listing.

The Regional Board's Staff Report on the Proposed Update of Clean Water Act 303(d) List of Impaired Water Bodies within the Colorado River Basin Region (Staff Report) concluded that the Regional Board has no data showing that nutrients in the New River violate water quality standards in the New River. (Staff Report, p. 3)

Clean Water Act regulations address the standards for de-listing a water body. A state must demonstrate good cause to de-list a water body. Good cause includes, without limitation, more recent or accurate data, or flaws in the data and information supporting the original listing analysis. (40 C.F.R. §130.7(b)(6)(iv), 130.7(b)(5).) The USEPA has interpreted this language to permit de-listing "if, upon re-examination, the original basis for listing is determined to be inaccurate." (USEPA, *National Clarifying Guidance For 1998 State and Territory Clean Water Act Section 303(d) Listing Decisions*, August 17, 1997, citing USEPA's *Guidance for 1994 Section 303(d) Lists* (November 26, 1993).)

The Regional Board ~~initially~~ listed the New River in 1998 ~~on~~ the presence of nutrients in the river. However, the Region's Basin Plan has no numeric standards for nutrients. Staff determined that while it is clear that the Salton Sea

is impaired for nutrients, and that the New River is a major source of nutrient loading to the Salton Sea, there is no indication that nutrients in the New River itself violates any water quality objectives in the New River. The TMDL for Nutrients is now under development and will be completed in 2004.

The requirement to list impaired water bodies applies only to "water quality limited segments." (40 C.F.R. §130.7.) A water quality limited segment means "[a]ny segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by sections 301(b) and 306 of the Act." (40 CFR §130.2(j).) The available data and information demonstrate that the New River is tributary to a nutrient water quality limited segment (i.e., the Salton Sea). However, the New River is not itself a nutrient water quality limited segment, since no data or information demonstrate that water quality in the New River fails to meet water quality standards.

The Table below shows 1999 mean nutrients concentrations into the Salton Sea from the three main tributaries; the Alamo River, the New River, and the Coachella Valley Storm Water Drain:

	Mean Concentration mg/L		
	Ortho P	Total P	NO3/NO2-N
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New River	1.11	1.47	4.94
Coachella Valley Storm Water Drain	1.17	1.17	19.7

The Source analysis for this TMDL will include the New R. Contribution.

Thank you for your consideration of these comments.

Cc: Lori Okun, OCC

File:

Letter to Craig J. Wilson from Phil regarding 303(d) list
(Staff wants it by 5/16)

Dear Mr. Wilson:

The purpose of this letter is to address State Board staff's recommendation not to de-list the New River for "nutrients/water/aquatic life." State Board staff's reasoning is as follows:

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The Regional Board initially listed the New River based on data from another surface water body in the region which is the Salton Sea. ~~because...~~ However, upon reexamining the data and information supporting the initial listing, and the data and information that became available since that time, and by reviewing water quality objectives for the New River in the Region's Basin Plan, staff determined that ~~... [e.g.: W~~while it is clear that the Salton Sea is impaired for nutrients, ~~insufficient data is available to determine how much of the nutrient source is the New River as opposed to other tributaries. Although~~ and that the New River is a major source of nutrient loading to the Salton Sea, there is no indication that nutrients water quality in the New River itself violates any nutrients water quality objectives in the New River~~, i.e., that the New River is an impaired water body~~. The Region's 303 (d) List lists the Salton Sea as impaired water body for nutrients and loading of nutrients from the New River into the Salton Sea will be addressed in the ~~Keep in mind load/waste load allocations in~~ Salton Sea Nutrients TMDL, which is currently being developed.]

The requirement to list impaired water bodies applies only to "water quality limited segments." (40 C.F.R. §130.7.) A water quality limited segment means "[a]ny segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by sections 301(b) and 306 of the Act." (40 CFR §130.2(j).) The available data and information demonstrate that the New River is *tributary* to a nutrient water quality limited segment (i.e., the Salton Sea). However, the New River is not itself a nutrient water quality limited segment, since no data or information demonstrate that water quality in the New River fails to meet water quality standards.

If the State Board determines that all tributaries to water quality limited segments are themselves impaired water bodies requiring 303(d) listing, then the State Board should list all Salton Sea tributaries that contribute to the nutrient loading of the Sea. These water bodies include about 1400 miles of agricultural drains, the Alamo River, and the Coachella Valley Storm Water Channel that also contribute significant amount of nutrients into the Salton Sea. Such a listing will be (1) technically deficient as we have no data to show that they are impaired, and (2) extremely controversial~~... [Cite data and information, preferably data and information submitted to RB and SB in 303(d) listing process.]~~

Thank you for your consideration of these comments.

/s/ Phil Gruenberg

Draft letter to Craig J. Wilson from R7 staff regarding delisting the New River for Nutrients from the Region's 303(d) List

Dear Mr. Wilson: should this be "Nutrients"

The purpose of this letter is to address State Board staff's recommendation not to de-list the New River for "nutrients/~~water/aquatic life~~." State Board staff's reasoning is as follows:

> No data available on which to base delisting. Staff report states that, RWQCB has no data showing that…nutrients are…violating water quality standards in the New River, however the River carries large amounts of nitrogen and phosphate which are causing eutrophic conditions [and] fish die-offs in the [Salton] Sea. Water quality conditions in the New River will need to be incorporated into TMDL for Salton Sea, so retain listing.

The Regional Board's Staff Report on the Proposed Update of Clean Water Act 303(d) List of Impaired Water Bodies within the Colorado River Basin Region (Staff Report) concluded that the Regional Board has no data showing that nutrients in the New River violate water quality standards in the New River. (Staff Report, p. 3, ¶1.)

Clean Water Act regulations address the standards for de-listing a water body. A state must demonstrate good cause to de-list a water body. Good cause includes, without limitation, more recent or accurate data, or flaws in the data and information supporting the original listing analysis. (40 C.F.R. §130.7(b)(6)(iv), 130.7(b)(5).) The USEPA has interpreted this language to permit de-listing "if, upon re-examination, the original basis for listing is determined to be inaccurate." (USEPA, *National Clarifying Guidance For 1998 State and Territory Clean Water Act Section 303(d) Listing Decisions*, August 17, 1997, citing USEPA's *Guidance for 1994 Section 303(d) Lists* (November 26, 1993).)

The Regional Board initially listed the New River in 1998 based on the presence of nutrients in the river. ~~data from another surface water body in the region, which is the Salton Sea. However, upon reexamining the data and information supporting the initial listing, and the data and information that became available since that time, and by reviewing water quality objectives for the New River in the Region's Basin Plan~~, staff determined that while it is clear that the Salton Sea is impaired for nutrients, and that the New River is a major source of nutrient loading to the Salton Sea, however the Region's Basin Plan has no numeric std. f. nutrients in the Basin Plan for nutr., there is no indication that nutrients ~~water quality~~ in the New River itself violates any ~~nutrients~~ water quality objectives in the New River. ~~The Region's 303 (d) List lists the Salton Sea as impaired water body for nutrients and loading of nutrients from the New River into the Salton Sea will be addressed in the Salton Sea Nutrients TMDL, which is currently being developed.]~~

The requirement to list impaired water bodies applies only to "water quality limited segments." (40 C.F.R. §130.7.) A water quality limited segment means "[a]ny segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the

application of the technology-based effluent limitations required by sections 301(b) and 306 of the Act." (40 CFR §130.2(j).) The available data and information demonstrate that the New River is *tributary* to a nutrient water quality limited segment (i.e., the Salton Sea). However, the New River is not itself a nutrient water quality limited segment, since no data or information demonstrate that water quality in the New River fails to meet water quality standards.

If the State Board determines that all tributaries to water quality limited segments are themselves impaired water bodies requiring 303(d) listing, then the State Board should list all Salton Sea tributaries that contribute to the nutrient loading of the Sea. These water bodies include about 1450 miles of agricultural drains, the Alamo River, and the Coachella Valley Storm Water Channel that also contribute significant amount of nutrients into the Salton Sea. The Table below shows 1999 mean nutrients concentrations into the Salton Sea from the three main tributaries; the Alamo River, the New River, and the Coachella Valley Storm Water Drain:

	Mean Concentration mg/L		
	Ortho P	Total P	NO3/NO2-N
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Coachella Valley Storm Water Drain	1.17	1.17	19.7

Such a listing will be (1) technically deficient as we have no data to show that they are impaired, and (2) extremely controversial

Thank you for your consideration of these comments.

Letter to Craig J. Wilson from Phil regarding 303(d) list
(Staff wants it by 5/16)

Dear Mr. Wilson:

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The Regional Board's Staff Report on the Proposed Update of Clean Water Act 303(d) List of Impaired Water Bodies within the Colorado River Basin Region (Staff Report) concluded that the Regional Board has no data showing that nutrients in the New River violate water quality standards in the New River. (Staff Report, p. __, ¶1.)

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The Regional Board initially listed the New River because... However, upon reexamining the data and information supporting the initial listing, and the data and information that became available since that time, staff determined that ... [e.g.: While it is clear that the Salton Sea is impaired for nutrients, insufficient data is available to determine how much of the nutrient source is the New River as opposed to other tributaries. Although the New River is a major source of nutrient loading to the Salton Sea, there is no indication that water quality in the New River itself violates water quality objectives, i.e., that the New River is an impaired water body. Keep in mind load/waste load allocations in Salton Sea TMDL.]

The requirement to list impaired water bodies applies only to "water quality limited segments." (40 C.F.R. §130.7.) A water quality limited segment means "[a]ny segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by sections 301(b) and 306 of the Act." (40 CFR §130.2(j).) The available data and information demonstrate

that the New River is *tributary* to a water quality limited segment (i.e., the Salton Sea). However, the New River is not itself a water quality limited segment, since no data or information demonstrate that water quality in the New River fails to meet water quality standards.

If the State Board determines that all tributaries to water quality limited segments are themselves impaired water bodies requiring 303(d) listing, then the State Board should list all Salton Sea tributaries that contribute to the nutrient loading of the Sea. These water bodies include ... [Cite data and information, preferably data and information submitted to RB and SB in 303(d) listing process.]

Thank you for your consideration of these comments.

/s/ Phil Gruenberg

From: Jose Angel
To: Martinson, Stan
Date: 4/8/02 11:20AM
Subject: Proposed 303(d) List for our Region

Stan,

The State Board's proposed 303(d) list for our region does not "de-list" the Nerw River for nutrient impairments as recommended by the Regional Board. We have talked to your staff in this regard and they said that the reason is that there is no data to de-list it. As stated in our staff report, which accompanied the Regional Board's resolution on the matter, the New River was improperly listed as impaired by nutrients in the first place. We can't prove the negative. It is the Salton Sea which is evidently impaired and has been listed accordingly. The impairment of course, is caused by the tributaries.

If we leave the New River in the 303(d) list, the logical extension of the policy would be for us to start listing all of the Sea's tributaries (e.g., Alamo River, 1500 miles of Imperial Valley drains, the Coachella Storm Water Channel, etc.) also as impaired--something which is (1) technically deficient as we have no data to show that they are impaired and (2) extremely controversial. Thus, we are asking State Board staff to reconsider the Regional Board recommendation on the New River.

We started last year to do a nutrient TMDL for the Salton Sea, and the TMDL addresses the tributary inputs. We do not see the need to add more nutrient-impaired waters in the Salton Sea Watershed, particularly if we cannot pull it off technically or legally. Thanks for your considerations.

Jose L. Angel, P.E.
Division Chief, Watershed Protection Division
Colorado River Basin Region Water Quality Control Board
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
Phone (760) 776-8932
Fax (760) 341-6820
E-mail: angej@rb7.swrcb.ca.gov

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	Date		Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
Alamo River	01/21/1999 0:00	1	0.365	0.82	1	1.09	6.71
Alamo River	02/17/1999 0:00	2	0.969	0.85	2	2.83	6.81
Alamo River	03/15/1999 0:00	3	0.484	1.05	3	2.30	8.15
Alamo River	04/15/1999 0:00	4	0.378	0.86	4	1.54	6.55
Alamo River	04/29/1999 0:00	4	0.535	1.03	4	0.538	6.28
Alamo River	05/13/1999 0:00	5	0.424	1.21	5	2.31	5.90
Alamo River	05/26/1999 0:00	5	0.419	0.933	5	2.82	6.44
Alamo River	06/10/1999 0:00	6	0.390	0.846	6	1.15	4.79
Alamo River	06/24/1999 0:00	6	0.234	0.648	6	0.672	5.20
Alamo River	07/08/1999 0:00	7	0.163	0.581	7	1.05	4.83
Alamo River	07/22/1999 0:00	7	0.190	0.449	7	0.680	4.46
Alamo River	08/11/1999 0:00	8	0.193	0.460	8	1.11	4.81
Alamo River	08/25/1999 0:00	8	0.209	0.194	8	0.687	5.88
Alamo River	09/09/1999 0:00	9	0.320	0.299	9	0.989	6.10
Alamo River	09/22/1999 0:00	9	0.713	0.874	9	1.16	6.00
Alamo River	10/21/1999 0:00	10	0.583	0.658	10	0.505	7.19
Alamo River	11/17/1999 0:00	11	0.269	0.505	11	0.307	7.28
Alamo River	12/15/1999 0:00	12	0.142	0.561	12	0.781	7.31
			0.388	0.712		1.25	6.15
			0.969	1.21		2.83	8.15
			0.142	0.194		0.307	4.46

	Date		Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
New River	01/21/1999 0:00	1	0.991	1.43	1	3.77	3.86
New River	02/18/1999 0:00	2	1.03	1.16	2	4.04	4.94
New River	03/15/1999 0:00	3	0.441	1.04	3	2.96	4.32
New River	04/15/1999 0:00	4	0.633	1.21	4	2.32	4.47
New River	04/28/1999 0:00	4	0.558	1.16	4	2.44	4.18
New River	05/13/1999 0:00	5	0.509	1.13	5	2.57	4.80
New River	05/26/1999 0:00	5	0.637	1.34	5	3.19	3.18
New River	06/10/1999 0:00	6	0.572	1.17	6	3.37	2.88
New River	06/24/1999 0:00	6	0.545	1.09	6	3.35	2.09
New River	07/08/1999 0:00	7	0.552	1.15	7	2.56	1.98
New River	07/22/1999 0:00	7	0.493	1.03	7	2.58	2.47
New River	08/11/1999 0:00	8	0.471	0.950	8	13.9	3.14
New River	08/25/1999 0:00	8	0.654	0.662	8	5.59	2.43
New River	09/09/1999 0:00	9	0.831	0.809	9	3.73	2.23
New River	09/22/1999 0:00	9	0.995	1.20	9	2.73	3.06
New River	10/21/1999 0:00	10	0.762	0.868	10	3.06	4.30
New River	11/17/1999 0:00	11	1.11	1.47	11	3.78	3.29
New River	12/15/1999 0:00	12	0.299	0.903	12	2.83	3.43
			0.671	1.10		3.82	3.39
			1.110	1.47		13.90	4.94
			0.299	0.662		2.32	1.98

	Date		Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
Whitewater River	01/21/1999 0:00	1	0.769	0.848	1	1.32	11.3
Whitewater River	02/18/1999 0:00	2	1.17	0.880	2	2.29	11.8
Whitewater River	03/16/1999 0:00	3	0.581	0.840	3	0.618	13.7
Whitewater River	04/15/1999 0:00	4	0.736	0.940	4	0.195	12.7
Whitewater River	04/28/1999 0:00	4	0.710	0.921	4	0.361	13.5
Whitewater River	05/12/1999 0:00	5	0.838	0.799	5	0.445	14.3
Whitewater River	05/26/1999 0:00	5	0.601	0.993	5	1.07	15.5
Whitewater River	06/09/1999 0:00	6	0.702	0.682	6	0.354	13.4
Whitewater River	06/23/1999 0:00	6	0.699	0.862	6	0.465	12.5
Whitewater River	07/07/1999 0:00	7	0.856	1.01	7	0.469	14.9
Whitewater River	07/21/1999 0:00	7	0.682	0.884	7	0.286	19.0
Whitewater River	08/10/1999 0:00	8	0.374	0.550	8	0.381	18.4
Whitewater River	08/24/1999 0:00	8	0.481	0.529	8	0.742	16.7
Whitewater River	09/08/1999 0:00	9	0.695	0.658	9	0.144	19.7
Whitewater River	09/22/1999 0:00	9	0.881	1.17	9	0.512	16.0
Whitewater River	10/21/1999 0:00	10	0.830	0.997	10	0.507	14.3
Whitewater River	11/17/1999 0:00	11	0.510	0.848	11	0.352	14.1
Whitewater River	12/15/1999 0:00	12	0.530	0.970	12	0.943	13.6
			0.703	0.855		0.636	14.7
			1.170	1.17		2.29	19.7
			0.374	0.529		0.144	11.3

	Date		Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
SS-1 (Surface)	01/22/1999 0:00	1	0.0025	0.063	1	0.822	0.155
SS-1 (Surface)	02/18/1999 0:00	2	0.033	0.155	2	0.629	0.197
SS-1 (Surface)	03/16/1999 0:00	3	0.019	0.190	3	0.579	0.130
SS-1 (Surface)	04/14/1999 0:00	4	0.006	0.140	4	0.019	0.283
SS-1 (Surface)	04/29/1999 0:00	4	0.0025	0.018	4	0.063	0.131

Mean Conc. mg/L

	Ortho P	Total P	NO_3/NO_2-N
	Mean Conc.		
Alamo	0.969	1.21	8.15
New	1.110	1.47	4.94
Combined	1.17	1.17	19.7

The requirement to list impaired water bodies applies only to "water quality limited segments." (40 C.F.R. §130.7.) A water quality limited segment means "[a]ny segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by sections 301(b) and 306 of the Act." (40 CFR §130.2(j).) The available data and information demonstrate that the New River is *tributary* to a water quality limited segment (i.e., the Salton Sea). However, the New River is not itself a water quality limited segment, since no data or information demonstrate that water quality in the New River fails to meet water quality standards.

If the State Board determines that all tributaries to water quality limited segments are themselves impaired water bodies requiring 303(d) listing, then the State Board should list all Salton Sea tributaries that contribute to the nutrient loading of the Sea. These water bodies include about 1400 miles of agricultural drains, the Alamo River, and the Coachella Valley Storm Water Channel that also contribute significant amount of nutrients into the Salton Sea. . . [Cite data and information, preferably data and information submitted to RB and SB in 303(d) listing process.]

Thank you for your consideration of these comments.

/s/ Phil Gruenberg

Letter to Craig J. Wilson from Phil regarding 303(d) list
(Staff wants it by 5/16)

Dear Mr. Wilson:

The purpose of this letter is to address State Board staff's recommendation not to de-list the New River for "nutrients/water/aquatic life." State Board staff's reasoning is as follows:

> No data available on which to base delisting. Staff report states that, RWQCB has no data showing that...nutrients are...violating water quality standards in the New River, however the River carries large amounts of nitrogen and phosphate which are causing eutrophic conditions [and] fish die-offs in the [Salton] Sea. Water quality conditions in the New River will need to be incorporated into TMDL for Salton Sea, so retain listing.

The Regional Board's Staff Report on the Proposed Update of Clean Water Act 303(d) List of Impaired Water Bodies within the Colorado River Basin Region (Staff Report) concluded that the Regional Board has no data showing that nutrients in the New River violate water quality standards in the New River. (Staff Report, p. 3–, ¶1.)

Clean Water Act regulations address the standards for de-listing a water body. A state must demonstrate good cause to de-list a water body. Good cause includes, without limitation, more recent or accurate data, or flaws in the data and information supporting the original listing analysis. (40 C.F.R. §130.7(b)(6)(iv), 130.7(b)(5).) The USEPA has interpreted this language to permit de-listing "if, upon re-examination, the original basis for listing is determined to be inaccurate." (USEPA, *National Clarifying Guidance For 1998 State and Territory Clean Water Act Section 303(d) Listing Decisions*, August 17, 1997, citing USEPA's *Guidance for 1994 Section 303(d) Lists* (November 26, 1993).)

The Regional Board initially listed the New River based on data from another surface water body in the region which is the Salton Sea. ~~because...~~ However, upon reexamining the data and information supporting the initial listing, and the data and information that became available since that time, and by reviewing water quality objectives for the New River in the Region's Basin Plan, staff determined that ~~... [e.g.: W~~while it is clear that the Salton Sea is impaired for nutrients, ~~insufficient data is available to determine how much of the nutrient source is the New River as opposed to other tributaries. Although~~ and that the New River is a major source of nutrient loading to the Salton Sea, there is no indication that nutrients water quality in the New River itself violates any nutrients water quality objectives in the New River~~, i.e., that the New River is an impaired water body~~. The Region's 303 (d) List lists the Salton Sea as impaired water body for nutrients and loading of nutrients from the New River into the Salton Sea will be addressed in the ~~Keep in mind load/waste load allocations in~~ Salton Sea Nutrients TMDL, which is currently being developed.]

From: Tim Stevens
To: Zeywar, Nadim
Date: 5/13/02 8:21AM
Subject: New River De-listing Issue

Hi Nadim,

Thanks for your call. As promised, I spoke to Craig and Diane (please chime if I misstate anything here).

In brief, I understand your issues to be:

1. The New River was previously listed for nutrients in 1998.
2. However, the Region 7 RWQCB has either no data or faulty data to support this listing (I am unclear which).
3. The Salton Sea (which Region 7 does have data for) is clearly impaired by high nutrient loads. However, the sources of nutrients to the Sea are any one of a number of drains into it.
4. Therefore, your logic is, if the New River is to remain on the List, the other Salton Sea drains (e.g., Alamo River) should also be listed even without specific monitoring data.

SWRCB staff's thoughts are:

A. The current feeling (to be formalized if/when List policy is created) is that de-listing should be somewhat more onerous then listing. (Appropriate data will nonetheless be required for both actions.) Failing to de-list a water body is not grounds to automatically list other water bodies (i.e., two wrongs don't make a right).

B. Currently, we have no data (from you) to recommend de-listing the New River for nutrients.

C. Be aware that all listings will probably be re-examined once an official policy is adopted. (There is inadequate time for the SWRCB to review the entire 1998 list before issuing the 2002 list.) Existing listing will, at that time (before the next listing cycle, say in 2004), be eliminated if they do not stand up to the Policy's requirements.

D. In the mean time for the 2002 cycle, if Region 7 has specific evidence (e.g., evidence of faulty data used in 1998), this would be appropriate to de-list. We assume that there was some reason why the New River was included for nutrients in 1998. What was the rationale then, and why is it considered faulty now?

(Please don't misunderstand. I'm not saying you are incorrect. What I'm saying is that we need evidence, in writing, in order to enter into the record and support our recommendation to de-list the River.)

E. The procedure for RWQCB List "dissent" discussed at the last TMDL roundtable is to write a concise but detailed letter to Craig Wilson including all the pertinent information.

F. The general feeling at the Roundtable was that issues can be worked

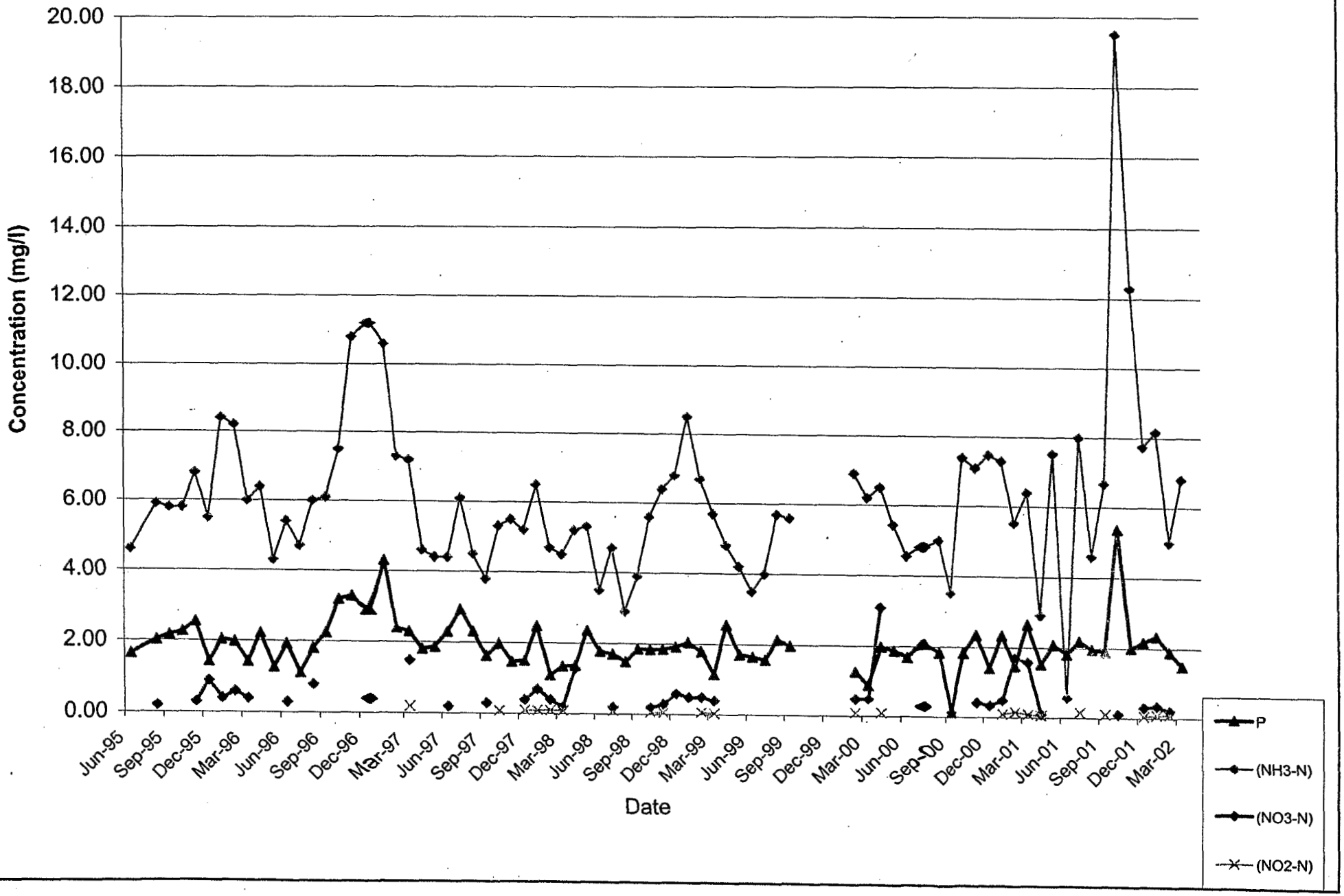
out ahead of time, before the hearings. As I said above, something in writing for the record is necessary.

I hope this helps. Please feel free to call me back, or anyone else up here, if you have any questions. Thanks for all your hard work on the listing issues.

Tim
916/341-5911

CC: Angel, Jose; Beaulaurier, Diane; Wilson, Craig J.; Wylie, Doug

NUTRIENTS AT NEW RIVER IBL



Nutrients at New River IBL
(June 1995 - March 2002)

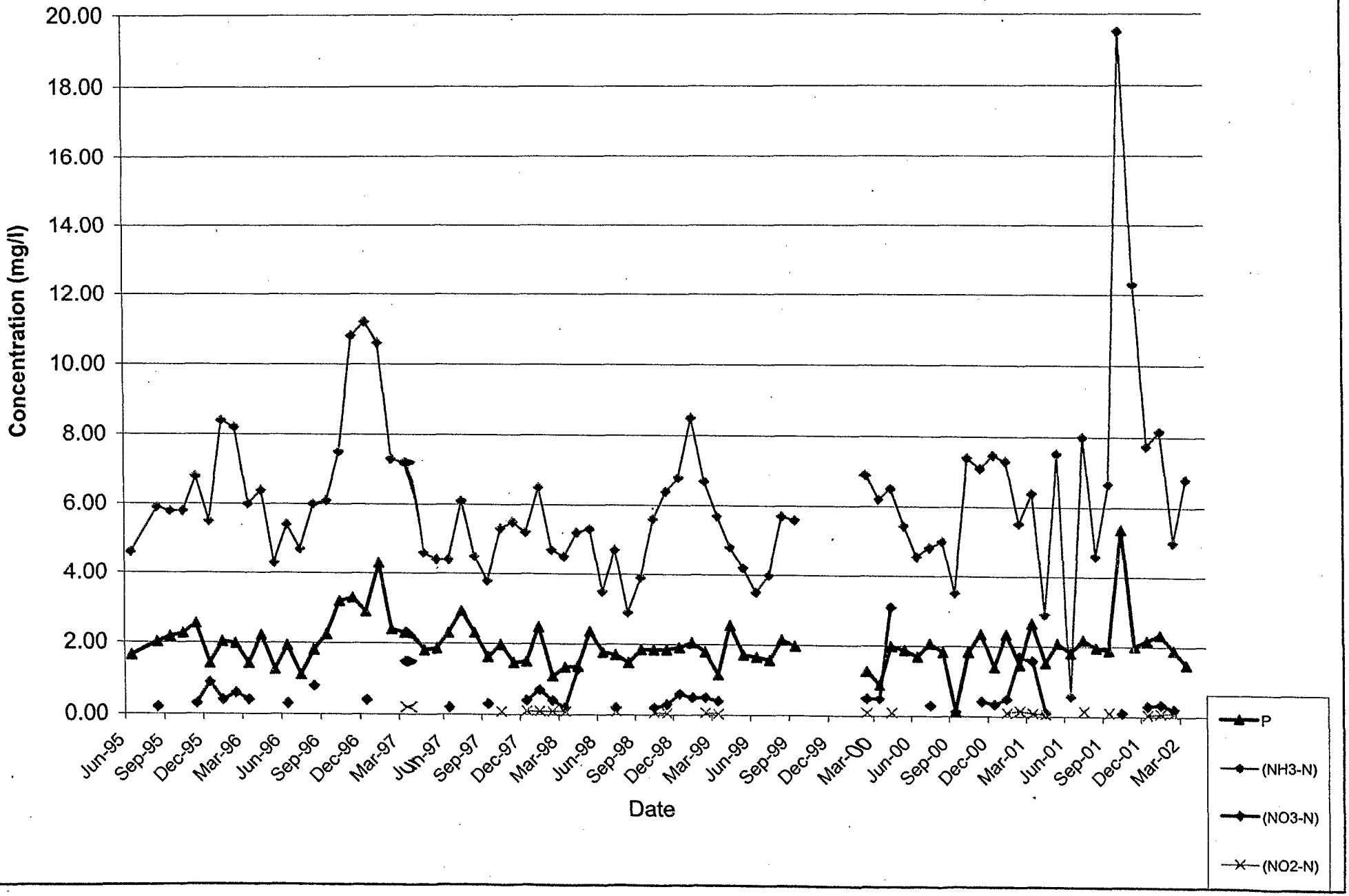
Constituent	1995						1996												1977				
	Jun	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May
Total Phosphate as P	1.66	2.03	2.18	2.27	2.55	1.44	2.04	1.99	1.44	2.22	1.28	1.94	1.13	1.82	2.25	3.20	3.30	2.90	4.30	2.40	2.30	1.82	1.87
Ammonia - Nitrogen (NH_3-N)	4.60	5.90	5.80	5.80	6.80	5.50	8.40	8.20	6.00	6.40	4.30	5.40	4.70	6.00	6.10	7.50	10.80	11.20	10.60	7.30	7.20	4.60	4.40
Nitrate - Nitrogen (NO_3-N)		0.20			0.30	0.90	0.40	0.60	0.40			0.30		0.80				0.40			1.50		
Nitrite - Nitrogen (NO_2-N)								0.08	0.10												0.20		

Constituent	1997							1998												1999			
	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April
Total Phosphate as P	2.30	2.93	2.31	1.64	1.98	1.48	1.51	2.48	1.10	1.36	1.38	2.36	1.78	1.71	1.49	1.86	1.85	1.86	1.92	2.05	1.80	1.16	2.55
Ammonia - Nitrogen (NH_3-N)	4.40	6.10	4.50	3.80	5.30	5.50	5.20	6.50	4.70	4.50	5.20	5.30	3.50	4.70	2.90	3.90	5.60	6.40	6.80	8.50	6.70	5.70	4.80
Nitrate - Nitrogen (NO_3-N)	0.20			0.30			0.40	0.70	0.40	0.20	1.30			0.20			0.20	0.30	0.60	0.50	0.50	0.40	
Nitrite - Nitrogen (NO_2-N)					0.08		0.10	0.10	0.10	0.10				0.10			0.06	0.05			0.07	0.04	

Constituent	1999					2000											2001						
	May	Jun	Jul	Aug	Sep	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
Total Phosphate as P	1.72	1.66	1.58	2.15	1.98	1.28	0.89	1.99	1.88	1.70	2.07	1.84	0.13	1.84	2.35	1.42	2.34	1.48	2.66	1.54	2.09	1.82	2.20
Ammonia - Nitrogen (NH_3-N)	4.20	3.50	4.00	5.70	5.60	6.90	6.20	6.51	5.44	4.55	4.82	5.00	3.52	7.39	7.10	7.47	7.30	5.53	6.39	2.92	7.52	0.57	8.00
Nitrate - Nitrogen (NO_3-N)						0.50	0.50	3.10			0.30		0.13		0.43	0.34	0.50	1.70	1.59	0.10			
Nitrite - Nitrogen (NO_2-N)						0.10	0.00	0.10									0.10	0.16	0.09	0.06			0.16

Constituent[1]	2001					2002		
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Total Phosphate as P	1.97	1.90	5.37	2.01	2.18	2.34	1.90	1.50
Ammonia - Nitrogen (NH_3-N)	4.60	6.67	19.50	12.30	7.74	8.16	5.00	6.80
Nitrate - Nitrogen (NO_3-N)			0.10		0.30	0.34	0.20	
Nitrite - Nitrogen (NO_2-N)		0.11			0.05	0.08	0.10	

NUTRIENTS AT NEW RIVER IBL



Annual FLOW SUMMARY IN ACRE-FEET

INDIVIDUAL DRAINS BY MONTH
IN ACRE FEET

2001

Drains	JAN	*FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	total/drain
F Channel	2.05	4.44	11.68	5.24	6.15	4.16	43.03	8.61	1.78	6.76	11.9	5.41	111.21
E Channel	71.92	82.18	62.09	53.54	81.14	86.26	67.01	72.54	63.65	11.07	79.72	79.3	810.42
Oasis-Grant	90.98	139.37	48.56	84.48	75.61	82.1	72.54	66.39	44.02	71.31	66.63	165.36	1007.35
D Channel	106.35	105.5	67.62	105.89	102.66	62.46	117.41	73.77	58.3	67.01	116.6	223.76	1207.33
C Channel	114.95	87.73	71.92	55.33	85.45	98.75	65.16	41.19	120.76	174.58	92.8	212.08	1220.7
Ave 83	6.27	17.77	5.84	5.24	4.12	0.55	10.45	43.65	2.38	11	8.33	5.85	121.45
Ave 79	157.37	168.24	103.89	210	173.97	124.33	136.47	85.45	155.27	94.67	132.66	319.04	1861.36
Lincoln-Oasis	13.4	5.55	10.45	262.95	197.33	21.42	7.99	12.29	176.09	136.47	16.66	127.86	988.46
A Channel	253.88	203.22	225.61	138.61	129.09	111.25	143.23	330.72	175.5	151.22	151.7	290.77	2304.8
Ave 76	159.22	215.99	180.12	188.58	224.99	180.25	149.99	124.79	164.19	196.1	141.59	379.29	2305.1
Ave 74	306.75	156.02	1.23	2.92	0.04	9.52	12.91	13.52	1.19	9.28	96.97	4.55	614.9
CVSWC	4300.3	3984.5	4932.1	4580.1	4178.2	3856.9	3882.0	3675.3	3932.4	4132.5	3701.3	4234.0	49389.52
Johnson St.	291.38	120.49	370.68	336.71	349.17	404.53	227.45	197.33	270.68	215.77	295.67	442.61	3522.47
Grant St.	204.09	255.97	276.01	481.27	339.33	214.76	202.86	189.95	87.45	99.59	88.05	330.11	2769.44
Grant 0.5	122.33	263.18	473.96	121.95	237.9	312.32	301.83	215.77	166.57	152.45	11.9	153.07	2533.23
Hayes	67.62	136.59	173.35	18.44	182.57	326.6	128.48	95.28	143.97	138.93	110.65	199.79	1722.27
Hayes 0.5	22.13	39.42	66.39	42.24	33.2	35.69	28.89	35.65	39.26	4.3	76.15	9.28	432.6
Garfield St.	169.67	227.09	157.37	187.39	202.86	151.7	128.48	149.99	169.55	140.77	185.61	196.1	2066.58
Garfield 0.5	76.23	92.17	87.29	111.25	58.4	118.39	135.24	61.47	32.72	20.9	63.06	82.99	940.11
Arthur St.	127.25	79.4	161.67	123.14	161.06	132.07	121.72	217	118.39	103.89	170.14	247.74	1763.47
Arthur 0.5	74.38	11.1	78.69	74.96	82.99	73.77	73.77	63.93	77.34	63.93	66.03	65.16	806.05
Cleveland East	21.52	28.32	24.59	28.56	43.03	50.57	47.95	30.74	22.61	17.83	22.01	28.89	366.62
Cleveland West	17.21	11.66	36.27	30.93	24.59	35.1	44.26	31.35	30.93	31.97	23.8	26.43	344.5
Caleb Channel	41.19	39.98	36.88	31.53	38.73	32.72	36.88	45.49	33.31	29.51	52.35	41.8	460.37
Cleveland 0.5	46.1	83.84	57.17	80.91	73.15	51.16	44.88	49.79	61.87	75.61	109.46	94.67	828.61
Mckinley	53.48	46.08	36.88	57.71	60.86	52.95	57.17	47.33	1.9	47.33	11.9	46.72	520.31
Total/Month	6918.05	6605.8	7758.3	7419.83	7146.62	6630.25	6288	5979.31	6152.05	6204.75	5903.64	8012.6	81019.23
												81019.2	

	Date		Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L	Total P >0.05 mg/l	NO3/NO2-N >10 mg/l
Alamo River	01/21/1999 0:00	1	0.365	0.82	1	1.09	6.71	0.82	0
Alamo River	02/17/1999 0:00	2	0.969	0.85	2	2.83	6.81	0.85	0
Alamo River	03/15/1999 0:00	3	0.484	1.05	3	2.30	8.15	1.05	0
Alamo River	04/15/1999 0:00	4	0.378	0.86	4	1.54	6.55	0.86	0
Alamo River	04/29/1999 0:00	4	0.535	1.03	4	0.538	6.28	1.025	0
Alamo River	05/13/1999 0:00	5	0.424	1.21	5	2.31	5.90	1.21	0
Alamo River	05/26/1999 0:00	5	0.419	0.933	5	2.82	6.44	0.933	0
Alamo River	06/10/1999 0:00	6	0.390	0.846	6	1.15	4.79	0.846	0
Alamo River	06/24/1999 0:00	6	0.234	0.648	6	0.672	5.20	0.648	0
Alamo River	07/08/1999 0:00	7	0.163	0.581	7	1.05	4.83	0.581	0
Alamo River	07/22/1999 0:00	7	0.190	0.449	7	0.680	4.46	0.449	0
Alamo River	08/11/1999 0:00	8	0.193	0.460	8	1.11	4.81	0.46	0
Alamo River	08/25/1999 0:00	8	0.209	0.194	8	0.687	5.88	0.194	0
Alamo River	09/09/1999 0:00	9	0.320	0.299	9	0.989	6.10	0.299	0
Alamo River	09/22/1999 0:00	9	0.713	0.874	9	1.16	6.00	0.874	0
Alamo River	10/21/1999 0:00	10	0.583	0.658	10	0.505	7.19	0.658	0
Alamo River	11/17/1999 0:00	11	0.269	0.505	11	0.307	7.28	0.505	0
Alamo River	12/15/1999 0:00	12	0.142	0.561	12	0.781	7.31	0.561	0
			0.388	0.712		1.25	6.15		
			0.969	1.21		2.83	8.15		
			0.142	0.194		0.307	4.46		
			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
New River	01/21/1999 0:00	1	0.991	1.43	1	3.77	3.86	1.43	0
New River	02/18/1999 0:00	2	1.03	1.16	2	4.04	4.94	1.16	0
New River	03/15/1999 0:00	3	0.441	1.04	3	2.96	4.32	1.04	0
New River	04/15/1999 0:00	4	0.633	1.21	4	2.32	4.47	1.21	0
New River	04/28/1999 0:00	4	0.558	1.16	4	2.44	4.18	1.1585	0
New River	05/13/1999 0:00	5	0.509	1.13	5	2.57	4.80	1.13	0
New River	05/26/1999 0:00	5	0.637	1.34	5	3.19	3.18	1.34	0
New River	06/10/1999 0:00	6	0.572	1.17	6	3.37	2.88	1.172	0
New River	06/24/1999 0:00	6	0.545	1.09	6	3.35	2.09	1.09	0
New River	07/08/1999 0:00	7	0.552	1.15	7	2.56	1.98	1.15	0
New River	07/22/1999 0:00	7	0.493	1.03	7	2.58	2.47	1.03	0
New River	08/11/1999 0:00	8	0.471	0.950	8	13.9	3.14	0.95	0
New River	08/25/1999 0:00	8	0.654	0.662	8	5.59	2.43	0.662	0
New River	09/09/1999 0:00	9	0.831	0.809	9	3.73	2.23	0.809	0
New River	09/22/1999 0:00	9	0.995	1.20	9	2.73	3.06	1.2	0
New River	10/21/1999 0:00	10	0.762	0.868	10	3.06	4.30	0.868	0
New River	11/17/1999 0:00	11	1.11	1.47	11	3.78	3.29	1.47	0
New River	12/15/1999 0:00	12	0.299	0.903	12	2.83	3.43	0.903	0
			0.671	1.10		3.82	3.39		
			1.110	1.47		13.90	4.94		
			0.299	0.662		2.32	1.98		
			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
Whitewater River	01/21/1999 0:00	1	0.769	0.848	1	1.32	11.3	0.848	11.3
Whitewater River	02/18/1999 0:00	2	1.17	0.880	2	2.29	11.8	0.88	11.8
Whitewater River	03/16/1999 0:00	3	0.581	0.840	3	0.618	13.7	0.84	13.7
Whitewater River	04/15/1999 0:00	4	0.736	0.940	4	0.195	12.7	0.94	12.7
Whitewater River	04/28/1999 0:00	4	0.710	0.921	4	0.361	13.5	0.921	13.5
Whitewater River	05/12/1999 0:00	5	0.838	0.799	5	0.445	14.3	0.799	14.29
Whitewater River	05/26/1999 0:00	5	0.601	0.993	5	1.07	15.5	0.993	15.526
Whitewater River	06/09/1999 0:00	6	0.702	0.682	6	0.354	13.4	0.682	13.42
Whitewater River	06/23/1999 0:00	6	0.699	0.862	6	0.465	12.5	0.862	12.5
Whitewater River	07/07/1999 0:00	7	0.856	1.01	7	0.469	14.9	1.01	14.9
Whitewater River	07/21/1999 0:00	7	0.682	0.884	7	0.286	19.0	0.884	19
Whitewater River	08/10/1999 0:00	8	0.374	0.550	8	0.381	18.4	0.55	18.4
Whitewater River	08/24/1999 0:00	8	0.481	0.529	8	0.742	16.7	0.529	16.7
Whitewater River	09/08/1999 0:00	9	0.695	0.658	9	0.144	19.7	0.658	19.7
Whitewater River	09/22/1999 0:00	9	0.881	1.17	9	0.512	16.0	1.17	16
Whitewater River	10/21/1999 0:00	10	0.830	0.997	10	0.507	14.3	0.997	14.3
Whitewater River	11/17/1999 0:00	11	0.510	0.848	11	0.352	14.1	0.848	14.1
Whitewater River	12/15/1999 0:00	12	0.530	0.970	12	0.943	13.6	0.97	13.6
			0.703	0.855		0.636	14.7		
			1.170	1.17		2.29	19.7		
			0.374	0.529		0.144	11.3		
			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L		
SS-1 (Surface)	01/22/1999 0:00	1	0.0025	0.063	1	0.822	0.155	0.063	0
SS-1 (Surface)	02/18/1999 0:00	2	0.033	0.155	2	0.629	0.197	0.155	0
SS-1 (Surface)	03/16/1999 0:00	3	0.019	0.190	3	0.579	0.130	0.19	0
SS-1 (Surface)	04/14/1999 0:00	4	0.006	0.140	4	0.019	0.283	0.14	0

SS-1 (Surface)	04/29/1999 0:00	4	0.0025	0.018	4	0.063	0.131	0	0
SS-1 (Surface)	05/12/1999 0:00	5	0.010	0.066	5	2.50	0.162	0.066	0
SS-1 (Surface)	05/27/1999 0:00	5	0.014	0.091	5	1.51	0.339	0.091	0
SS-1 (Surface)	06/09/1999 0:00	6	0.005	0.054	6	1.63	0.105	0.054	0
SS-1 (Surface)	06/23/1999 0:00	6	0.014	0.033	6	2.98	0.348	0	0
SS-1 (Surface)	07/07/1999 0:00	7	0.0025	0.050	7	2.27	0.075	0	0
SS-1 (Surface)	07/21/1999 0:00	7	0.0025	0.152	7	0.115	0.035	0.152	0
SS-1 (Surface)	08/10/1999 0:00	8	0.046	0.110	8	1.39	0.015	0.11	0
SS-1 (Surface)	08/24/1999 0:00	8	0.007	0.005	8	1.07	0.250	0	0
SS-1 (Surface)	09/08/1999 0:00	9	0.0025	0.012	9	0.740	0.272	0	0
SS-1 (Surface)	09/23/1999 0:00	9	0.045	0.060	9	1.03	0.015	0.06	0
SS-1 (Surface)	10/20/1999 0:00	10	0.048	0.044	10	1.62	0.040	0	0
SS-1 (Surface)	11/16/1999 0:00	11	0.025	0.050	11	1.04	0.100	0	0
SS-1 (Surface)	12/15/1999 0:00	12	0.084	0.143	12	2.95	0.110	0.143	0
			0.020	0.080		1.28	0.153		
			0.084	0.190		2.98	0.348		
			<0.005	0.005		0.019	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-1 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.013	4	0.118	0.149	0	0
SS-1 (Bottom Epi)	05/12/1999 0:00	5	0.006	0.061	5	1.75	0.110	0.061	0
SS-1 (Bottom Epi)	05/27/1999 0:00	5	0.011	0.050	5	1.41	0.076	0	0
SS-1 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.042	6	2.22	0.100	0	0
SS-1 (Bottom Epi)	06/23/1999 0:00	6	0.015	0.027	6	1.81	0.053	0	0
SS-1 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.009	7	1.98	0.055	0	0
SS-1 (Bottom Epi)	07/21/1999 0:00	7	0.0025	0.109	7	0.264	0.049	0.109	0
SS-1 (Bottom Epi)	08/10/1999 0:00	8	0.010	0.100	8	1.41	0.036	0.1	0
SS-1 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.748	0.015	0	0
SS-1 (Bottom Epi)	09/08/1999 0:00	9	0.0025	0.0035	9	0.809	0.015	0	0
SS-1 (Bottom Epi)	09/23/1999 0:00	9	0.037	0.036	9	0.973	0.015	0	0
			0.009	0.041		1.23	0.061		
			0.037	0.109		2.22	0.149		
			<0.005	<0.005		0.118	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-1 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.010	4	0.295	0.217	0	0
SS-1 (Top Hypo)	05/12/1999 0:00	5	0.0025	0.069	5	1.57	0.053	0.069	0
SS-1 (Top Hypo)	05/27/1999 0:00	5	0.011	0.069	5	1.81	0.041	0.069	0
SS-1 (Top Hypo)	06/09/1999 0:00	6	0.0025	0.034	6	1.90	0.041	0	0
SS-1 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.030	6	2.63	0.015	0	0
SS-1 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.019	7	2.63	0.051	0	0
SS-1 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.124	7	1.48	0.015	0.124	0
SS-1 (Top Hypo)	08/10/1999 0:00	8	0.0025	0.098	8	1.48	0.015	0.098	0
SS-1 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	2.13	0.015	0	0
SS-1 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.0035	9	0.750	0.015	0	0
SS-1 (Top Hypo)	09/23/1999 0:00	9	0.035	0.037	9	0.975	0.015	0	0
			0.006	0.045		1.60	0.045		
			0.035	0.124		2.63	0.217		
			<0.005	<0.005		0.295	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-1 (Bottom)	01/22/1999 0:00	1	0.0025	0.060	1	1.05	0.108	0.06	0
SS-1 (Bottom)	02/18/1999 0:00	2	0.032	0.063	2	1.04	0.140	0.063	0
SS-1 (Bottom)	03/16/1999 0:00	3	0.020	0.110	3	0.606	0.099	0.11	0
SS-1 (Bottom)	04/14/1999 0:00	4	0.0025	0.100	4	0.218	0.131	0.1	0
SS-1 (Bottom)	04/29/1999 0:00	4	0.0025	0.011	4	0.504	0.039	0	0
SS-1 (Bottom)	05/12/1999 0:00	5	0.005	0.097	5	1.68	0.015	0.097	0
SS-1 (Bottom)	05/27/1999 0:00	5	0.013	0.070	5	1.98	0.015	0.07	0
SS-1 (Bottom)	06/09/1999 0:00	6	0.0025	0.034	6	1.96	0.044	0	0
SS-1 (Bottom)	06/23/1999 0:00	6	0.005	0.033	6	3.08	0.154	0	0
SS-1 (Bottom)	07/07/1999 0:00	7	0.005	0.027	7	3.25	0.050	0	0
SS-1 (Bottom)	07/21/1999 0:00	7	0.0025	0.131	7	2.37	0.015	0.131	0
SS-1 (Bottom)	08/10/1999 0:00	8	0.0025	0.110	8	1.37	0.031	0.11	0
SS-1 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	3.09	0.015	0	0
SS-1 (Bottom)	09/08/1999 0:00	9	0.0025	0.006	9	0.901	0.108	0	0
SS-1 (Bottom)	09/23/1999 0:00	9	0.031	0.034	9	1.08	0.015	0	0
SS-1 (Bottom)	10/20/1999 0:00	10	0.011	0.013	10	1.82	0.030	0	0
SS-1 (Bottom)	11/16/1999 0:00	11	0.017	0.049	11	1.25	0.050	0	0
SS-1 (Bottom)	12/15/1999 0:00	12	0.076	0.115	12	2.45	0.120	0.115	0
			0.013	0.059		1.65	0.066		
			0.076	0.131		3.25	0.154		
			<0.005	<0.005		0.218	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-2 (Surface)	01/22/1999 0:00	1	0.0025	0.095	1	0.729	0.262	0.095	0
SS-2 (Surface)	02/18/1999 0:00	2	0.034	0.113	2	0.400	0.228	0.113	0

Date	Station	AR	NR	WR	SS-1 (S)	SS-1 (B)	SS-2 (S)	SS-2 (D)	SS-2 (B)	SS-3 (S)	SS-3 (B)
########	Depth (m)	0.5	0.5	0.5	0.5	14.5	0.5		12.5	0.5	14
As (ug/L)	Dissolved	5.16	4.82	6.7	1.99		5.92			7.36	
	Total	6.98	6.74	7.35	2.12		6.07			7.26	
Se (ug/L)	Dissolved	5.89	3.24	2.55	1.25		1.09			1.02	
	Total	5.86	3.35	2.47	2.11		1.18			1.11	
Hg (ng/L)	Dissolved	1.04	1.02	1.48	0.55		0.47			0.42	
	Total	11.4	16.6	6.16	1.53		1.01			1.16	
Ag (ug/L)	Dissolved	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Total	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Al (ug/L)	Dissolved	31.9	<30	<30	<30	<30	<30	<30	<30	<30	<30
	Total	18800	4340	2070	<30	<30	<30	<30	<30	<30	<30
B (ug/L)	Dissolved	474	723	481	11400	11300	11400	11300	11400	11400	11400
	Total	535	737	509	11800	11900	12000	12000	12000	11800	12100
Ba (ug/L)	Dissolved	94.5	110	38.4	64.2	62.7	64.1	63.5	64.2	65.7	64.3
	Total	176	104	58	65.6	65.7	66.3	65.7	65.3	69.4	64.5
Ca (mg/L)	Dissolved	154	169	116	842	850	865	855	868	863	852
	Total	154	151	110	969	973	971	966	967	953	966
Cd (ug/L)	Dissolved	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Total	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Co (ug/L)	Dissolved	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
	Total	7.94	<3	<3	<3	<3	<3	<3	<3	3.42	<3
Cr (ug/L)	Dissolved	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Total	14	4.48	<4	<4	<4	<4	<4	<4	<4	<4
Cu (ug/L)	Dissolved	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Total	10.9	4.67	<4	<4	<4	<4	<4	<4	<4	<4
Fe (ug/L)	Dissolved	15.7	27.5	12.8	<4	<4	<4	<4	<4	<4	<4
	Total	9320	2160	1910	31.1	64.9	27.5	32.1	25	10.1	18.3
K (mg/L)	Dissolved	9.24	12.1	7.92	262	257	259	257	260	260	261
	Total	16.2	14.8	10	280	281	280	284	279	275	280
Mg (mg/L)	Dissolved	79.1	79.5	29.5	1350	1330	1340	1330	1340	1340	1340
	Total	79.7	74.5	31.8	1400	1410	1400	1400	1400	1390	1410
Mn (ug/L)	Dissolved	21.7	144	35.6	13.2	19.7	6.15	6.04	8.11	9.42	10.3
	Total	253	190	87.1	27.3	32.5	17	20.3	20.1	19.9	21.9
Mo (ug/L)	Dissolved	12.5	14	34.8	<10	<10	<10	<10	<10	10.3	10.2
	Total	13.4	16.5	39.3	<10	12.4	<10	11.7	<10	<10	<10
Na (mg/L)	Dissolved	370	536	273	12600	12500	12500	12400	12500	12500	12500
	Total	380	486	277	12600	12600	12500	12500	12500	12300	12400
Ni (ug/L)	Dissolved	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Total	15.1	12.5	<10	<10	<10	<10	<10	<10	<10	<10
Pb (ug/L)	Dissolved	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
	Total	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Si (ug/L)	Dissolved	4910	6060	7800	6150	6150	6070	6030	6120	6080	6090
	Total	46100	16000	12700	6580	6790	6600	6710	6660	6410	6590
Sr (ug/L)	Dissolved	2570	2900	1900	21500	21300	21500	21300	21500	21500	21400
	Total	2630	2830	1910	22700	22900	22900	23000	22800	22600	23000
V (ug/L)	Dissolved	9.1	4.92	8.38	<4	<4	<4	<4	<4	<4	<4
	Total	31.4	12.1	15.7	7.48	<4	<4	<4	4.92	<4	<4
Zn (ug/L)	Dissolved	21.3	16	4.67	<4	<4	<4	<4	<4	<4	<4
	Total	40	14.2	31	11.8	8.49	4.19	4.13	<4	<4	<4

Date	Station	AR	NR	WR	SS-1 (S)	SS-1 (B)	SS-2 (S)	SS-2 (B)	SS-3 (S)	SS-3 (B)
########	Depth (m)	0.5	0.5	0.5	0.5	14.5	0.5	12.5	0.5	14.0
As (ug/L)	Dissolved	3.86	3.32	5.92	1.46	8.85	8.56	9.44	6.33	9.15
	Total	5.33	4.23	6.05	1.55	9.69	8.54	9.95	9.3	9.51
Se (ug/L)	Dissolved	6.18	3.24	0.36	<0.04	0.16	0.49	0.73	<0.04	0.7
	Total	6.6	3.5	2.37	<0.04	0.52	0.47	0.78	0.99	0.84
Hg (ng/L)	Dissolved	0.9	0.84	0.87	0.64	5.42	0.44	1.55	0.49	1.96
	Total	8.97	16.7	6.2	3.06	29.7	1.8	6.92	2.59	11.7
Ag (ug/L)	Dissolved	<4	4.05	<4	4.79	<4	<4	<4	<4	<4
	Total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Al (ug/L)	Dissolved	<30	<30	<30	<30	<30	<30	<30	<30	<30
	Total	14900	7530	3590	<30	<30	<30	<30	<30	<30
B (ug/L)	Dissolved	542	770	602	11500	11300	11200	11400	11100	10800
	Total	540	817	632	12100	12400	12200	12200	12000	12600
Ba (ug/L)	Dissolved	101	125	91.2	70.1	72.5	69.8	69.6	68.4	69
	Total	162	146	74.5	75.9	77	76.3	76.8	78.4	79.8
Ca (mg/L)	Dissolved	172	173	116	976	845	806	822	789	775
	Total	167	169	113	936	935	946	936	940	975
Cd (ug/L)	Dissolved	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Co (ug/L)	Dissolved	<3	<3	<3	<3	<3	<3	<3	<3	<3
	Total	3.77	<3	<3	3.31	<3	<3	<3	<3	<3
Cr (ug/L)	Dissolved	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Total	10.2	6.08	<4	<4	<4	<4	<4	<4	<4
Cu (ug/L)	Dissolved	<4	<4	<4	<4	4.67	<4	4.99	<4	<4
	Total	7.42	4.26	4.08	<4	<4	<4	<4	<4	<4
Fe (ug/L)	Dissolved	6.67	11.9	14.6	<4	<4	<4	<4	<4	<4
	Total	8070	4220	3230	14.9	8.27	16.9	14.1	21.6	9.33
K (mg/L)	Dissolved	6.32	10.1	8.43	256	254	254	254	251	245
	Total	14.1	16.5	12	271	277	270	272	271	282
Mg (mg/L)	Dissolved	82.7	76.8	31.2	1350	1330	1320	1340	1300	1260
	Total	85.7	80.5	31.2	1390	1430	1410	1410	1400	1460
Mn (ug/L)	Dissolved	8.36	109	21.7	4.72	<4	<4	<4	<4	57.5
	Total	186	205	90.8	29.1	39.1	31.2	41	38.4	59.4
Mo (ug/L)	Dissolved	15.8	15.4	36.7	12.5	<10	<10	10.4	10.6	<10
	Total	<10	12.4	32.6	<10	<10	<10	<10	<10	<10
Na (mg/L)	Dissolved	414	547	289	12600	12300	12200	12400	12000	11700
	Total	524	734	280	17100	17600	17300	17300	17200	17900
Ni (ug/L)	Dissolved	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Total	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pb (ug/L)	Dissolved	<30	<30	<30	<30	<30	<30	<30	<30	<30
	Total	<30	<30	<30	<30	<30	<30	<30	<30	<30
Si (ug/L)	Dissolved	12.2	14.8	19.1	9.01	8.77	8.56	8.99	8.73	8.67
	Total	38100	23500	17100	4290	4400	4290	4410	4420	4580
Sr (ug/L)	Dissolved	2800	2980	1860	22300	21200	21000	21300	20600	20000
	Total	2750	3070	1930	23000	23400	23100	23100	23000	23800
V (ug/L)	Dissolved	5.62	<4	9.18	<4	<4	<4	<4	<4	<4
	Total	29.5	16.3	17.8	<4	<4	<4	<4	<4	<4
Zn (ug/L)	Dissolved	27.8	34.8	38.8	44.9	24.8	133	17.3	63.7	16.9
	Total	28.2	17.7	15.8	41	4.87	34.6	21.5	8.54	15.6

SS-2 (Surface)	03/16/1999 0:00	3	0.022	0.130	3	0.664	0.162	0.13	0
SS-2 (Surface)	04/14/1999 0:00	4	0.0025	0.150	4	<0.010	0.212	0.15	0
SS-2 (Surface)	04/29/1999 0:00	4	0.0025	0.006	4	0.063	0.156	0	0
SS-2 (Surface)	05/12/1999 0:00	5	0.0025	0.058	5	1.24	0.126	0.058	0
SS-2 (Surface)	05/27/1999 0:00	5	0.005	0.070	5	0.915	0.303	0.07	0
SS-2 (Surface)	06/09/1999 0:00	6	0.0025	0.050	6	1.35	0.116	0	0
SS-2 (Surface)	06/23/1999 0:00	6	0.0025	0.094	6	1.12	0.074	0.094	0
SS-2 (Surface)	07/07/1999 0:00	7	0.0025	0.013	7	1.13	0.072	0	0
SS-2 (Surface)	07/21/1999 0:00	7	0.0025	0.115	7	0.218	0.048	0.115	0
SS-2 (Surface)	08/10/1999 0:00	8	0.036	0.120	8	1.16	0.145	0.12	0
SS-2 (Surface)	08/24/1999 0:00	8	0.0025	0.0025	8	0.614	0.015	0	0
SS-2 (Surface)	09/08/1999 0:00	9	0.0025	0.0035	9	0.398	0.154	0	0
SS-2 (Surface)	09/23/1999 0:00	9	0.033	0.033	9	0.825	0.030	0	0
SS-2 (Surface)	10/20/1999 0:00	10	0.016	0.019	10	1.77	0.040	0	0
SS-2 (Surface)	11/16/1999 0:00	11	0.012	0.036	11	1.07	0.160	0	0
SS-2 (Surface)	12/15/1999 0:00	12	0.100	0.131	12	1.83	0.380	0.131	0
			0.016	0.069		0.912	0.149		
			0.100	0.150		1.83	0.380		
			<0.005	<0.005		<0.010	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-2 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.006	4	0.080	0.228	0	0
SS-2 (Bottom Epi)	05/12/1999 0:00	5	0.0025	0.059	5	1.43	0.123	0.059	0
SS-2 (Bottom Epi)	05/27/1999 0:00	5	0.009	0.058	5	1.51	0.086	0.058	0
SS-2 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.038	6	1.80	0.083	0	0
SS-2 (Bottom Epi)	06/23/1999 0:00	6	0.0025	0.024	6	1.13	0.355	0	0
SS-2 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.020	7	1.15	0.207	0	0
SS-2 (Bottom Epi)	07/21/1999 0:00	7	0.0025	0.117	7	0.263	0.015	0.117	0
SS-2 (Bottom Epi)	08/10/1999 0:00	8	0.022	0.100	8	1.14	0.043	0.1	0
SS-2 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.121	0.142	0	0
SS-2 (Bottom Epi)	09/08/1999 0:00	9	0.0025	0.0035	9	0.701	0.015	0	0
SS-2 (Bottom Epi)	09/23/1999 0:00	9	0.033	0.033	9	1.02	0.015	0	0
			0.008	0.042		0.940	0.119		
			0.033	0.117		1.80	0.355		
			<0.005	<0.005		0.080	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-2 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.008	4	0.129	0.200	0	0
SS-2 (Top Hypo)	05/12/1999 0:00	5	0.0025	0.054	5	1.40	0.119	0.054	0
SS-2 (Top Hypo)	05/27/1999 0:00	5	0.010	0.058	5	1.64	0.117	0.058	0
SS-2 (Top Hypo)	06/09/1999 0:00	6	0.005	0.030	6	1.70	0.159	0	0
SS-2 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.035	6	1.96	0.329	0	0
SS-2 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.032	7	2.83	0.102	0	0
SS-2 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.109	7	0.295	0.049	0.109	0
SS-2 (Top Hypo)	08/10/1999 0:00	8	0.025	0.098	8	1.17	0.547	0.098	0
SS-2 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	1.02	0.015	0	0
SS-2 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.0035	9	0.809	0.015	0	0
SS-2 (Top Hypo)	09/23/1999 0:00	9	0.034	0.035	9	1.07	0.015	0	0
			0.008	0.042		1.27	0.152		
			0.034	0.109		2.83	0.547		
			<0.005	<0.005		0.129	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-2 (Bottom)	01/22/1999 0:00	1	0.0025	0.064	1	0.935	0.136	0.064	0
SS-2 (Bottom)	02/18/1999 0:00	2	0.035	0.068	2	1.02	0.101	0.068	0
SS-2 (Bottom)	03/16/1999 0:00	3	0.026	0.105	3	0.541	0.149	0.105	0
SS-2 (Bottom)	04/14/1999 0:00	4	0.0025	0.110	4	0.317	0.158	0.11	0
SS-2 (Bottom)	04/29/1999 0:00	4	0.0025	0.014	4	0.328	0.170	0	0
SS-2 (Bottom)	05/12/1999 0:00	5	0.007	0.055	5	1.49	0.215	0.0545	0
SS-2 (Bottom)	05/27/1999 0:00	5	0.015	0.079	5	1.85	0.015	0.079	0
SS-2 (Bottom)	06/09/1999 0:00	6	0.008	0.034	6	1.84	0.121	0	0
SS-2 (Bottom)	06/23/1999 0:00	6	0.0025	0.023	6	2.33	0.088	0	0
SS-2 (Bottom)	07/07/1999 0:00	7	0.0025	0.035	7	2.94	0.015	0	0
SS-2 (Bottom)	07/21/1999 0:00	7	0.014	0.129	7	1.92	0.015	0.129	0
SS-2 (Bottom)	08/10/1999 0:00	8	0.030	0.098	8	1.04	0.015	0.098	0
SS-2 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	1.10	0.605	0	0
SS-2 (Bottom)	09/08/1999 0:00	9	0.009	0.0035	9	1.03	0.065	0	0
SS-2 (Bottom)	09/23/1999 0:00	9	0.038	0.029	9	1.28	0.015	0	0
SS-2 (Bottom)	10/20/1999 0:00	10	0.012	0.012	10	1.82	0.015	0	0
SS-2 (Bottom)	11/16/1999 0:00	11	0.055	0.028	11	1.67	0.040	0	0
SS-2 (Bottom)	12/15/1999 0:00	12	0.087	0.119	12	1.63	0.280	0.119	0
			0.019	0.056		1.39	0.123		
			0.087	0.129		2.94	0.605		
			<0.005	<0.005		0.317	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		

SS-3 (Surface)	01/22/1999 0:00	1	0.0025	0.071	1	0.860	0.171	0.071	0
SS-3 (Surface)	02/18/1999 0:00	2	0.034	0.115	2	0.380	0.192	0.115	0
SS-3 (Surface)	03/16/1999 0:00	3	0.028	0.110	3	0.691	0.128	0.11	0
SS-3 (Surface)	04/14/1999 0:00	4	0.0025	0.130	4	0.096	0.136	0.13	0
SS-3 (Surface)	04/29/1999 0:00	4	0.0025	0.025	4	0.151	0.152	0	0
SS-3 (Surface)	05/12/1999 0:00	5	0.0025	0.054	5	1.26	0.129	0.054	0
SS-3 (Surface)	05/27/1999 0:00	5	0.011	0.058	5	1.01	0.210	0.058	0
SS-3 (Surface)	06/09/1999 0:00	6	0.007	0.047	6	1.79	0.126	0	0
SS-3 (Surface)	06/23/1999 0:00	6	0.008	0.027	6	0.941	0.557	0	0
SS-3 (Surface)	07/07/1999 0:00	7	0.0025	0.022	7	1.05	0.062	0	0
SS-3 (Surface)	07/21/1999 0:00	7	0.0025	0.109	7	0.310	0.030	0.109	0
SS-3 (Surface)	08/10/1999 0:00	8	0.098	0.095	8	1.52	0.044	0.095	0
SS-3 (Surface)	08/24/1999 0:00	8	0.0025	0.0025	8	1.57	0.015	0	0
SS-3 (Surface)	09/08/1999 0:00	9	0.008	0.006	9	0.462	0.015	0	0
SS-3 (Surface)	09/23/1999 0:00	9	0.029	0.032	9	0.844	0.015	0	0
SS-3 (Surface)	10/20/1999 0:00	10	0.016	0.017	10	1.71	0.015	0	0
SS-3 (Surface)	11/16/1999 0:00	11	0.017	0.023	11	1.21	0.030	0	0
SS-3 (Surface)	12/15/1999 0:00	12	0.087	0.222	12	1.32	0.210	0.2215	0
			0.020	0.065		0.95	0.124		
			0.098	0.222		1.79	0.557		
			<0.005	<0.005		0.096	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-3 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.035	4	0.129	0.151	0	0
SS-3 (Bottom Epi)	05/12/1999 0:00	5	0.0025	0.071	5	1.26	0.165	0.0705	0
SS-3 (Bottom Epi)	05/27/1999 0:00	5	0.008	0.058	5	1.51	0.130	0.058	0
SS-3 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.036	6	1.72	0.273	0	0
SS-3 (Bottom Epi)	06/23/1999 0:00	6	0.0025	0.020	6	1.03	0.258	0	0
SS-3 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.019	7	1.15	0.047	0	0
SS-3 (Bottom Epi)	07/21/1999 0:00	7	0.022	0.114	7	0.287	0.015	0.114	0
SS-3 (Bottom Epi)	08/10/1999 0:00	8	0.075	0.11	8	1.38	0.015	0.11	0
SS-3 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.286	0.015	0	0
SS-3 (Bottom Epi)	09/08/1999 0:00	9	0.005	0.006	9	0.496	0.015	0	0
SS-3 (Bottom Epi)	09/23/1999 0:00	9	0.028	0.037	9	0.882	0.015	0	0
			0.014	0.046		0.92	0.100		
			0.075	0.114		1.72	0.273		
			<0.005	<0.005		0.129	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-3 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.050	4	0.173	0.168	0	0
SS-3 (Top Hypo)	05/12/1999 0:00	5	0.012	0.063	5	1.38	0.174	0.063	0
SS-3 (Top Hypo)	05/27/1999 0:00	5	0.009	0.055	5	1.83	0.105	0.055	0
SS-3 (Top Hypo)	06/09/1999 0:00	6	0.0025	0.038	6	1.81	0.079	0	0
SS-3 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.028	6	2.10	0.015	0	0
SS-3 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.022	7	2.70	0.015	0	0
SS-3 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.131	7	1.94	0.131	0.131	0
SS-3 (Top Hypo)	08/10/1999 0:00	8	0.093	0.100	8	1.31	0.015	0.1	0
SS-3 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	1.04	0.015	0	0
SS-3 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.006	9	0.745	0.085	0	0
SS-3 (Top Hypo)	09/23/1999 0:00	9	0.028	0.029	9	0.902	0.015	0	0
			0.015	0.048		1.45	0.074		
			0.093	0.131		2.70	0.174		
			<0.005	<0.005		0.173	<0.030		
			Ortho-P	Total P		NH3-N	NO3/NO2-N		
			mg/L	mg/L		mg/L	mg/L		
SS-3 (Bottom)	01/22/1999 0:00	1	0.0025	0.054	1	0.846	0.173	0.054	0
SS-3 (Bottom)	02/18/1999 0:00	2	0.035	0.067	2	1.02	0.121	0.067	0
SS-3 (Bottom)	03/16/1999 0:00	3	0.029	0.11	3	0.642	0.126	0.11	0
SS-3 (Bottom)	04/14/1999 0:00	4	0.0025	0.11	4	0.251	0.894	0.11	0
SS-3 (Bottom)	04/29/1999 0:00	4	0.0025	0.054	4	0.184	0.826	0.054	0
SS-3 (Bottom)	05/12/1999 0:00	5	0.005	0.060	5	1.46	0.082	0.06	0
SS-3 (Bottom)	05/27/1999 0:00	5	0.010	0.056	5	1.76	0.015	0.056	0
SS-3 (Bottom)	06/09/1999 0:00	6	0.0025	0.053	6	2.10	0.543	0.053	0
SS-3 (Bottom)	06/23/1999 0:00	6	0.0025	0.034	6	2.37	0.015	0	0
SS-3 (Bottom)	07/07/1999 0:00	7	0.0025	0.026	7	2.95	0.035	0	0
SS-3 (Bottom)	07/21/1999 0:00	7	0.0025	0.138	7	2.51	0.180	0.138	0
SS-3 (Bottom)	08/10/1999 0:00	8	0.041	0.11	8	3.44	0.015	0.11	0
SS-3 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	3.40	0.015	0	0
SS-3 (Bottom)	09/08/1999 0:00	9	0.005	0.0035	9	0.926	0.111	0	0
SS-3 (Bottom)	09/23/1999 0:00	9	0.029	0.039	9	0.907	0.015	0	0
SS-3 (Bottom)	10/20/1999 0:00	10	0.014	0.015	10	1.793	0.015	0	0
SS-3 (Bottom)	11/16/1999 0:00	11	0.011	0.024	11	1.201	0.065	0	0
SS-3 (Bottom)	12/15/1999 0:00	12	0.100	0.134	12	1.455	0.110	0.134	0
			0.017	0.061		1.62	0.186		
			0.100	0.138		3.44	0.894		
			<0.005	<0.005		0.184	<0.030		

New River

Water Quality Data Summary

1997

	Reporting Limit	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
			#######	#######	#######	#######	#######	#######	#######	#######	#######	#######	#######	#######			
Field Measured																	
pH		units	7.58	8.09	7.73	7.47	7.80	7.92	7.71	7.75	7.75	7.86	7.65	7.71			
Dissolved Oxygen		mg/L	8.1		6.12	6.14	5.26	3.44	7.90	4.36	8.07	11.04	7.48	4.51			
Temperature		deg C	13.7	13.5	17.7	24.0	23.2	29.9	30.7	32.0	28.0	16.6	18.0	15.0			
Conductivity		mS	4.85	4.12	3.99	3.65	3.75	3.88	4.41	4.70	3.96	4.34	4.53	4.64			
Inorganics																	
Total Hardness	3	mg/L	940	890	790	790	740	840	440	1000	850	920	910	990			
Calcium	1	mg/L	210	200	170	174	170	200	98	220	190	210	200	220			
Magnesium	1	mg/L	100	95	83	84	77	84	48	110	90	96	97	110			
Ammonia-Nitrogen	0.1	mg/L	3.0	9.6	4.1	4.4	3.3	3.2	3.6	3.1	2.9	2.9	3.6	3.4			
Nitrate-Nitrogen	0.2	mg/L	3.9	4.3	4.3	3.7	2.8	3.0	3.9	3.0	3.7	4.9	5.3	5.4			
pH	1	units	7.7	7.6	7.6	7.9	7.8	7.6	7.7	7.8	7.7	7.9	7.7	7.8			
Specific Cond	1	umho/cm	4460	3700	3700	3290	3500	3720	4270	4660	4040	4340	4750	4970			
Total Diss Solids	10	mg/L	2900	2590	2460	2500	2480	2490	2940	3330	2650	2770	3500	3220			
Total Susp Solids	5	mg/L	130	320	340	260	150	290	230	220	300	220	210	210	130	320	340
Volatile Susp Solids	5	mg/L	34	43	32	20	35	41	32	41	34	25	14	25			
Settlable Solids	0.1	mg/L	0.3	0.4	0.5	0.4	0.5	0.4	0.3	0.4	0.4	0.3	0.3	0.3			
Total Phosphorus	0.05	mg/L	1.5	1.2	1.2	1.2	1.1	0.99	1.0	1.1	1.1	1.1	1.4	1.5			
Turbidity	0.05	NTU	80	220	250	230	230	150	140	140	220	130	130	160	80	220	250
Metals																	
Arsenic	2	ug/L	3	ND	3	6	4	4	10	9	8	6	7	6			
Boron	100	ug/L	1000	910	820	800	770	890	530	1100	930	1100	1100	1200			
Cadmium	1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Total Chromium	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	19	4	7	3			
Copper	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	3	6	6	6			
Lead	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Mercury	1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Nickel	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	5	6	6	7			
Selenium	1.0	ug/L	ND	ND	3.80	3.74	3.24	3.42	4.17	4.10	3.94	2.93	4.43	4.11			
Silver	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Zinc	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	6	16	7	4			

										High	Low	Ave
										8.09	7.47	7.75
										11.04	3.44	6.58
										32	13.5	21.9
										4.85	3.65	4.24
										1000	440	842
										220	98	189
										110	48	90
										9.6	2.9	3.9
										5.4	2.8	4.0
										7.9	7.6	7.7
										4970	3290	4117
										3500	2460	2819
260	150	290	230	220	300	220	210	210	240	340	130	240
										43	14	31
										0.5	0.3	0.4
										1.5	0.99	1.2
230	230	150	140	140	220	130	130	160	173.33	250	80	173
										10	3	6
										1200	530	929
										ND	ND	ND
										19	3	8
										6	3	5
										ND	ND	ND
										ND	ND	ND
										7	5	6
										4.43	2.93	3.79
										ND	ND	ND
										16	4	8

SS-1 (Surface)	05/12/1999 0:00	5	0.010	0.066	5	2.50	0.162
SS-1 (Surface)	05/27/1999 0:00	5	0.014	0.091	5	1.51	0.339
SS-1 (Surface)	06/09/1999 0:00	6	0.005	0.054	6	1.63	0.105
SS-1 (Surface)	06/23/1999 0:00	6	0.014	0.033	6	2.98	0.348
SS-1 (Surface)	07/07/1999 0:00	7	0.0025	0.050	7	2.27	0.075
SS-1 (Surface)	07/21/1999 0:00	7	0.0025	0.152	7	0.115	0.035
SS-1 (Surface)	08/10/1999 0:00	8	0.046	0.110	8	1.39	0.015
SS-1 (Surface)	08/24/1999 0:00	8	0.007	0.005	8	1.07	0.250
SS-1 (Surface)	09/08/1999 0:00	9	0.0025	0.012	9	0.740	0.272
SS-1 (Surface)	09/23/1999 0:00	9	0.045	0.060	9	1.03	0.015
SS-1 (Surface)	10/20/1999 0:00	10	0.048	0.044	10	1.62	0.040
SS-1 (Surface)	11/16/1999 0:00	11	0.025	0.050	11	1.04	0.100
SS-1 (Surface)	12/15/1999 0:00	12	0.084	0.143	12	2.95	0.110
			0.020	0.080		1.28	0.153
			0.084	0.190		2.98	0.348
			<0.005	0.005		0.019	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-1 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.013	4	0.118	0.149
SS-1 (Bottom Epi)	05/12/1999 0:00	5	0.006	0.061	5	1.75	0.110
SS-1 (Bottom Epi)	05/27/1999 0:00	5	0.011	0.050	5	1.41	0.076
SS-1 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.042	6	2.22	0.100
SS-1 (Bottom Epi)	06/23/1999 0:00	6	0.015	0.027	6	1.81	0.053
SS-1 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.009	7	1.98	0.055
SS-1 (Bottom Epi)	07/21/1999 0:00	7	0.0025	0.109	7	0.264	0.049
SS-1 (Bottom Epi)	08/10/1999 0:00	8	0.010	0.100	8	1.41	0.036
SS-1 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.748	0.015
SS-1 (Bottom Epi)	09/08/1999 0:00	9	0.0025	0.0035	9	0.809	0.015
SS-1 (Bottom Epi)	09/23/1999 0:00	9	0.037	0.036	9	0.973	0.015
			0.009	0.041		1.23	0.061
			0.037	0.109		2.22	0.149
			<0.005	<0.005		0.118	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-1 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.010	4	0.295	0.217
SS-1 (Top Hypo)	05/12/1999 0:00	5	0.0025	0.069	5	1.57	0.053
SS-1 (Top Hypo)	05/27/1999 0:00	5	0.011	0.069	5	1.81	0.041
SS-1 (Top Hypo)	06/09/1999 0:00	6	0.0025	0.034	6	1.90	0.041
SS-1 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.030	6	2.63	0.015
SS-1 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.019	7	2.63	0.051
SS-1 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.124	7	1.48	0.015
SS-1 (Top Hypo)	08/10/1999 0:00	8	0.0025	0.098	8	1.48	0.015
SS-1 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	2.13	0.015
SS-1 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.0035	9	0.750	0.015
SS-1 (Top Hypo)	09/23/1999 0:00	9	0.035	0.037	9	0.975	0.015
			0.006	0.045		1.60	0.045
			0.035	0.124		2.63	0.217
			<0.005	<0.005		0.295	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-1 (Bottom)	01/22/1999 0:00	1	0.0025	0.060	1	1.05	0.108
SS-1 (Bottom)	02/18/1999 0:00	2	0.032	0.063	2	1.04	0.140
SS-1 (Bottom)	03/16/1999 0:00	3	0.020	0.110	3	0.606	0.099
SS-1 (Bottom)	04/14/1999 0:00	4	0.0025	0.100	4	0.218	0.131
SS-1 (Bottom)	04/29/1999 0:00	4	0.0025	0.011	4	0.504	0.039
SS-1 (Bottom)	05/12/1999 0:00	5	0.005	0.097	5	1.68	0.015
SS-1 (Bottom)	05/27/1999 0:00	5	0.013	0.070	5	1.98	0.015
SS-1 (Bottom)	06/09/1999 0:00	6	0.0025	0.034	6	1.96	0.044
SS-1 (Bottom)	06/23/1999 0:00	6	0.005	0.033	6	3.08	0.154
SS-1 (Bottom)	07/07/1999 0:00	7	0.005	0.027	7	3.25	0.050
SS-1 (Bottom)	07/21/1999 0:00	7	0.0025	0.131	7	2.37	0.015
SS-1 (Bottom)	08/10/1999 0:00	8	0.0025	0.110	8	1.37	0.031
SS-1 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	3.09	0.015
SS-1 (Bottom)	09/08/1999 0:00	9	0.0025	0.006	9	0.901	0.108
SS-1 (Bottom)	09/23/1999 0:00	9	0.031	0.034	9	1.08	0.015
SS-1 (Bottom)	10/20/1999 0:00	10	0.011	0.013	10	1.82	0.030
SS-1 (Bottom)	11/16/1999 0:00	11	0.017	0.049	11	1.25	0.050
SS-1 (Bottom)	12/15/1999 0:00	12	0.076	0.115	12	2.45	0.120
			0.013	0.059		1.65	0.066
			0.076	0.131		3.25	0.154
			<0.005	<0.005		0.218	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-2 (Surface)	01/22/1999 0:00	1	0.0025	0.095	1	0.729	0.262
SS-2 (Surface)	02/18/1999 0:00	2	0.034	0.113	2	0.400	0.228
SS-2 (Surface)	03/16/1999 0:00	3	0.022	0.130	3	0.664	0.162

SS-2 (Surface)	04/14/1999 0:00	4	0.0025	0.150	4	<0.010	0.212
SS-2 (Surface)	04/29/1999 0:00	4	0.0025	0.006	4	0.063	0.156
SS-2 (Surface)	05/12/1999 0:00	5	0.0025	0.058	5	1.24	0.126
SS-2 (Surface)	05/27/1999 0:00	5	0.005	0.070	5	0.915	0.303
SS-2 (Surface)	06/09/1999 0:00	6	0.0025	0.050	6	1.35	0.116
SS-2 (Surface)	06/23/1999 0:00	6	0.0025	0.094	6	1.12	0.074
SS-2 (Surface)	07/07/1999 0:00	7	0.0025	0.013	7	1.13	0.072
SS-2 (Surface)	07/21/1999 0:00	7	0.0025	0.115	7	0.218	0.048
SS-2 (Surface)	08/10/1999 0:00	8	0.036	0.120	8	1.16	0.145
SS-2 (Surface)	08/24/1999 0:00	8	0.0025	0.0025	8	0.614	0.015
SS-2 (Surface)	09/08/1999 0:00	9	0.0025	0.0035	9	0.398	0.154
SS-2 (Surface)	09/23/1999 0:00	9	0.033	0.033	9	0.825	0.030
SS-2 (Surface)	10/20/1999 0:00	10	0.016	0.019	10	1.77	0.040
SS-2 (Surface)	11/16/1999 0:00	11	0.012	0.036	11	1.07	0.160
SS-2 (Surface)	12/15/1999 0:00	12	0.100	0.131	12	1.83	0.380
			0.016	0.069		0.912	0.149
			0.100	0.150		1.83	0.380
			<0.005	<0.005		<0.010	<0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
SS-2 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.006	4	0.080	0.228
SS-2 (Bottom Epi)	05/12/1999 0:00	5	0.0025	0.059	5	1.43	0.123
SS-2 (Bottom Epi)	05/27/1999 0:00	5	0.009	0.058	5	1.51	0.086
SS-2 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.038	6	1.80	0.083
SS-2 (Bottom Epi)	06/23/1999 0:00	6	0.0025	0.024	6	1.13	0.355
SS-2 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.020	7	1.15	0.207
SS-2 (Bottom Epi)	07/21/1999 0:00	7	0.0025	0.117	7	0.263	0.015
SS-2 (Bottom Epi)	08/10/1999 0:00	8	0.022	0.100	8	1.14	0.043
SS-2 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.121	0.142
SS-2 (Bottom Epi)	09/08/1999 0:00	9	0.0025	0.0035	9	0.701	0.015
SS-2 (Bottom Epi)	09/23/1999 0:00	9	0.033	0.033	9	1.02	0.015
			0.008	0.042		0.940	0.119
			0.033	0.117		1.80	0.355
			<0.005	<0.005		0.080	<0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
SS-2 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.008	4	0.129	0.200
SS-2 (Top Hypo)	05/12/1999 0:00	5	0.0025	0.054	5	1.40	0.119
SS-2 (Top Hypo)	05/27/1999 0:00	5	0.010	0.058	5	1.64	0.117
SS-2 (Top Hypo)	06/09/1999 0:00	6	0.005	0.030	6	1.70	0.159
SS-2 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.035	6	1.96	0.329
SS-2 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.032	7	2.83	0.102
SS-2 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.109	7	0.295	0.049
SS-2 (Top Hypo)	08/10/1999 0:00	8	0.025	0.098	8	1.17	0.547
SS-2 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	1.02	0.015
SS-2 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.0035	9	0.809	0.015
SS-2 (Top Hypo)	09/23/1999 0:00	9	0.034	0.035	9	1.07	0.015
			0.008	0.042		1.27	0.152
			0.034	0.109		2.83	0.547
			<0.005	<0.005		0.129	<0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
SS-2 (Bottom)	01/22/1999 0:00	1	0.0025	0.064	1	0.935	0.136
SS-2 (Bottom)	02/18/1999 0:00	2	0.035	0.068	2	1.02	0.101
SS-2 (Bottom)	03/16/1999 0:00	3	0.026	0.105	3	0.541	0.149
SS-2 (Bottom)	04/14/1999 0:00	4	0.0025	0.110	4	0.317	0.158
SS-2 (Bottom)	04/29/1999 0:00	4	0.0025	0.014	4	0.328	0.170
SS-2 (Bottom)	05/12/1999 0:00	5	0.007	0.055	5	1.49	0.215
SS-2 (Bottom)	05/27/1999 0:00	5	0.015	0.079	5	1.85	0.015
SS-2 (Bottom)	06/09/1999 0:00	6	0.008	0.034	6	1.84	0.121
SS-2 (Bottom)	06/23/1999 0:00	6	0.0025	0.023	6	2.33	0.088
SS-2 (Bottom)	07/07/1999 0:00	7	0.0025	0.035	7	2.94	0.015
SS-2 (Bottom)	07/21/1999 0:00	7	0.014	0.129	7	1.92	0.015
SS-2 (Bottom)	08/10/1999 0:00	8	0.030	0.098	8	1.04	0.015
SS-2 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	1.10	0.605
SS-2 (Bottom)	09/08/1999 0:00	9	0.009	0.0035	9	1.03	0.065
SS-2 (Bottom)	09/23/1999 0:00	9	0.038	0.029	9	1.28	0.015
SS-2 (Bottom)	10/20/1999 0:00	10	0.012	0.012	10	1.82	0.015
SS-2 (Bottom)	11/16/1999 0:00	11	0.055	0.028	11	1.67	0.040
SS-2 (Bottom)	12/15/1999 0:00	12	0.087	0.119	12	1.63	0.280
			0.019	0.056		1.39	0.123
			0.087	0.129		2.94	0.605
			<0.005	<0.005		0.317	<0.030

			Ortho-P mg/L	Total P mg/L		NH3-N mg/L	NO3/NO2-N mg/L
SS-3 (Surface)	01/22/1999 0:00	1	0.0025	0.071	1	0.860	0.171

SS-3 (Surface)	02/18/1999 0:00	2	0.034	0.115	2	0.380	0.192
SS-3 (Surface)	03/16/1999 0:00	3	0.028	0.110	3	0.691	0.128
SS-3 (Surface)	04/14/1999 0:00	4	0.0025	0.130	4	0.096	0.136
SS-3 (Surface)	04/29/1999 0:00	4	0.0025	0.025	4	0.151	0.152
SS-3 (Surface)	05/12/1999 0:00	5	0.0025	0.054	5	1.26	0.129
SS-3 (Surface)	05/27/1999 0:00	5	0.011	0.058	5	1.01	0.210
SS-3 (Surface)	06/09/1999 0:00	6	0.007	0.047	6	1.79	0.126
SS-3 (Surface)	06/23/1999 0:00	6	0.008	0.027	6	0.941	0.557
SS-3 (Surface)	07/07/1999 0:00	7	0.0025	0.022	7	1.05	0.062
SS-3 (Surface)	07/21/1999 0:00	7	0.0025	0.109	7	0.310	0.030
SS-3 (Surface)	08/10/1999 0:00	8	0.098	0.095	8	1.52	0.044
SS-3 (Surface)	08/24/1999 0:00	8	0.0025	0.0025	8	1.57	0.015
SS-3 (Surface)	09/08/1999 0:00	9	0.008	0.006	9	0.462	0.015
SS-3 (Surface)	09/23/1999 0:00	9	0.029	0.032	9	0.844	0.015
SS-3 (Surface)	10/20/1999 0:00	10	0.016	0.017	10	1.71	0.015
SS-3 (Surface)	11/16/1999 0:00	11	0.017	0.023	11	1.21	0.030
SS-3 (Surface)	12/15/1999 0:00	12	0.087	0.222	12	1.32	0.210
			0.020	0.065		0.95	0.124
			0.098	0.222		1.79	0.557
			<0.005	<0.005		0.096	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-3 (Bottom Epi)	04/29/1999 0:00	4	0.0025	0.035	4	0.129	0.151
SS-3 (Bottom Epi)	05/12/1999 0:00	5	0.0025	0.071	5	1.26	0.165
SS-3 (Bottom Epi)	05/27/1999 0:00	5	0.008	0.058	5	1.51	0.130
SS-3 (Bottom Epi)	06/09/1999 0:00	6	0.0025	0.036	6	1.72	0.273
SS-3 (Bottom Epi)	06/23/1999 0:00	6	0.0025	0.020	6	1.03	0.258
SS-3 (Bottom Epi)	07/07/1999 0:00	7	0.0025	0.019	7	1.15	0.047
SS-3 (Bottom Epi)	07/21/1999 0:00	7	0.022	0.114	7	0.287	0.015
SS-3 (Bottom Epi)	08/10/1999 0:00	8	0.075	0.11	8	1.38	0.015
SS-3 (Bottom Epi)	08/24/1999 0:00	8	0.0025	0.0025	8	0.286	0.015
SS-3 (Bottom Epi)	09/08/1999 0:00	9	0.005	0.006	9	0.496	0.015
SS-3 (Bottom Epi)	09/23/1999 0:00	9	0.028	0.037	9	0.882	0.015
			0.014	0.046		0.92	0.100
			0.075	0.114		1.72	0.273
			<0.005	<0.005		0.129	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-3 (Top Hypo)	04/29/1999 0:00	4	0.0025	0.050	4	0.173	0.168
SS-3 (Top Hypo)	05/12/1999 0:00	5	0.012	0.063	5	1.38	0.174
SS-3 (Top Hypo)	05/27/1999 0:00	5	0.009	0.055	5	1.83	0.105
SS-3 (Top Hypo)	06/09/1999 0:00	6	0.0025	0.038	6	1.81	0.079
SS-3 (Top Hypo)	06/23/1999 0:00	6	0.0025	0.028	6	2.10	0.015
SS-3 (Top Hypo)	07/07/1999 0:00	7	0.0025	0.022	7	2.70	0.015
SS-3 (Top Hypo)	07/21/1999 0:00	7	0.0025	0.131	7	1.94	0.131
SS-3 (Top Hypo)	08/10/1999 0:00	8	0.093	0.100	8	1.31	0.015
SS-3 (Top Hypo)	08/24/1999 0:00	8	0.0025	0.0025	8	1.04	0.015
SS-3 (Top Hypo)	09/08/1999 0:00	9	0.0025	0.006	9	0.745	0.085
SS-3 (Top Hypo)	09/23/1999 0:00	9	0.028	0.029	9	0.902	0.015
			0.015	0.048		1.45	0.074
			0.093	0.131		2.70	0.174
			<0.005	<0.005		0.173	<0.030
			Ortho-P	Total P		NH3-N	NO3/NO2-N
			mg/L	mg/L		mg/L	mg/L
SS-3 (Bottom)	01/22/1999 0:00	1	0.0025	0.054	1	0.846	0.173
SS-3 (Bottom)	02/18/1999 0:00	2	0.035	0.067	2	1.02	0.121
SS-3 (Bottom)	03/16/1999 0:00	3	0.029	0.11	3	0.642	0.126
SS-3 (Bottom)	04/14/1999 0:00	4	0.0025	0.11	4	0.251	0.894
SS-3 (Bottom)	04/29/1999 0:00	4	0.0025	0.054	4	0.184	0.826
SS-3 (Bottom)	05/12/1999 0:00	5	0.005	0.060	5	1.46	0.082
SS-3 (Bottom)	05/27/1999 0:00	5	0.010	0.056	5	1.76	0.015
SS-3 (Bottom)	06/09/1999 0:00	6	0.0025	0.053	6	2.10	0.543
SS-3 (Bottom)	06/23/1999 0:00	6	0.0025	0.034	6	2.37	0.015
SS-3 (Bottom)	07/07/1999 0:00	7	0.0025	0.026	7	2.95	0.035
SS-3 (Bottom)	07/21/1999 0:00	7	0.0025	0.138	7	2.51	0.180
SS-3 (Bottom)	08/10/1999 0:00	8	0.041	0.11	8	3.44	0.015
SS-3 (Bottom)	08/24/1999 0:00	8	0.0025	0.0025	8	3.40	0.015
SS-3 (Bottom)	09/08/1999 0:00	9	0.005	0.0035	9	0.926	0.111
SS-3 (Bottom)	09/23/1999 0:00	9	0.029	0.039	9	0.907	0.015
SS-3 (Bottom)	10/20/1999 0:00	10	0.014	0.015	10	1.793	0.015
SS-3 (Bottom)	11/16/1999 0:00	11	0.011	0.024	11	1.201	0.065
SS-3 (Bottom)	12/15/1999 0:00	12	0.100	0.134	12	1.455	0.110
			0.017	0.061		1.62	0.186
			0.100	0.138		3.44	0.894
			<0.005	<0.005		0.184	<0.030

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

STAFF REPORT ON THE PROPOSED UPDATE OF CLEAN WATER ACT 303(d) LIST OF IMPAIRED WATER BODIES WITHIN THE COLORADO RIVER BASIN REGION

INTRODUCTION

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board) is charged by the Porter-Cologne Water Quality Control Act with the protection of water quality for waters within the Region. The Regional Board is also responsible for implementing provisions and pollution control requirements that the Federal Clean Water Act (CWA) specifies for surface waters of the United States. CWA Section 303(d) requires the State to identify those surface water bodies that do not meet water quality standards after implementation of technology-based and best management practices (BMPs). The Regional Board's Water Quality Control Plan for the Colorado River Basin (Basin Plan) identifies all waters in the Region and establishes water quality standards for those waters. Water quality standards consist of limits or levels of water quality constituents or characteristics that are established for the reasonable protection of the beneficial uses of a water body.

Following the identification of impaired water bodies, the State is also required to establish a priority list of these water bodies, identify the pollutants that cause the impairments, and in partnership with the United States Environmental Protection Agency (USEPA), develop pollutant-loading limits commonly called Total Maximum Daily Loads (TMDLs). Surface water bodies within the Colorado River Basin Region that are impaired (i.e. do not fully achieve their designated beneficial uses and/or are in noncompliance with water quality objectives) have been placed on the Regional Board's Clean Water Act Section 303(d) List (hereafter "303(d) List"). The Regional Board's 303(d) List is reviewed and updated as necessary (typically every 3 years) and is subject to the approval of the State Water Resources Control Board (State Board) and the USEPA.

The Regional Board's 303(d) List was last updated in 1998, approved by the State Board the same year, and approved by the USEPA in 1998. Attachment One shows the 1998 CWA 303(d) List for the Region. The impaired surface waters for the Region are:

1- New River
2- Alamo River
3- Imperial Valley Drains
4- Salton Sea
5- Palo Verde Outfall Drains
6- Coachella Valley Stormwater Channel.

Regional Board staff is proposing that the Regional Board update its 1998 303(d) List based on data and comments received from stakeholders and based on data collected by the staff. Staff is also recommending that the Regional Board submit the updated 303(d) List to the State Board for approval. The State Board will be reviewing updated 303(d) Lists from all the Regional Boards, hold a public hearing and consider public comments, finalize the 303(d) List, and transmit the List to the USEPA for final approval. In developing the 303(d) List, Regional Board staff considered federal regulations under the Clean Water Act (see, e.g., 40 C.F.R. Parts 25 and 130). Staff then solicited public input and provided public notice regarding the 303(d) Listing and TMDL processes. Staff considered various factors, including non-attainment of water quality standards, public health advisories, previous 303(d) Lists, and bioaccumulation of pollutants in fish tissue at concentrations that exceed applicable fish tissue criteria or guidelines.

PUBLIC INPUT

In a letter dated February 28, 2001, the Regional Board staff solicited information from the public for updating its 303(d) List (see Attachment Two). The following agencies and persons submitted data in response to the letter:

Agency	Information Submitted
U.S. Bureau of Reclamation (USBOR)	Fax and E-mails with water quality data on the Colorado River above Imperial Dam and on the Brawley Wetlands Projects.
US Geological Survey	A Hard copy from the USGS "Water Resources Data, Arizona, Water Year 1999" regarding water quality data on the Colorado River and tributaries to the Colorado River.
California Department of Pesticide Regulation	Letter referring the Regional Board staff to the Department's Internet Databases that include water quality data on the region's surface waters.
US Department of Agriculture, Forest Service	Letter reporting that Department is updating its water quality records
Big Bear Regional Wastewater Agency	Letter reporting water quality data on Big Bear Lake.
Metropolitan Water District of Southern California	Letter reporting water quality data on Lake Havasu.
George Bernath at EarthLink	E-mail reporting water quality data on the Piute Spring.

Copies of all data and information received from the public will be sent to the State Water Resources Control Board in support of the Regional Board's List.

REVIEW OF DATA AND COMMENTS

Regional Board staff has reviewed the data and comments submitted by stakeholders and reviewed existing and readily available water quality-related data. Based on that review, staff is proposing that the Regional Board update its 303(d) List so that the updated List:

1. Identifies specific volatile organic compounds (VOCs) as impairing the New River. The VOCs are attributable to discharges of wastes from Mexico;
2. Removes the pollutant "nutrients" as impairing the New River because there is no documentation that the impairment manifests itself in the river, even though nutrients in the river end up in and are impairing the Salton Sea;
3. Adds trash from Mexico as a pollutant impairing the New River;
4. Adds dissolved organic matter as another pollutant impairing the New River. The effect of this pollutant is manifested as chronic low dissolved oxygen in the river;
5. Changes "bacteria" to "pathogens" as a pollutant impairing the Palo Verde Outfall Drain, the New River, and the Coachella Valley Stormwater Channel; and
6. Modifies the time schedule for TMDL development.

Attachment Three shows the proposed updated 303(d) List for the Region. The proposed changes are also based on data previously submitted to Regional Board by State Board, the Imperial Irrigation District, and the Salton Sea Authority. The following section describes the rationale for the changes.

PROPOSED CHANGES TO THE 303(d) LIST

The proposed 2001 303(d) List described in Attachment Three contains the same six water bodies previously listed with some changes. The changes and rationale for the changes follow:

1- Remove the pollutant "nutrients" from the New River. Nutrients were added to the New River in 1998 because the river carries nitrogen and relatively high elevated concentrations of phosphates from Mexico and the Imperial Valley. However, the Regional Board has no data showing that these nutrients are in fact violating water quality standards in the New River, even though the New River is the largest contributor of phosphate in the Salton Sea. Nutrients discharged into the Salton Sea are causing eutrophic conditions, which in turn causes fish die-offs in the Sea.

2- Change the pollutant "bacteria" to "pathogens" for all water bodies listed for bacteria in the previous list. Regional Board staff proposes the change to recognize that only pathogenic microorganisms are of concern here. Pathogens violate the following WQS for these surface waters: Water Contact Recreation (REC I) and Non-contact Water Recreation (REC II). Pathogens in the New River at the International Boundary also violate the qualitative and quantitative water quality standards of the New River as provided in Minute No. 264 of the Mexican-American Water Treaty.

3- List specific volatile organic compounds (VOCs) for the New River based on monitoring data collected by the Regional Board from 1995 to date for the New River at the International Boundary with Mexico. The identified VOCs (e.g., solvents and petroleum hydrocarbon compounds) are associated with untreated and improperly treated discharges of industrial wastes in Mexico, violate the Basin Plan quantitative and qualitative standards for the New River at the International Boundary, as provided for in Minute No. 264 of the Mexican-American Treaty. Minute No. 264 of this treaty prohibits the discharge of untreated industrial wastes in the New River. However, data collected by the USBOR near the New River- Salton Sea Delta didn't detect any major present of VOCs, which indicate that the VOCs impairment may not affect the whole 60-mile stretch of the New River in the USA. Additional data is necessary to characterize the impacted river segment.

4- Add dissolved organic matter as another condition impairing the New River. The effect of this pollutant is indicated by the lack of dissolved oxygen in the river. Dissolved oxygen is a stressor indicator parameter for organic load. Regional Board monthly reports on Binational Observation Tours of the New River Watershed in Mexicali document that anywhere from 5 to 20 million gallons per day of raw sewage are discharged into the New River in Mexicali. They also note discharges of untreated and partially treated industrial discharges. One of the water quality impacts of these discharges is manifested in chronic dissolved oxygen conditions in the New River in the USA. Conditions at the worst within 20 miles downstream of the International Boundary. Monthly data collected by Regional Board staff on the New River at the International Boundary between January 1996 through July 2001 showed that 100% of DO samples violated the Basin Plan's 5 mg/L minimum dissolved oxygen water quality objective for the New River. Untreated and improperly treated discharges of wastes from Mexico into the New River are responsible for the violations. The low DO impairs the Warm Freshwater Habitat (WARM) designated beneficial uses of the New River. It also results in unaesthetic conditions in the river that prevent attainment of the designated recreational uses of the river.

5- Add "trash" as a pollutant impairing the New River. During monthly 8-hour and quarterly 24-hour sampling events of the New River at the International Boundary, Regional Board staff has routinely observed trash floating in the New River. Also, Imperial County estimates that the County removes about 200 cubic yards of accumulated trash from the river a few miles north of the International Boundary every six months. The trash adversely impacts the following beneficial

uses of the New River: Warm Freshwater Habitat (WARM), Wildlife Habitat (WILD), Water Contact Recreation (REC I) and Non-Contact Water Recreation (REC II). Trash also violates Minute No. 264 of the Mexican-American Water Treaty that requires the water of the New River to be free from trash, oil, scum, or other floating materials resulting from human activity in amounts sufficient to be injurious, unsightly, or to cause adverse effects on human life, fish, and wildlife.

6- Modify the proposed time schedule for TMDL development as shown in Attachment Three. The proposed time schedule is predicated on Regional Board prioritization. Target dates for TMDL development in the list should be considered tentative. Completion of TMDLs will depend mainly on the availability of resources in terms of staff and funds. They will also depend upon further evaluation of the need for and feasibility of TMDLs.

ATTACHMENTS

1. The 1998 303(d) List for the Colorado River Basin Region.
2. February 28, 2001 Public Solicitation Letter.
3. Recommended Colorado River Basin Region 2001 303(d) List.
4. 1996-2001 water quality data for New River downstream of International Boundary.
5. 2000-2001 Monthly reports on Binational Observation Tour of New River in Mexicali.

Attachment Three
CRWQCB-CRBR 2001 303(d) List
Timeline for Development of Total Maximum Daily Loads (TMDLs)[1]

WATERBODY	HYDROLOGIC UNIT NO.	SIZE AFFECTED	PROBLEM DESCRIPTION	POLLUTANT/STRESSOR	PROBABLE SOURCE	TMDL PRIORITY	TARGET DATE(S)
New River	723.10	60 miles	Basin Plan Objectives violated, public health hazard	Pathogens	Mexico and Wastewater Treatment Plants in Imperial County	High	Started 1998, completed 2001
			Basin Plan Objectives violated, recreational impacts	Silt	Imperial Valley agricultural return flows	High	Started 1998, complete 2002
			Elevated fish tissue levels, fish kills	Pesticides[4]	Imperial Valley agricultural return flows and Mexico	High	Start 2005, complete 2011
			Basin Plan Objectives violated, fish kills	Dissolved Organic Matter/Dissolved Oxygen	Mexico	High	Start 2003, complete 2006
			Basin Plan Objectives violated, Public health hazard	Trash	Mexico	High	Start 2004, complete 2007
			Basin Plan Objectives violated[2]	Chloroform	Mexico	High	Start 2007, complete 2011
			Basin Plan Objectives violated[2]	Toluene	Mexico	High	Start 2007, complete 2011
			Basin Plan Objectives violated[2]	p-Cymene	Mexico	High	Start 2006, complete 2009
			Basin Plan Objectives violated[2]	1,2,4-trimethylbenzene	Mexico	High	Start 2006, complete 2009
			Basin Plan Objectives violated[2]	M,p,-Xylene	Mexico	High	Start 2005, complete 2008
			Basin Plan Objectives violated[2]	o-Xylenes	Mexico	High	Start 2005, complete 2008
			Basin Plan Objectives violated[2]	p-DCB	Mexico	High	Start 2006, complete 2010

1. (See footnotes on page 3)

Attachment 3 (cont.)

WATERBODY	HYDROLOGIC UNIT NO.	SIZE AFFECTED	PROBLEM DESCRIPTION	POLLUTANT/STRESSOR	PROBABLE SOURCE	TMDL PRIORITY	TARGET DATE(S)
Alamo River	723.10	52 miles	Basin Plan Objectives violated, recreational impacts	Silt	Imperial Valley agricultural return flows	High	Started 1998, completed 2001
			Elevated fish tissue levels, toxic bioassay results	Pesticides[4]	Imperial Valley agricultural return flows	High	Start 2005, complete 2011
			Elevated fish tissue levels	Selenium[3]	Imperial Valley agricultural return flows	High	Start 2005, complete 2010
Imperial Valley Drains	723.10	1,305 miles	Basin Plan Objectives violated, recreational impacts	Silt	Imperial Valley agricultural return flows	High	Start 2001, complete 2004
			Elevated fish tissue levels, toxic bioassay results	Pesticides[4]	Imperial Valley agricultural return flows	High	Start 2005, complete 2011
			Elevated fish tissue levels	Selenium[3]	Imperial Valley agricultural return flows	High	Start 2003, complete 2010
Salton Sea	728.00	220,000 acres	Basin Plan Objectives violated, recreational impacts	Nutrients	Agricultural return flows, NPDES Wastewater Treatment Plants, Mexico	High	Start 2001 complete 2004
			Basin Plan Objectives violated	Salts[5]	Agricultural return flows, NPDES Wastewater Treatment Plants, Mexico	High	
			Elevated fish tissue levels	Selenium[3]	Agricultural return flows	Medium	Start 2005, complete 2010

Attachment 3 (cont.)

WATERBODY	HYDROLOGIC UNIT NO.	SIZE AFFECTED	PROBLEM DESCRIPTION	POLLUTANT/STRESSOR	PROBABLE SOURCE	TMDL PRIORITY	TARGET DATE(S)
Palo Verde Outfall Drain	715.40	16 miles	Basin Plan Objectives violated, public health hazard	Pathogens	Unknown	Medium	Start 2001, complete 2003
Coachella Valley Storm water Channel	719.47	20 miles	Basin Plan Objectives violated, threat of toxic bioassay results	Pathogens	Unknown	Low	Start 2002, complete 2005

1. This is not a commitment to complete work. The commitments are made in fund source specific workplans.
2. Current Regional Board's monitoring data for the New River at the International Boundary shows that VOCs are routinely present in the New River immediately downstream from the International Boundary with Mexico, at concentrations that violate Basin Plan objectives. However, data collected by USBOR near the New River-Salton Sea Delta in 1999 and briefly presented at the January 13-14, 2000 Salton Sea Symposium found that VOCs in the New River not to be of major concern. Therefore, it is believed that the VOC impairment may not affect the 60-mile stretch of the New River in the USA. Additional data is necessary to characterize the impacted river segment.
3. Selenium originates from upper portion of the Colorado River and is delivered to the Imperial Valley via irrigation water; Selenium will likely be addressed via a federal TMDL for the entire Colorado River Watershed.
4. May be effectively addressed by Silt TMDL, thus not requiring new TMDL development.
5. TMDL development will not be effective in addressing this problem, which will require an engineered solution with federal, state, and local cooperation.

From: Lori Okun
To: Angel, Jose; Wylie, Doug
Date: 4/8/02 4:16PM
Subject: Re: SWRCB's Proposed 303(d) Listing (confidential/privileged)

At our staff meeting this morning, Ted Cobb (head of State Board OCC unit) said be sure to submit comments at and prior to the hearing if RB staff takes issue with any SB recommendations. The advice was "be prepared to justify the data," since SB staff decided to review and draw their own conclusions regarding all the data that all of the RBs submitted. There are some legal issues regarding de-listing based on faulty data for the initial listing (that's the legal terminology). See attached draft comments. Make sure and do a staff report at the May board meeting (before the SB 303(d) hearing) if staff comments will request listing other tributaries in addition to the New River. Even though in this round of 303(d) listing it wasn't required to get the Regional Board to approve the list, since they did, they should be advised of any suggested changes (either by State Board staff or RB staff). (You should probably do a staff report anyway and provide them with cc's of the comments.)

Lori T. Okun
Staff Counsel
(916) 341-5165

>>> Doug Wylie 04/03/02 03:04PM >>>
Yes, the SB recommends that the listing be maintained because no data is available on which to base the delisting. I discussed this briefly with Phil who could go either way on this listing. However, he believes that if the New River is listed as impaired, then the SB should also list other tributaries to the Salton Sea, such as the Alamo. Please advise me on how to proceed.

>>> Jose Angel 04/02/02 01:13PM >>>
Please review the subject proposal to ensure is consistent with the Board's recommended list. I think SWRCB still has the New River listed as impaired by nutrients.

Jose L. Angel, P.E.
Division Chief, Watershed Protection Division
Colorado River Basin Region Water Quality Control Board
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
Phone (760) 776-8932
Fax (760) 341-6820
E-mail: angej@rb7.swrcb.ca.gov

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at http://www.swrcb.ca.gov. Thank you for your attention to this important matter.

CC: Zeywar, Nadim

From: Lori Okun
To: Wylie, Doug
Date: 5/9/02 8:37AM
Subject: Fwd: Proposed 303(d) List for our Region

Here' Jose's e-mail.
Do you have the draft comment letter I e-mailed to Jose? Anyway I attached it, in case you don't

Lori T. Okun
Staff Counsel
(916) 341-5165
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From: Jose Angel
To: Okun, Lori
Date: 4/8/02 4:20PM
Subject: Fwd: Proposed 303(d) List for our Region

It's a small world. See attached e-mail I fired off to Stan.

Jose L. Angel, P.E.
Division Chief, Watershed Protection Division
Colorado River Basin Region Water Quality Control Board
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
Phone (760) 776-8932
Fax (760) 341-6820
E-mail: angej@rb7.swrcb.ca.gov

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at http://www.swrcb.ca.gov. Thank you for your attention to this important matter.

CC: Gruenberg, Phil