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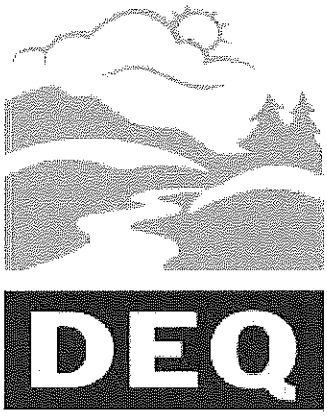
OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 02/16/1995



State of Oregon
Department of Environmental Quality

A G E N D A

ENVIRONMENTAL QUALITY COMMISSION MEETING

February 16, 1995
Portland Conference Center
300 N.E. Multnomah Street
Morrison Room
Portland, Oregon

Thursday, February 16, 1995: Regular Meeting beginning at 11:00 a.m.

Notes:

Because of the uncertain length of time needed for each agenda item, the Commission may deal with any item at any time in the meeting. If a specific time is indicated for an agenda item, an effort will be made to consider that item as close to that time as possible. Anyone wishing to listen to the discussion on any item should arrive at the beginning of the meeting to avoid missing the item of interest.

A. ‡**Rule Action Item (This item is scheduled to begin at 11:00 a.m.):** Proposed Modification of Total Dissolved Gas Criteria for the Mainstem Columbia River.

B. †**Rule Action Item (This item is scheduled to begin at 1:00 p.m.):** Proposed Amendment to OAR 340-41-470, the "Three Basin Rule," affecting the Clackamas River, North Santiam River, and McKenzie River (above Hayden Bridge) subbasins.

‡*Public Hearings have already been held on this Rule Action Item, testimony summaries and written comments have been submitted to the Commission, and the designated public comment period has closed. The Commission may choose to question interested parties present at the meeting.*

†*Public Hearings have already been held on this Rule Action Item, testimony summaries and written comments have been submitted to the Commission, and the designated public comment period has closed. However, the Commission has elected to hear comments from several panels made up of individuals representing various interests in the relevant basins. Other than the designated panelists, the Commission does not plan to take comment from meeting attendees. A list of panelists will be sent to all persons who have requested information on this rule prior to the February 16, 1995 meeting.*

The Commission has set aside March 3, 1995, for their next meeting. The location has not been established.

Copies of staff reports for individual agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone 229-5395, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

If special physical, language or other accommodations are needed for this meeting, please advise the Director's Office, (503)229-5395 (voice)/(503)229-6993 (TTY) as soon as possible but at least 48 hours in advance of the meeting.

January 27, 1995

Approved	✓
Approved with Corrections	

Minutes are not final until approved by the EQC

ENVIRONMENTAL QUALITY COMMISSION

Special Meeting
February 16, 1995

The Environmental Quality Commission special meeting was convened at 11 a.m. on Thursday, February 16, 1995, in the Morrison Room, Portland Conference Center, 300 N. E. Multnomah Street, Portland, Oregon. The following Commission members were present:

William Wessinger, Chair
Emery Castle, Vice Chair
Henry Lorenzen, Commissioner
Linda McMahan, Commissioner
Carol Whipple, Commissioner

Also present were Michael Huston, Assistant Attorney General, Oregon Department of Justice, Lydia Taylor, Interim Director, DEQ, and other DEQ staff.

Note: Staff reports presented at this meeting, which contain the Department's recommendations, are on file in the Office of the Director, DEQ, 811 S. W. Sixth Avenue, Portland, Oregon 97204. Written material submitted at this meeting is made a part of this record and is on file at the above address. These written materials are incorporated into the minutes of the meeting by reference.

Chair Wessinger called the meeting to order.

A. Rule Action Item: Proposed Modification of Total Dissolved Gas (TDG) Criteria for the Mainstem Columbia River.

Modification of the TDG criteria for the mainstem Columbia River provides language allowing the Director (Commission) authority to modify TDG criteria for the mainstem Columbia River for the purpose of aiding juvenile salmonid migration through increased spill at Columbia River hydro projects. Application of the discretion allowed in the rule is contingent upon four specific findings and a reasonable public review and comment period.

Mike Downs, administrator of the Department's Water Quality Division, indicated that the issue before the Commission was adoption of procedural rules that would allow the Department or Commission to consider increased spill. He said the issue today was not to debate the level of spill or TDG; those kinds of issues would be considered when an actual spill request would come forward. Mr. Downs added that the temporary rule had expired for the 1994 spill program so if the rules being considered were not adopted, the Commission would not be able to consider and debate the issue of spill.

Bob Baumgartner of the Water Quality Division provided a brief outline of the staff report and referred to Attachment D. He said there was a great deal of public comment about whether the proposed rule was needed, whether it did more harm than good and whether the TDG criteria should be permanently raised for the Columbia River. In regard to enacting the rule, whether that would be the director or Commission, he said the staff had no recommendation.

Commissioner McMahan asked about other migratory fish. She indicated that the rules did not seem to cover those fish. Mr. Baumgartner said that the wording "resident biological community" was intended to include other migratory fish but indicated the language may need to be expanded.

Commissioner Whipple asked about physical and biological monitoring. Mr. Baumgartner said the Department would use the physical monitoring data to bring about improvements; he said there was concern about using biological monitoring to manage the river. Commissioner Whipple asked how the results would be reported to the Department. Mr. Baumgartner said that issue was not implicit in the rule but that staff was envisioning that the Department would continue receiving on a daily basis information from the fisheries agencies via the Fish Passage Center. Commissioner Whipple suggested that the rule should include wording that the Department will receive monitoring results.

Roy Hemmingway, Governor Kitzhaber's policy advisor on salmon, spoke to the Commission. He said all the plans endorsed by the utility and environmental community involve some measure of spills, augmented flows, transportation of juvenile fish, drawdowns of dams, habitat improvements and harvest management.

Commissioner Lorenzen said there is a great debate between in-river migration versus barging. Mr. Baumgartner talked about cost-benefit analysis for in-river migration versus barging. He indicated the Department does not have the resources to provide that analysis and believed the issue was best handled by the agencies responsible and had authority to implement barging or spill. Commissioner Lorenzen asked how it would affect the Commission's deliberation if such language was struck from the rule. Mr. Huston indicated the Commission might want to consider that if that language was removed, the Commission would be subject to an argument that the Commission is then obligated to consider all options.

Commissioner Castle said he liked the philosophy underlying the presentation of the rule. He said the rule calls attention to beneficial use and properly presents standards as the means to an end. He said he thought the staff report was correct on the economics issue. In the matter of the discretionary authority, while he originally believed this matter was best handled by the Director, he said that debate can more readily occur by having the matter before the Commission.

After discussion about in-river migration wording in the rule, Commissioner Lorenzen moved adoption of Option No. 1 with the following modification:

> Striking the wording in (B)(i) ~~[*through in-river migration than would occur by increased spill*]~~; and, striking the words ~~[*in-river*]~~ from (B)(ii).

Commissioner Lorenzen further modified his motion to say in B(i) "[f]ailure to act would result in greater harm to salmonid stock survival ***through in-river migration than would occur by other alternatives.***"

That motion failed due to a lack of a second. Commissioner McMahan moved to adopt the proposed rule language of Attachment A, Option 1, with the modification of B(iv), "[b]iological monitoring is occurring to document that the migratory salmonid and ***other migratory fish*** are being protected; (B)i and ii would remain unchanged; Commissioner Castle seconded Commissioner McMahan's motion.

Mr. Huston said the rule does not expressly indicate that the Commission may attach conditions to its approval of a modification. He said that legal authority is clear that whenever an agency has the discretion to make a decision, it has the implied authority to condition that decision. Mr. Huston asked that this clarification be made for the record and have it confirmed by the Commission that it was their understanding that when the Commission makes a TDG modification, they may attach conditions to that modification.

Mr. Downs suggested adding a subsection to satisfy Commissioner Lorenzen's concern. He proposed the following wording: "...***The Commission may at its discretion consider alternative modes of migration.***" Commissioners McMahan and Castle had no objection to adding that wording. The amended motion was unanimously approved.

B. Rule Action Item: Proposed Amendment to OAR 340-41-470, the Three Basin Rule, Affecting the Clackamas River, North Santiam River and McKenzie River (above Hayden Bridge) Subbasins.

The Commission directed the Department to follow normal rule making procedures to consider revising OAR 340-41-470(1) on January 28, 1994. An advisory committee of 24 members representing diverse local and statewide interests was established. The group met nine times over a period of as many months, and several subcommittees formed, which met numerous times. Committee members agreed that recommendations would be made by consensus or by a 90 percent favorable vote. This level of agreement was never reached; no recommendation resulted from the group's discussions.

Based on evaluation of testimony and additional information received since the proposed rule was written, staff concluded the original rule sent out for public comment could result in more degradation than intended because of the high level of staff resources required to fully implement certain provisions. Staff, therefore, recommended adoption of a modified rule that would provide a high level of water quality protection but require relatively few staff resources. The staff-recommended rule allows somewhat less flexibility for growth and development than the rule sent out for comment but accommodates essential discharges needed for public safety and environmental cleanup and allows significantly more room for growth and development than the existing rule. Several other alternatives were also provided so that the Commission could determine that a different level or form of water quality protection is desired for these basins.

Chair Wessinger stated that this meeting was not a public hearing. He said the Commission had received a summary of the public testimony and had followed the proceedings of the advisory committee. He said the meeting would begin with hearing from Department staff and then the three panels representing industrial/business, local government and environmental interests. He explained that the rule making process began in December 1993 when the Commission received the petition for rule making from Kinross Copper Corporation. Chair Wessinger said the Commission would ask to hear briefly from the petitioner following the three panels.

Mike Downs, Tom Lucas and Lynne Kennedy from the Department's Water Quality Division provided the following information: Ms. Kennedy summarized the rule making process and five rule alternatives in the staff report; Mr. Lucas spoke about the Department recommended rule, spoke on the activities that would be allowed under the proposed rule and presented proposed staff amendments to the proposed rule; and, Mr. Downs discussed the water quality of the three basins.

Mr. Huston indicated the Department had asked the Attorney General's Office about comments they and the Commission received after the public comment deadline. He said the 1993 legislature chose specifically to address that issue in an amendment in the Administrative Procedures Act in ORS 183.335, which states:

> When an agency has established a deadline for comment on a proposed rule, the agency may not extend that deadline for another agency or person unless the extension applies equally to all interested agencies and persons. An agency shall not consider any submission made by another agency after the final deadline has passed.

He said the clear effect of that provision was to preclude the agency from considering any comments received after January 16, 1995 (comment period deadline). He recommended to the Commission that any comments received after the deadline not be considered a part of the rule making record and not be considered by the Commission in its deliberations. In regard to the panel discussion, he said he believed the legislature did not intend to prohibit a state commission from continuing to pose questions during their deliberations.

Commissioner McMahan said she needed to be reassured that the rule being considered because it was different than the rule proposed during public comment, was appropriate for consideration by the Commission. Mr. Huston indicated yes. He said the scope of Commission action is dictated by the notice given to the public and that the public was fairly alerted to the decision the Commission might make: the

public notice indicated the Commission would be considering revisions to the three basin rule. Mr. Huston said the only questionable alternative under this notice would be Alternative 5 which was complete repeal of the rule; the notice indicated the Commission would be revising the rule, not repealing the rule.

Panel discussions occurred as follows:

- **Industrial/Business Panel**

  Drake Butsch, Home Builders Association of Metropolitan Portland, said the reason this rule was being considered was due to a misunderstanding of the interpretation of the rule which was working well according to his industry. He said the rule needs to accommodate growth and economic needs where local communities have worked hard to establish land use planning. He said his industry needs the stormwater portions of the rule in order to permit the construction and stormwater from the sites. He said the rule should create a balance that allows managed planning and growth in these basins while protecting the waters.

  Terry Drever-Gee, Oregon Independent Miners (OIM), indicated that OIM supported the Department's draft rule with modifications. She indicated that OIM concurred with the proposed rule which included allowing suction dredge mining.

  Bob Freres, Jr., Freres Lumber Company, North Santiam Canyon, said he had great concern about the quality of the drinking water. He said he believes that industry can exist while the quality of the basins is maintained. He said that due to legislation and mill closures river quality has improved. He said the proposed rule severely affects the livelihood of those living in the three basin area and urged the Commission to adopt the draft rule discussed at the January public hearings.

  Brad Nanke, Siltec Corporation, told the Commission their position was to oppose any degradation to the existing water quality. He said Siltec supported Alternative 3, the alternative recommended by staff.

Valerie Root, Sabroso Company of Medford, told the Commission that Sabroso has an existing fruit processing plant in Sandy, Oregon, and had planned for growth of that facility and had wanted to build another plant. She asked the Commission to rule positively on the staff-recommended amendments as well as allow some degradation to the rivers. She said industry needs reasonable, clean industrial growth to support the agricultural community.

Jim Whitty, Associated Oregon Industry (AOI), said that the combined strategy of offsets, technology and performance offers the highest level of protection for the three basins while still allowing new human activity. He said that AOI believed that Alternative 4 (the rule sent out for public comment) should be adopted, that AOI does not support the gradual erosion of water quality in three basins or gradual erosion of an economic base for the upstream three-basin communities.

- **Local Government Panel**

Loren Collins, City of Salem, talked about the costs involved to improve their sewage treatment plant. He said the City did not support the public comment rule as originally prepared by the Department; however, they did support Alternative 3 of the staff report. He said the City has pledged to provide technical assistance to the canyon cities through the involvement of the Salem Economic Development Corporation (SEDCORP) and would seek appropriate businesses to locate in those communities. He said the staff of his public works department would be available to assist in identifying viable alternatives for the proper disposal of wastes as allowed under the revised rule.

Marvin Gloege, Linn County, said that North Santiam Canyon communities reluctantly urged the adoption of the draft rule that was subject to hearing in January. He said that they could not support the revised rule, Alternative 3. He said that the rule needed more flexibility. He said that sustainable communities need to be created where the needs of the community are recognized in shaping new regulations.

Helene Lichtman, Clackamas County Department of Utilities, said that Clackamas County considers its first priority the protection of the high quality of the water in the Clackamas River. She said that the county was in general agreement with the Department's amendments to OAR 340-41-470 but was concerned that Sections 12 and 13 of the comment rule which dealt with

nonpoint sources and basin monitoring had been deleted. She said that it was imperative that the river be closely monitored to preserve water quality. For this reason, she said, the county advocated that monitoring and enforcement activities envisioned in Section 12 and 13 of the comment rule be reinstated. She added that the county supported Section 6 of the recommended rule which details policy on stormwater.

Joni Low, League of Oregon Cities (LOC), talked about the responsibilities involved in balancing water needs, requirements and protection. She said that the League would have accepted Alternative 4 if Section 8 were deleted. She also commented on Alternative 3, proposing a new subsection to Section 5, to allow vehicle washing. She said that LOC supported Section 6. She said that the League considers it is important to strive toward equity in regulating point and non-point sources of pollution and, therefore, recommended that Section 12 be reinserted into the rule to clarify that non-point sources of pollution would also be regulated.

Laurie Power, Eugene Water and Electric Board (EWEB), said the Board supported the staff recommendation and requested adoption of Alternative 3. She talked about the community's reliance on the McKenzie River. She said that the EWEB was very interested in increased water quality monitoring on the McKenzie River.

Bill Strawn, City of Estacada, said the City is committed to keeping the water quality high and pristine. He urged the Commission to take into consideration economics, jobs and the community. He said that sections that had been dropped from the rule proposed at the January hearings were pertinent to the health and welfare of the community and that he would like those sections reinserted. He said that the Commission should look into revising the rule at a later date since technology and economic conditions can change in the basins.

- **Environmental Panel**

Nina Bell, Northwest Environmental Advocates, supported the staff's proposed rule because it represented a good balance between a high level of protection and flexibility for growth. She urged the Commission to direct the staff to evaluate the three basins for designation as outstanding resource waters. She also commented on the need to regulate stormwater better immediately and potential problems associated with land application of effluent.

Mike Sheets, Three Basin Alliance, said that the proposed rule had significant problems: stormwater is not adequately addressed and that the rule could shift contamination from surface to groundwater; it made no sense to allow discharges of any type before baseline data has been established. He said that the original rule which contained provisions for public safety and welfare should be adopted. He said there should not be a rush to implement the rule because the rule had not had full public scrutiny. He requested a public hearing on the staff recommendation.

Dr. Louisa Silva said that in regard to safeguarding drinking water, public health officers and physicians had not been involved in the creation of the proposed rule and requested representation in any future discussions or rewrites of the three basin rule or any future DEQ rules that have public health implications. She requested a public hearing on industrial waste disposal to groundwater and talked about the public health risks posed by industrial waste disposal into drinking water sources. She suggested a revision to the rule protecting groundwater.

Charles Tebbutt, Western Environmental Law Center, advocated retention of the original three basin rule with minor modifications. He said the Department had done a service by changing the original draft proposal but needed to go further. He said that zero discharge technologies are evolving; the only time that industry finds solutions is when they are told they cannot do something any longer. He suggested that stormwater discharges be regulated and that no additional mass loadings should be allowed at city sewage treatment plants. He said the economics of prevention are superior to the economics of allowing discharge.

Larry Tuttle, Center for Environmental Equity, said that any reduction of water quality protection considered at this meeting would be interpreted as a willingness to allow degradation in not only the three basins but in every basin in Oregon. He asked that the proposed rule be returned to staff and that staff prepare a rule which addresses existing stormwater permits, threats to human health, safety and emergencies and that they then proceed to develop comprehensive stormwater rules. He said the proposed rule cannot be fixed because much of the rule had been based on accommodating Kinross. He discussed the implications of incomplete, non-comprehensive stormwater rules. He urged the Commission not to adopt the rule amendment.

Tom Wolf, Trout Unlimited, talked about how unwise changes to the rule would have adverse affects on fish, people who fish and those who depend on the economics of fish. He recommended that Alternative 2 be adopted.

Art Ditto, Kinross, spoke to the Commission since Kinross was the originator of the rule making petition. He gave a brief overview of the company's activities to seek permits. He said the mine would not use chemicals such as cyanide or produce acid rock drainage. He urged the Commission to adopt a rule that was closer to the proposed rule considered during the public comment process but suggested that the proposed staff recommendation be modified to allow for new National Pollutant Discharge Elimination System (NPDES) permits for pending applications.

Barbara Burton of the Department's Western Regional Office, Salem, told the Commission about the general permit applicable for the Kinross operation. She said that the general permit contained effluent limitations, that a stormwater management plan must be developed, that any discharge of any toxic materials would be prohibited and that water quality standards could not be violated.

Mr. Downs discussed non-point source concerns (Section 12) expressed during the panel discussions. He said these concerns were taken care of since the Department of Forestry has adopted best management practices. In regard to agricultural activities, he said that Senate Bill (SB) 1010 (adopted last year) directed the Department of Agriculture to develop agricultural management plans in basins that are water quality limited (TMDL) and where the Department has developed a TMDL. In regard to Section 13, monitoring requirements and trends analysis, Ms. Kennedy indicated the Department was committed to adding one ambient monitoring site in each of those basins and agreed to collaborate with local drinking water suppliers, state and federal agencies and other local governments to merge sampling. Mr. Lucas discussed washwater facilities.

Commissioner Whipple asked Ms. Low about the discussion of the LOC in regard to the proposed rule. Ms. Low outlined the process, indicating that she worked closely with the cities and municipalities who were represented on the advisory committee. She said that she also provided monthly briefings to the League's wastewater committee and provided briefings to the League's board of directors. She noted that some cities in the Santiam Canyon were not satisfied with the League's representation. In regard to the position of the League, she said this was not an ideal position for the League in that some cities were supportive of the new alternative and some cities preferred the additional flexibility of Alternative 4.

Commissioner Lorenzen said the central issue was a conflict between what rural communities would like to do and what rural communities perceive that urban communities are able to do. Commissioner McMahan said that in response to suggestions that the Commission not act on the issue was not reasonable, that there were people who need the Commission to act in some manner. She said there probably was a need to examine on a continuing basis whatever action was decided upon. Commissioner Castle said he shared Commissioner Lorenzen's concerns and believed a great deal of hypocrisy was associated with the issue. He said it would be his preference to provide for trending and monitoring analysis and permit more flexibility. However, he said, the Department recommendation was reasonable. Commissioner Whipple said she did not believe that the three basins should be treated as if they were entirely similar. She said she believed very strongly about economic development and equity. She said she supported the staff recommendation.

Commissioner Castle moved to adopt Alternative No. 3 with the staff recommended amendments; Commissioner McMahan seconded the motion. The motion was unanimously approved.

There was no further business, and the meeting was adjourned at 4:30 p.m.

Environmental Quality Commission

☒ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item A

Title:

Modification of TDG criteria for the mainstem Columbia River

Summary:

Provides language allowing the Director (Commission) authority to modify TDG criteria for the mainstem Columbia River for the purpose of aiding juvenile salmonid migration through increased spill at Columbia River Hydroprojects. Application of the discretion allowed in the rule is contingent upon four (4) specific findings and a reasonable public review and comment period.

Department Recommendation:

Department recommends that the Commission adopt the proposed rule as modified.

Report Author	Division Administrator	Director

†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

SA\WC13\WC13173.5

State of Oregon
Department of Environmental Quality Memorandum†

Date: January 25, 1995

To: Environmental Quality Commission

From: Lydia Taylor, Interim Director

Subject: Agenda Item, A, EQC Meeting

Modification to Total Dissolved Gas Criteria for the Mainstem Columbia River

Background

On October 18, 1994, the Director authorized the Water Quality Division to proceed to a rulemaking hearing on proposed rules which would modify the total dissolved gas (TDG) criteria for the mainstem of the Columbia River. The proposed rule would allow the Director (Commission) the authority to modify TDG criteria in the mainstem Columbia River for the purpose of aiding in-river salmonid migration. The proposed rule contains four (4) explicit findings that must be met prior to modifying TDG criteria. The findings are that resident aquatic and salmonid resources are protected, that monitoring is occurring to assure compliance with standard, that biological monitoring is occurring, and that salmon impairment due to modification of the TDG criteria is less than would occur under other in-river migration options.

Pursuant to the authorization, hearing notice was published in the Secretary of State's Bulletin on December 12, 1994. The Hearing Notice and informational materials were mailed to the mailing list of those persons who have asked to be notified of rulemaking actions, and to a mailing list of persons known by the Department to be potentially affected by or interested in the proposed rulemaking action on December 12, 1994.

A Public Hearing was held January 12, 1995 Room 3A of the DEQ offices, 811 SW 6th Ave. Portland, Or. 97204, at 10:00 a.m. with Robert Baumgartner serving as Presiding Officer. The Presiding Officer's Report (Attachment C) summarizes the oral testimony presented at the hearing.

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†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

Written comment was received through January 13, 1995, 5:00 p.m.. A list of written comments received is included as Attachment D. (A copy of the comments is available upon request.)

Department staff have evaluated the comments received (Attachment D). Based upon that evaluation, modifications to the initial rulemaking proposal are being recommended by the Department. These modifications are summarized below and detailed in Attachment E.

The following sections summarize the issue that this proposed rulemaking action is intended to address, identify the authority to address the issue, describe the process for development of the rulemaking proposal including alternatives considered, and provides summaries of the rulemaking proposal presented for public hearing, the significant public comments and the changes proposed in response to those comments, of how the rule will work and how it is proposed to be implemented, and finally a recommendation for Commission action.

Issue this Proposed Rulemaking Action is Intended to Address

The proposed rule provides language allowing modification of the TDG criteria for the mainstem of the Columbia River. By allowing increased TDG the Commission provides opportunity for increased spill at Columbia River hydroprojects for the purpose of aiding in-river migration of juvenile salmonids. Increased spill is one of several options being implemented or considered by fisheries managers for improving the survival of the endangered Columbia River salmon. Survival of in-river juvenile salmon migrating past dams is greater if passage occurs via spill as opposed to turbine passage. The increased spill results in greater levels of TDG. Elevated levels of TDG are known to adversely affect or even kill fish.

Relationship to Federal and Adjacent State Rules

The proposed rule is less stringent than federal guidelines, however it is consistent with federally accepted TDG criteria for Washington and Idaho. Greater detail on consistency with federal guidelines is included in attachment F of the Hearings Package "Question to be Answered to Reveal Potential Justification for Differing from Federal Requirements"

The proposed rule is more stringent than those in Washington and Idaho. Both Washington and Idaho have mechanism within their existing rule to modify or waive the TDG if needed to provide for increased spill. The proposed rule restricts TDG modification for the purpose of aiding salmonid migration and incorporates specific findings that define the Director's (Commission's) discretion. Similar constraints are not included in the standards for Idaho or Washington.

Authority to Address the Issue

Legal authority is contained in

ORS 468B.040
ORS 468B.048
ORS 468.020

Process for Development of the Rulemaking Proposal (including Advisory Committee and alternatives considered)

The proposed rule was developed by the Department and distributed for public comments. It was also discussed with the Policy Advisory Committee for the triennial standards review. However, the Policy Committee was not asked to act on the proposed rule since it was outside of their defined scope. The proposed rule was discussed by the Department at meetings with the State, Tribal, and Federal fisheries and water quality agencies. These meetings did not, however, provide a forum for evaluation, review, or comment on the proposed rule.

The Department elected to not waive the TDG criteria or to adopt permanent higher TDG criteria for the Columbia River to address the spill issue.

Summary of Rulemaking Proposal Presented for Public Hearing and Discussion of Significant Issues Involved.

The proposed rule would allow the Director (Commission) the authority to modify TDG criteria in the Columbia River for the purpose of increased spill to aid salmonid migration. The fish passage issues in the Columbia River are controversial and the proponents and opponents on various issues are often polarized.

There is substantive debate on whether or not the Department should modify the existing rule, as well as whether it should consider the potential benefits of transportation as opposed to in-river passage, and whether or not the Department should evaluate economic impacts of the spill program that could be implemented as a result of a change in the criteria.

The debate can be summarized as:

Juvenile fish can pass a dam through several methods, transport via barge or truck, through spill, or through the turbines.

The benefits of out of river transportation of juvenile salmon are debated. Survival of juveniles to the estuary is improved by transportation. The benefits of transportation on returning adults, or the complete life history of the salmon are uncertain. The DEQ/EQC does not provide the appropriate forum for debate on passage issues. Fish passage issues should be debated by agencies responsible for implementing Columbia River salmonid recovery strategies.

For in-river migration past dams greater mortality occurs via turbine passage than occurs via spill passage.

Spill elevates TDG.

Elevated TDG can harm or kill fish. A great deal is known about the effects of Gas Bubble Trauma (GBT) from laboratory studies and to a much more limited extent from field bio-assays. Although several observations of massive kills due to TDG are cited, few extensive field studies exist. Our ability to interpret available information to predict overall mortality rates to salmon migrating in-river or resident biological communities is limited.

The existing standard of 110% saturation is based on the best available scientific information. No data is available that would support changing the criteria on purely biological basis. However, the recognized benefits to in-river migrants of spill passage as opposed to turbine passage at the Columbia River dams can not be achieved within the current TDG criteria.

The proposed rule would require that the controversial and debated benefits of spill on overall system survival must be weighed against the limited ability to assess the impact of elevated TDG on migrating salmon and resident biological communities.

The proposed rule contains four (4) specific findings that must be met within the judgement of the Director (Commission) in order to modify the criteria:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

Summary of Significant Public Comment and Changes Proposed in Response

Extensive comments were received during the public hearing. These comments are summarized and evaluated in greater detail in attachment D. The discussion in attachment D is summarized as five (5) major policy decisions below.

Major Issues

1) Rule needed, or would it do more harm than good

2) Public/Scientific input and Policy decisions at the Commission or Director's level

3) Economic Analysis within the rule

4) Remove the narrow "in-river" constraint from the rule language

5) Identify a maximum TDG cap within the rule

1) Rule needed, or more harm than good

The principle debate is whether the proposed rule is needed, or not. By maintaining the current rule the TDG criterion would act to impede potential spill programs. Several comments suggest that the proposed rule would, by allowing elevated levels of TDG, do more harm than good.

The Department recommends that the proposed rule, as modified, be adopted. It is reasonable to expect that the recovery plans for the endangered salmonids will incorporate some level of elevated spill. By adopting the proposed rule the Commission

allows the fisheries agencies to recommend and justify an alternative TDG criteria. The rule does not provide that any criteria will necessarily be adopted. The actual TDG criterion will need to be justified by the agencies requesting modification. The proposed TDG will be reviewed by DEQ with appropriate public review.

2) Public/Scientific input process, and, Policy decisions at the Commission or Director's level.

There were two debates inherent in the discussion of whether the Commission or the Director should maintain the authority to implement the proposed rule. One concern was the amount of public and scientific input that would occur as part of the decision making process, and the second was the level of policy decided by implementing the proposed rule.

Proponents of the EQC maintaining the authority to implement the rule argue that the EQC process would assure public and scientific input and review. The proponents further argue that the decision on TDG is a major policy decision that should be addressed by the EQC, and observed that there is no reason why a request can not be made with reasonable time for review by DEQ.

The proponents for the Director being granted the authority to implement the rule argue that this is consistent with the process in Washington and Idaho and that it will facilitate coordination with State, Tribal, and Federal Agencies making the request. The proponents further argue that the Director's authority does not necessarily limit the opportunity for public input.

The opportunity for public and scientific comment is an integral component to developing public policy. The department recommends, as suggested in the public hearing, that language be added to the rule requiring a reasonable public comment period, except that the Director may modify the TDG criteria for emergencies, for a period not exceeding 48 hours.

The Department makes no recommendation on whether the Commission or Director be delegated the authority and responsibility for modification of the TDG criterion in the proposed rule.

3) Economic considerations within the rule language

Two additional findings were proposed which would require a cost benefit analysis and cost effectiveness analysis of available salmonid transport alternatives. The intent was not for the Director (Commission) to weigh salmonid survival against economic impact. The proposed language is intended to suggest that economic impact be considered when evaluating the choice of available strategies for survival of the species.

(v) the economic costs of additional spill at federal hydropower dams, including the cost imposed on electrical ratepayers, resulting from increased spill is outweighed by the biological benefit achieved by allowing increased gas saturation,

(vi) increased spill at federal hydropower dams is a cost-effective means to assist salmon populations as compared to other means.

The Department recommends that the proposed language not be included in the rule. The additional language would require the Director (Commission) to judge the cost effectiveness and cost benefits of alternative fish transport options. The debate on the cost effectiveness or cost benefits of transportation alternatives is the responsibility of the agency(ies) responsible for developing and implementing transport programs for the Columbia River salmon. The DEQ does not provide the appropriate forum for that issue. The DEQ should focus on the water quality criteria needed to protect in stream uses rather than fish transport alternatives. The Department does not have the resources to conduct an analysis of the cost benefits or cost effectiveness of alternative transport strategies.

4) Removal of the "in-river" language constraints

Comments were received suggesting that the wording "in-river" be deleted from parts (i) and (ii) of the proposed rule. The comments suggested that the term "in-river" too narrowly constrained the Director (Commission). The Director (Commission) should be able to evaluate the identified benefits of transportation in the deliberations on a proposed TDG criterion.

The term "in-river" was used to focus the attention on protecting instream beneficial uses. The DEQ should not provide the forum for debate on transportation options. The issues evaluated by the Director (Commission) should focus on establishing and achieving the water quality criteria needed to protect instream uses. Therefore the Department recommends that the language "in-river" be retained.

5) Add a maximum TDG cap within the rule:

Several comments were received suggesting that the proposed rule be modified to include a maximum cap on the level of TDG allowable under the rule.

To be effective a TDG criterion will need to establish a maximum cap. The question is whether a cap should be identified within the proposed language that enables modification to TDG criteria or in any modification to criteria. The Department elected to focus on administrative requirements to either allow, or not allow, modification to the TDG criteria. Therefore, a maximum cap is not proposed within this proposed rule.

The level of the maximum cap should be evaluated using information received as part of any request for modification of the TDG criterion and the subsequent review and evaluation required under modification to the proposed rule. The maximum level of TDG should be identified as part of any modification allowed under the proposed rule.

Summary of How the Proposed Rule Will Work and How it Will be Implemented

The rule will be implemented using the following generalized process:

A proposal will be submitted to DEQ for rule modification. An acceptable proposal will include:

Definition of agency requesting modification
Proposed TDG criterion
Location and timing for application of proposed criterion
Statement of need for the proposed criteria
Rationale for the derivation of the proposed criteria
Documentation of findings (i) through (iv)
Supporting material
Description of physical monitoring of TDG
Description of biological monitoring
Information indicating Corps of Engineers will implement the spill program proposal if the TDG criteria is modified as requested.

The Department will then provide public notice of the proposed TDG criteria modification and identify the submitting agency where supporting documentation may be obtained.

The Department will review and evaluate information presented in the submittal and additional comments and information presented during the comment period.

The Department will provide a summary report and review to the Director (Commission) with recommendations.

The Director (Commission) will determine whether or not to modify the criteria, and document the new criteria.

Recommendation for Commission Action

It is recommended that the Commission adopt Option 1 or Option 2 of the rule amendments regarding TDG criteria in the mainstem Columbia River as presented in Attachment A of the Department Staff Report. Option 1 would have the decision on alternative TDG criteria made by the Commission. Option 2 would have the decision made by the Director.

Attachments

A. Rule (Amendments) Proposed for Adoption
B. Supporting Procedural Documentation:
    1. Legal Notice of Hearing
    2. Public Notice of Hearing (Chance to Comment)
    3. Rulemaking Statements (Statement of Need)
    4. Fiscal and Economic Impact Statement
    5. Land Use Evaluation Statement
    6. Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements
C. Presiding Officer's Report on Public Hearing
D Department's Evaluation of Public Comment
(D) List of Written Comments Received
E. Detailed Changes to Original Rulemaking Proposal made in Response to Public Comment
F. Rule Implementation Plan

Reference Documents (available upon request)

Written Comments Received (listed in Attachment D)
(Other Documents supporting rule development process or proposal)

Approved:

Section: _____

Division: _____

Report Prepared By: Robert P. Baumgartner

Phone: 229-5877

Date Prepared: January 25, 1995

RPB:crw
SA\WC13\WC13172.5
25 Jan 95

Proposed Rule Language
Option 1

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Proposed Rule Language
Option 2

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

*(A)*The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

(B) The Director may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Director must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Director will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Proposed Rule Modifications
Columbia River Total Dissolved Gas

Date Issued:	12-12-94
Public Hearings:	1-12-95
Comments Due:	1-13-95

WHO IS AFFECTED: Federal, Tribal, State, and local agencies involved in fisheries, energy, or water management for the Columbia River, industries, citizens, and environmental activist organizations concerned with water and energy management or with the recovery of salmonids stocks listed as endangered or threatened under the Endangered Species Act.

WHAT IS PROPOSED: The proposed rule provides language allowing modification of the total dissolved gas criteria for the mainstem of the Columbia River for the specific purpose of enhancing instream migration of salmonids. Two alternatives are presented, allowing either the Environmental Quality Commission, or the Director to apply the modification upon request.

WHAT ARE THE HIGHLIGHTS: The proposed rule modifications are procedural, no alternative criteria for total dissolved gas are proposed proposed at this time. The modifications are needed to prevent the total dissolved gas criteria from becoming an impediment to implementing spill programs designed to aid salmonid survival. Implementation of the proposed rule is dependent on specific required findings.

HOW TO COMMENT: Public Hearings to provide information and receive public comment are scheduled as follows:

January 12, 1995, Room 3A at the DEQ offices
811 SW 6th Ave.,
Portland OR, 97204

811 S.W. 6th Avenue
Portland, OR 97204

FOR FURTHER INFORMATION: Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

11/1/86

Written comments must be received by 5:00 p.m. on Friday, January 13 at the following address:

Department of Environmental Quality
Water Quality Division
811 S. W. 6th Avenue
Portland, Oregon, 97204

A copy of the Proposed Rule may be reviewed at the above address. A copy may be obtained from the Department by calling Robert Baumgartner, Water Quality Division, at 229-5284 or calling in Oregon toll free 1-800-452-4011.

Persons with hearing impairments can receive help by calling the Department's TTY number at (503) 229-6993.

WHAT IS THE NEXT STEP:

The Department will evaluate comments received and will make a recommendation to the Environmental Quality Commission. Interested parties can request to be notified of the date the Commission will consider the matter by writing to the Department at the above address.

SA\WC13\WC13075.5

State of Oregon
Department of Environmental Quality

Memorandum†

Date: 12/1/94

To: Interested and Affected Public

Subject: Rulemaking Proposal - Modification of Total Dissolved Gas (TDG) Criteria for the Mainstem Columbia River

This memorandum contains information on a proposal by the Department of Environmental Quality (DEQ) to adopt rule amendments regarding procedural rule modifications that would allow the Director of DEQ (Director) or the Environmental Quality Commission (Commission) to modify the Total Dissolved Gas (TDG) criteria for the mainstem Columbia River to facilitate migration of salmonid fish species. This proposal would allow the Director or the Commission to modify the TDG standard dependent on four required findings. Rule modification is needed to prevent the current criteria from becoming an impediment to increased spill for salmonid migration. The change in criteria would allow evaluating the risk of increased mortality from dissolved gas levels versus the increased survivability due to spill for out migrating juvenile salmonids.

What's in this Package?

Attachments to this memorandum provide details on the proposal as follows:

Attachment A	The actual language of the proposed rule (amendments).
Attachment B	The "Legal Notice" of the Rulemaking Hearing. (required by ORS 183.335)
Attachment C	The official Rulemaking Statements for the proposed rulemaking action. (required by ORS 183.335).
Attachment D	The official statement describing the fiscal and economic impact of the proposed rule. (required by ORS 183.335)

†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

Attachment E	A statement providing assurance that the proposed rules are consistent with statewide land use goals and compatible with local land use plans.
Attachment F	Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements.
Attachment G	(Other attachments as appropriate and necessary)

Hearing Process Details

You are invited to review these materials and present written or oral comment in accordance with the following:

Date: 1/12/95
Time: 10:00 am
Place: DEQ Headquarters, Room 3A
811 SW 6th Avenue
Portland, OR 97204

Deadline for submittal of Written Comments: 1/16/95 5:00pm

Robert P. Baumgartner will be the Presiding Officer at this hearing. Following close of the public comment period, the Presiding Officer will prepare a report which summarizes the oral testimony presented and identifies written comments submitted. The Environmental Quality Commission (EQC) will receive a copy of the Presiding Officer's report and all written comments submitted. The public hearing will be tape recorded, but the tape will not be transcribed.

If you wish to be kept advised of this proceeding and receive a copy of the recommendation that is presented to the EQC for adoption, you should request that your name be placed on the mailing list for this rulemaking proposal.

What Happens After the Public Comment Period Closes

The Department will review and evaluate comments received, and prepare responses. Final recommendations will then be prepared, and scheduled for consideration by the Environmental Quality Commission (EQC).

The EQC will consider the Department's recommendation for rule adoption during one of their regularly scheduled public meetings. The targeted meeting date for consideration of this rulemaking proposal is 2/16/95. This date may be delayed if needed to provide additional time for evaluation and response to testimony received in the hearing process. You will be notified of the time and place for final EQC action if you present oral testimony at the hearing or submit written comment during the comment period or ask to be notified of the proposed final action on this rulemaking proposal.

The EQC expects testimony and comment on proposed rules to be presented during the hearing process so that full consideration by the Department may occur before a final recommendation is made. The EQC may elect to receive comment during the meeting where the rule is considered for adoption; however, such comment will be limited to the effect of changes made by the Department after the public comment period in response to testimony received. The EQC strongly encourages people with concerns regarding the proposed rule to communicate those concerns to the Department at the earliest possible date so that an effort may be made to understand the issues and develop options for resolution where possible.

Background on Development of the Rulemaking Proposal

What is the problem

The current TDG criteria was an obstacle to allowing spills at the mainstem Columbia River dams designed to increase survivability of out-migrating juvenile salmonids.

How does this proposed rule help solve the problem

The proposal would allow the flexibility to adjust dissolved gas levels higher than the current criteria, contingent upon required findings. Accordingly, spill might be allowed which could increase the number of smolts to pass through the hydrosystem.

How was the rule developed

The rule was developed in consultation with state and federal fish and water quality agencies which recommended flexibility in dealing with TDG while at the same time assuring resource protection.

How does it affect the public, regulated community, other agencies

The proposed rule change is not expected to have any direct positive or negative effects on the regulated community or the general public. There could be indirect economic effects if water is spilled for fish passage instead of electric generation. This could result in higher electric rates for electric rate payers. There could be positive economic effects on the general public should the increased spills lead to an increase in the numbers of returning salmon which could be realized through increased sport and commercial harvest.

The relaxation of the TDG standard does not require action from the regulated community for implementation. However, the change removes the TDG standard as an impediment to increased spills for fish. There should be no direct effect on other state agencies. Dam operators would be required to provide TDG and biological monitoring data.

How does the rule relate to federal requirements or adjacent state requirements

The proposed rule language would allow a higher TDG level than currently contained in the rules. There should be no conflict with existing federal requirements. Attachment F: Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements, more thoroughly addresses these issues.

How will the rule be implemented

The rule would allow the Director or the commission to modify the existing TDG standard for the Columbia River if certain criteria are met. The minimum factors proposed to be considered are:

1. that increased spill would result in less harm to salmonid stock survival via in-river migration than would occur if spill levels remained at normal operational levels,

2. that the modified TDG standard provides a reasonable balance of the risks associated with elevated TDG considering other options for in-river migration of salmonids, survival of migrating adult and juvenile salmonids, and potential impairment to resident biological communities,

3. that adequate data will exist to determine compliance with the standards, and

4. that biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

A request for implementing alternative TDG criteria must be received by the Department at least 45 days prior to the anticipated modification.

Are there time constraints

The fisheries agencies would like the spill program for 1995 to begin in March, 1995. The physical outmigration of smolts affects the implementation time-frame for the proposed rule amendments. There are no other federal or state deadlines.

Contact for more information

If you would like more information on this rulemaking proposal, or would like to be added to the mailing list, please contact:

Robert P. Baumgartner
DEQ Headquarters
811 SW 6th Avenue
Portland, OR 97204
(503)229-5877

Proposed Rule Amendments

AMEND: OAR 340-41-205(2)(n)
OAR 340-41-445(2)(n)
OAR 340-41-485(2)(n)
OAR 340-41-525(2)(n)
OAR 340-41-565(2)(n)
OAR 340-41-605(2)(n)
OAR 340-41-645(2)(n)

Other Sections of OAR 340-41 as may be required

OPTION ONE

(A)The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceed the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

(B)The director may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The director must find that:

(i)failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii)the modified TDG criterion provides a reasonable balance of the risks associated with elevated TDG on the survival of migrating adult and juvenile salmonids, and impairment to the resident biological communities, compared to other options for in-river migration of salmonids,

(iii)adequate data will exist to determine compliance with the standards, and

(iiii)biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

OPTION TWO

(A)The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceed the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

(B)The commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The commission must find that:

(i)failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii)the modified TDG criterion provides a reasonable balance of the risks associated with elevated TDG on the survival of migrating adult and juvenile salmonids, and impairment to the resident biological communities, compared to other options for in-river migration of salmonids,

(iii)adequate data will exist to determine compliance with the standards, and

(iiii)biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

NOTICE OF PROPOSED RULEMAKING HEARING

(Rulemaking Statements and Statement of Fiscal Impact must accompany this form.)

Department of Environmental Quality — Water Quality Division

OAR Chapter 340

DATE:	TIME:	LOCATION:
1/12/95	10 AM	Room 3A DEQ 811 SW 6th Ave Portland, OR

HEARINGS OFFICER(s): Robert P. Baumgartner

STATUTORY AUTHORITY: ORS 468B.040
ORS 468B.048
ORS 468.020

ADOPT:

AMEND: OAR 340-41-205(2)(n)
OAR 340-41-445(2)(n)
OAR 340-41-485(2)(n)
OAR 340-41-525(2)(n)
OAR 340-41-565(2)(n)
OAR 340-41-605(2)(n)
OAR 340-41-645(2)(n)

Other Sections of OAR 340-41 as may be required

REPEAL:

☒ This hearing notice is the initial notice given for this rulemaking action.
☐ This hearing was requested by interested persons after a previous rulemaking notice.
☒ Auxiliary aids for persons with disabilities are available upon advance request.

SUMMARY:

The proposed rule modifications are procedural, providing language that would allow the Director or the Commission to modify the Total Dissolved Gas (TDG) criteria for the mainstem Columbia River. The rule language does not identify new criteria.

One stock of salmon in the Columbia River has been identified as endangered; Snake River sockeye, and two as threatened; Snake River spring/summer chinook and Snake River fall chinook. Juvenile migration out of the Columbia River has been identified as a critical time

period in the life history of these fish. Significant mortality occurs as these fish migrate past the Columbia River dams. The National Marine Fisheries Service has developed recovery plans for these stocks of fish. Additional spill is a component of the recovery plans that is supported by state and tribal fisheries agencies. However, increased spill results in an increase (TDG) often above the state standard and the national criteria of 110%. The overall effect of elevated TDG in the Columbia River is debated.

During the spring and summer of 1994 the EQC adopted temporary rules with higher levels of TDG to allow implementation of the spill program. Application of temporary rules is restricted to a single 180 day period that was utilized during the spring and summer spill request of 1994. Rule modification is needed to prevent the current criteria from becoming an impediment to increased spill for salmon migration. The change in the criteria would allow evaluating the risk of increased mortality from dissolved gas levels versus the increased survivability due to spill for out-migrating salmon and steelhead juveniles.

Option one allows the Director to modify the dissolved gas standard dependent on four required findings (B(i, ii, iii, & iiii)). Option 2 allows the Commission to modify the dissolved gas standard dependent on four required findings (B(i, ii, iii, & iiii). Option one would allow less opportunity for public comment but approval of a higher TDG level would be faster than Option two. Option two would allow more opportunity for public comment but could take longer to complete than Option one.

LAST DATE FOR COMMENT: 1/16/95
DATE PROPOSED TO BE EFFECTIVE: Upon adoption by the Environmental Quality Commission and subsequent filing with the Secretary of State.

AGENCY RULES COORDINATOR:	Chris Rich, (503) 229-6775
AGENCY CONTACT FOR THIS PROPOSAL:	Robert P. Baumgartner
ADDRESS:	Water Quality Division 811 S. W. 6th Avenue Portland, Oregon 97204
TELEPHONE:	(503)229-5877 or Toll Free 1-800-452-4011

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments will also be considered if received by the date indicated above.

Signature _____ Date _____

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Modification of Total Dissolved Gas (TDG) Criteria for the Mainstem Columbia River

Rulemaking Statements

Pursuant to ORS 183.335(7), this statement provides information about the Environmental Quality Commission's intended action to adopt a rule.

1. Legal Authority

ORS 468B.040
ORS 468B.048
ORS 468.020

2. Need for the Rule

The Department expects to receive a request from the federal, state, and/or tribal fisheries agencies in January 1995 to allow exceedance of the current TDG standard to accommodate increased spill at the Columbia River mainstem dams to aid out-migrating juvenile salmonids during the spring and summer of 1995.

The proposed rule modifications are procedural, providing language that would allow the Director or the Commission to modify the Total Dissolved Gas (TDG) criteria for the mainstem Columbia River. The rule language does not identify new criteria.

One stock of salmon in the Columbia River has been identified as endangered; Snake River sockeye, and two as threatened; Snake River spring/summer chinook and Snake River fall chinook. Juvenile migration out of the Columbia River has been identified as a critical time period in the life history of these fish. Significant mortality occurs as these fish migrate past the Columbia River dams. The National Marine Fisheries Service has developed recovery plans for these stocks of fish. Additional spill is a component of the recovery plans that is supported by state and tribal fisheries agencies. However, increased spill results in an increase (TDG) often above the state standard and the national criteria of 110%. The overall effect of elevated TDG in the Columbia River is debated.

During the spring and summer of 1994 the EQC adopted temporary rules with higher levels of TDG to allow implementation of the spill program. Application of temporary rules is restricted to a single 180 day period that was utilized during the spring and summer spill request of 1994. Rule modification is needed to prevent the current criteria from becoming an impediment to increased spill for salmon migration. The change in the criteria would allow evaluating the risk of increased mortality from dissolved gas levels versus the increased survivability due to spill for out migrating salmon and steelhead juveniles.

3. Principal Documents Relied Upon in this Rulemaking

Memo: TDG criteria modification, October 6, 1994; from Bob Baumgartner to Fred Hansen, Mike Downs, and Policy Advisory Committee.

Memo: Agenda Item 1, EQC Meeting, July 21, 1994

4. Advisory Committee Involvement

The current Policy Advisory Committee (PAC) used by the Water Quality Department for water quality standard review will be used to review the proposed rule. Information on the proposed rule will be presented to the PAC at the November 23, 1994 meeting. PAC draft comments due December 7, 1994.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Modification of Total Dissolved Gas (TDG) Criteria for the mainstem Columbia River

Fiscal and Economic Impact Statement

Introduction

The proposed rule change is not expected to have any direct positive or negative economic effect on the regulated community or the general public. The relaxation of the TDG standard does not require action from the regulated community. However, the change removes the TDG standard as an impediment to increased spills for fish. Water spilled for fish passage instead of electric generation could have a negative effect on electric rates for electric rate payers. There could be positive economic effects on the general public should the increased spills lead to an increase in the numbers of returning salmon which could be realized through increased sport and commercial harvest.

General Public

The proposed rule change should not have any direct economic impact on the general public. Negative economic effects in the form of increased electric rates due to spilling water for fish instead of hydroelectric generation could occur. Positive economic effects in the form of increased salmon returns could occur.

Small Business

The proposed rule change should not have any direct economic impact on small business. Negative economic effects in the form of increased electric rates due to spilling water for fish instead of hydroelectric generation could occur. Positive economic effects in the form of increased salmon returns could occur.

Large Business

The proposed rule change should not have any direct economic impact on large business. Negative economic effects in the form of increased electric rates due to spilling water for fish instead of hydroelectric generation could occur. Positive economic effects in the form of increased salmon returns could occur.

Local Governments

The proposed rule change should not have any direct economic impact on local government. Negative economic effects in the form of increased electric rates due to spilling water for fish instead of hydroelectric generation could occur. Positive economic effects in the form of increased salmon returns could occur.

State Agencies

-DEQ

The implementation of this rule would require additional staff time to evaluate and respond to spill requests. No resources have been budgeted for this effort, and staff are being withdrawn from other assignments to respond to the spill issue.

- Other Agencies

There should be no direct effect on other state agencies. There would be increased costs for dam operators required to provide TDG and biological monitoring information, but DEQ is not reasonably able to calculate these costs.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Modification of Total Dissolved Gas (TDG) Criteria for the mainstem Columbia River.

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

The proposed rule modifications are procedural, providing language that would allow the Director to modify the Total Dissolved Gas (TDG) criteria. The rule modification is needed to prevent the current criteria from becoming an impediment to increased spill for salmon migration. The rule language does not identify new criteria.

2. Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program?

   Yes___ No_X___

   a. If yes, identify existing program/rule/activity:

   b. If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?

      Yes____ No_____ (if no, explain):

   c. If no, apply the following criteria to the proposed rules.

      Staff should refer to Section III, subsection 2 of the SAC document in completing the evaluation form. Statewide Goal 6 - Air, Water and Land Resources is the primary goal that relates to DEQ

authorities. However, other goals may apply such as Goal 5 - Open Spaces, Scenic and Historic Areas, and Natural Resources; Goal 11 - Public Facilities and Services; Goal 16 - Estuarine Resources; and Goal 19 - Ocean Resources. DEQ programs or rules that relate to statewide land use goals are considered land use programs if they are:

1. Specifically referenced in the statewide planning goals; or

2. Reasonably expected to have significant effects on

   a. resources, objectives or areas identified in the statewide planning goals, or

   b. present or future land uses identified in acknowledged comprehensive plans.

In applying criterion 2. above, two guidelines should be applied to assess land use significance:

- The land use responsibilities of a program/rule/action that involves more than one agency, are considered the responsibilities of the agency with primary authority.
- A determination of land use significance must consider the Department's mandate to protect public health and safety and the environment.

In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.

The proposed rule change would have no direct implications to local land use programs. The dissolved gas levels are affected by the Columbia River dams which are existing structures that have not been traditionally regulated through the NPDES program. No other sources would be expected to be affected by the rule change. Although the rules are not implemented through current permit processes monitoring would be performed by the federal operating agency. The rule is supportive of Goal 6 and is specifically designed to enhance the resources of the Columbia River, that is, threatened and endangered stocks of Columbia River basin salmon.

3. **If the proposed rules have been determined a land use program under 2. above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.**

Division _____ Intergovernmental Coord. _____ Date 11/15/94

Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements.

The following questions should be clearly answered, so that a decision regarding the stringency of a proposed rulemaking action can be supported and defended:

Note: If a federal rule is relaxed, the same questions should be asked in arriving at a determination of whether to continue the existing more stringent state rule.

1. *Are there federal requirements that are applicable to this situation? If so, exactly what are they?*

   Federal water quality criteria are established by the Environmental Protection Agency (EPA). The EPA has approved dissolved gas criteria for the States of Washington, Idaho, and Oregon. The federally approved criteria for Washington and Idaho provide a process for modifying criteria. The proposed rule modification would provide similar, although more specific, language for Oregon. The water quality criteria for Oregon, Washington, and Idaho are all similarly based on national guidance.

2. *Are the applicable federal requirements performance based, technology based, or both with the most stringent controlling?*

   The federal requirements are established by State Water Quality Standards, and are instream concentration criteria.

3. *Do the applicable federal requirements specifically address the issues that are of concern in Oregon? Was data or information that would reasonably reflect Oregon's concern and situation considered in the federal process that established the federal requirements?*

   Yes, the federal guidance is based largely on the maximum level of total dissolved gas allowable to prevent risk to salmonids in the Columbia River from the effects of gas bubble trauma. Neither the national guidance, or the existing state criteria, addressed the dilemma of balancing risk between different instream passage alternatives. The proposed rule modification would allow such an evaluation to occur.

4. *Will the proposed requirement improve the ability of the regulated community to comply in a more cost effective way by clarifying confusing or potentially conflicting requirements (within or cross-media), increasing certainty, or preventing or reducing the need for costly retrofit to meet more stringent requirements later?*

   No, the proposed rule modification is procedural and is directed at allowing increased spill for the purposes of aiding instream passage of juvenile salmonids. These changes will not directly influence any need or costs for potential retrofit to meet water quality standards.

5. *Is there a timing issue which might justify changing the time frame for implementation of federal requirements?*

   No

6. *Will the proposed requirement assist in establishing and maintaining a reasonable margin for accommodation of uncertainty and future growth?*

   The proposed rule language would not influence future growth.

7. *Does the proposed requirement establish or maintain reasonable equity in the requirements for various sources? (level the playing field)*

   Yes

8. *Would others face increased costs if a more stringent rule is not enacted?*

   The proposed language would not influence the costs associated with achieving compliance with the rule. Significant costs could occur if efforts are taken to comply with existing rules. There could also be significant indirect costs if electricity rates increase due to increased spill occurring as a result of applying the flexibility associated with the proposed rule language.

9. *Does the proposed requirement include procedural requirements, reporting or monitoring requirements that are different from applicable federal requirements? If so, Why? What is the "compelling reason" for different procedural, reporting or monitoring requirements?*

Yes. The compelling reason is the proposed rule would allow, but not require, modification of the total dissolved gas criteria for the purpose of aiding instream migration of salmonids. The Department believes the existing criteria are appropriate based on the potential effects of elevated dissolved gas alone. However, there are substantive concerns regarding transport methods, and increased relative survival of juvenile salmonids associated with increased spill. Increased spill results in elevated levels of dissolved gas. The monitoring and reporting requirements associated with the allowance for modification is designed to provide the information necessary to make sound decisions using scientific data and verify compliance with instream criteria.

10. *Is demonstrated technology available to comply with the proposed requirement?*

The proposed requirement does not change the level of technology required to comply with standards that have been existence since 1979.

11. *Will the proposed requirement contribute to the prevention of pollution or address a potential problem and represent a more cost effective environmental gain?*

The proposed rule would not directly contribute to pollution prevention. The proposed rule would provide a means to address a complex and controversial environmental problem. Since the proposed rule is procedural and does not directly change concentration criteria it is not anticipated to directly influence cost effectiveness.

State of Oregon
Department of Environmental Quality

Attachment C
Memorandum

Date: January 25, 1995

To: Environmental Quality Commission

From: Robert Baumgartner

Subject: Presiding Officer's Report for Rulemaking Hearing
Hearing Date and Time: January 12, 1995, beginning at 10:00a.m
Hearing Location: 811 SW 6th Ave. Portland Or.

Title of Proposal: Modification of Total Dissolved Gas (TDG) Criteria for the Mainstem Columbia River

The rulemaking hearing on the above titled proposal was convened at 10:00 A.M. People were asked to sign witness registration forms if they wished to present testimony. People were also advised that the hearing was being recorded and of the procedures to be followed.

Approximately 35 people were in attendance, 14 people signed up to give testimony.

Prior to receiving testimony, Robert Baumgartner briefly explained the specific rulemaking proposal, the reason for the proposal, and responded to questions from the audience.

People were then called to testify in the order of receipt of witness registration forms and presented testimony as summarized in the attached table.

The people or groups providing written comments are also summarized in the attached table.

There was no further testimony and the hearing was closed at 12:30 p.m.
Attachments:

Written Testimony Submitted for the Record.

SA\WC13\WC13170.5

Table 1. Summary of Public Input Sources, Reference Used in Staff Report, and comment summary				
Source	Initials	Oral	Written	Summary
Oregon Department of Fish and Wildlife	ODFW	X	X	State Agency responsible for fisheries management, generally supports.
Idaho Fish and Game	IFG	X		State Agency, describes existing problem.
State of Idaho, Governors Office	Idaho		X	Head of State, does not support proposed rule, It is not the policy of the State of Idaho to support massive spill programs.
Pacific Northwest Utilities Conference Committee	PNUCC	X	X	Representing utilities, opposed, if adopted would prefer open public process.
Columbia River Inter Tribal Fish Commission	CRITFC	X	X	Representing 4 tribes with fishing rights, generally supports proposed rule with modifications.
Northwest Environmental Defense Center	NEDC	X		Environmental activist group, would support permanent higher TDG rule, prefers option 2, and limited public input, Spill safest way past dams
Direct Services Industry	DSI	X	X	Representing electro-chemical companies, recommends no change from existing rule, provides additional language, prefers EQC if rule adopted.
Oregon Natural Resources Council	ONRC	X		Environmental activist group, tentative support, would support permanent higher TDG criteria.
Sierra Club	-----	X		Prefer permanent higher TDG rule. Public input in rule could hamper process.
Save our Wild Salmon	SOWS	X		Representing 40 environmental and fishery groups, tentative support, would prefer permanent rule at higher TDG, prefers to limit public input
Northwest Sport Fishing Industry Association	NSAI	X	X	Strong support of proposed rule, defer water quality standards to ODFW
Pacific Coast Federation of Fisherman Association	PCFFA	X		Representing 1,000+ commercial fishermen, supports option 1, economic impact to fisherman could be significant, need a timely response.
Salmon for All	SFA	X	X	A 850 member gill netters association, supports the proposed rule option 1.
Dr. Wesley J. Ebel	---		X	Major concern, no cap, prefer option 2 over 1 to allow for public comment. . TDG at 130% can kill fish in less than 8 hours
Dr. Gerald Bouck	---		X	Opposed, arbitrary and capricious, lack of scientific evaluation and justification.
Dr. Don E. Weitkamp	---		X	No cap, TDG should not exceed 120-125, would increase instream TDG over what has occurred in recent years
Dr. Larry E. Fiddler	---		X	Opposed, may lead to irreparable harm.
Pacific Northwest Generating Cooperative	PNGG	X	X	A cooperative corporation of 15 members and 12 affiliates for rural electrical distribution. Opposes rule, would do more harm than good, ignores the benefit of transportation. If adopted prefers EQC and public review process.
Oregon Metals Industry Council	OMIC		X	Representing several corporations, opposed to rule modification, may do more harm than good, ignores benefit of transportation, significant economic effect.
Common Sensing Incorporated	CSI		X	Generally opposed, there is a lack of scientific input, review, and evaluation of alternatives.

Hearings Officers Report
Rulemaking proposal - Modification of
Total Dissolved Gas (TDG) for the Mainstem Columbia River

Background:

The Department proposes modification to the TDG criteria. Rule modification is needed if spill programs to benefit instream migration of juvenile salmon are to be implemented without violating state water quality standards. The proposed rule was published for public comment on 12/12/94. A hearing was held in Portland Oregon on 1/12/95, and written comments were accepted through 1/13/95. Written and oral comments were received from twenty (20) agencies, groups, and individuals which are summarized in Table 1. Table 2 categorizes the responses by issue and provides the outline for this report.

Overall Rule:

At the request of the National Marine Fisheries Service (NMFS) the EQC adopted emergency rules in 1994 that increased the total dissolved gas (TDG) criteria for the Columbia River. The emergency rules provided for increased spill at the Columbia River hydro-projects to aid juvenile salmon outmigration. Oregon administrative law does not permit the EQC to make future modifications to the TDG criteria by emergency rule. A permanent rule is needed if water quality standards are not to become an impediment to future spill proposals.

Supported Proposed Rule:

The principal reason cited for supporting the proposed rule is to provide a mechanism by which state water quality standards do not become an impediment to increased spill programs and to best facilitate in-stream migration of salmon. The state water quality standard should not be a detriment to saving fish.

The proposed rule was supported by agencies (ODFW, IFG) tribes (CRITFC), fisheries and environmental groups (SOWS, NSIA, NEDC, SFA). The fisheries agencies advise the EQC that the Columbia River salmon stocks are in a crisis, the 1995 adult returns are projected to be 60% of the 1994 returns which are the lowest in record. The 1995 juvenile outmigration is anticipated to be the last large outmigration for at least the next three years (ODFW). The state and tribal fisheries agencies believe that the best way to improve the salmon stocks is by leaving the fish in the natural corridor (IFG).

The NWSPA believes that a detailed and effective monitoring program would detect and correct any occurrence of gas bubble trauma.

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Northwest Environmental Defense Center	NEDC	X		Environmental activist group, would support permanent higher TDG rule, prefers option 2, and limited public input, Spill safest way past dams
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Oregon Natural Resources Council	ONRC	X		Environmental activist group, tentative support, would support permanent higher TDG criteria.
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Salmon for All	SFA	X	X	A 850 member gill netters association, supports the proposed rule option 1.
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Common Sensing Incorporated	CSI		X	Generally opposed, there is a lack of scientific input, review, and evaluation of alternatives.

Table 2, Hearing record, Comment summary by source.

Source	Overall Rule				Authority		Discretion			Additions			
	Support proposed rule	Rule is not needed	Harmful	Permanent High TDG Rule	Defer to Fish Agencies	EQC	Director	EQC Public process	Apply Current	Cap	Clarify	Eco-nomics	Syste m risk
ODFW	X						X		X				
State Of Idaho		X											
Idaho F&G	X						X						
CRITFC	X						X		X			X	
PNUCC (DSI)		X	X					X		X			X
NEDC	X			X	X		X						
DSI (J Tanzer)		X	X			X		X			X		
ONRC				X									
Seirra Club				X									
SOWS	X			X	X		X						
Liz H. NSIA	X				X		X					X	
PCFSA	X						X						
Salmon for All	X						X						
Dr. W.J. Ebel			X					X		X			
Dr. J. Bouck			X					X		X			
Dr. D.E. Weitkamp										X			
Dr. L.E. Fidler		X	X										
Common Sensing		X	X										
PNGG		X	X					X					X

The ODFW observed that the TDG criteria is frequently violated in the Columbia River due to conditions not associated with spill for salmon passage. The ODFW and CRITFC urge DEQ to initiate discussion with the Corps and regional fisheries managers to identify gas abatement measures. The ODFW agrees with the proposed rule findings and recommends that the Director be delegated the responsibility of modifying the TDG criteria. The ODFW correctly observes that rule modification authority at the directors level would be consistent with the current process in the States of Washington and Idaho. The ODFW observes that having the responsibility at the directors level would not necessarily constrain public input and review process, but could improve coordination between agencies.

The CRITFC and ODFW provided a risk assessment (Spill and 1995 Risk Management), as discussed during meetings with State and Federal fish management and water quality agencies. This document provides support for their position that the proposed rule would provide a mechanism to spread the risk associated with juvenile migration by enhancing spill, and result in benefits to the Columbia River salmonid stocks. The risk assessment provide substantial scientific literature review and interpretation. Bioassays studies, excluding those in shallow environments, were compared to differential mortality from spill or turbine passage to indicate that, except for steelhead, the point at which no further benefit is achieved through spill exceeds 120% TDG. The Risk Assessment further evaluates adult impacts and provides a monitoring strategy to achieve the findings of the proposed rule.

CRITFC citing Mundy et al (1994) that "transportation alone, as presently conceived and implemented, is unlikely to halt or prevent the continued decline and extirpation of listed species of salmon in the Snake River basin". The CRITFC also observes that four of the five best return ratios for Snake River spring and summer chinook from 1974 to 1989 occurred under substantially higher spill levels than proposed. The CRITFC argues that the intent of water quality standards is to protect beneficial uses. Use protection should therefore be the basis for the decision on alternative TDG levels, rather than strict adherence to a water quality criteria. The CRITFIC observes that the focus of the Clean Water Act is on making the nation's waters fishable and swimmable, and recommends the EQC focus on instream survival since under any options a large proportion of salmon remain in the river.

The CRITFC provides a previously presented Scientific Rationale for Implementing a Summer Spill Program to Increase Juvenile Salmonid Survival in the Snake and Columbia Rivers (1994) and Additional Technical Comments in Support of the Fishery Agency and Tribal Risk Assessment to summarize and review technical information in support of a spill program.

Prefer a higher criteria (standard):

The NEDC, Sierra Club, SOWS, and ONRC support raising the criteria on a permanent basis. No scientific justification was provided with these comments for a higher criteria. However, several comments suggested that a new rule would result in less impediment to the implementation of a spill program.

Rule not needed:

The PNUCC observes that the proposed rule is flawed for several reasons. The Director (Commission) may not be able to obtain adequate scientific information to meet the findings of greater harm to salmonid stock survival through in river migration than would occur by increased spill. Additionally, the proposed rule fails to incorporate the benefits of transportation which has been demonstrated to be the safest method for fish passage. Finally, limits on the magnitude and time of the year are not included in the rule.

The PNGG recalls the results of last years spill request and subsequent monitoring data demonstrating high levels of internal signs of Gas Bubble Symptoms (GBS) in juvenile steelhead trout to support the observation that a new rule is not needed and may do more harm than good. Similarly, the PNGG and PNUCC cite the National Marine Fisheries Service (NMFS) expert panels findings, and substantial scientific literature, that any increase above 110% TDG is in the direction of increasing risk. Several comments observed that there is not adequate scientific information to justify changing the standard. Further, the PNGG provides supporting documentation which includes submissions from recognized experts in field of TDG (Fiddler, Bouck, Weitkamp, and Ebel) and other scientists (Chapman and Anderson) that the proposed rule would do more harm than good.

Dr. Bouck writes that he is opposed to the proposed rule for several reasons: the EQC, DEQ and fisheries agencies proposing the change lack the specific experience needed to evaluate the potential impacts, the rule is open ended, there is a lack of scientific and public review, and no new information has been submitted to justify a change in the standard. Making empirical observation Dr. Bouck notes that shad, like the salmon, are anadromous in the Columbia River. Both shad and salmon migrate through the turbines and spillways. Shad migrate during the fall when flow and gas are at their lowest levels, the worst conditions, yet shad populations are exploding while salmon populations decrease.

The DSI observes that the current TDG criterion is based on the best available scientific information, and that no new reliable scientific information has been provided that would justify an alternative criteria. The DSI warns that common wisdom may not be factually correct, observing that Idaho salmon populations increased for nearly 10 years following completion of the last dam in 1975. During the past two (2) decades salmon harvest has

increased 5-fold, habitat has decreased, and hatchery production increased with less hardy smolts corrupting the wild stocks. DSI does not believe that the dams are responsible for the salmon crisis.

The State of Idaho corrected the presentation of their fisheries staff that it is not the policy of the State of Idaho to recommend a change to the state water quality criteria. The State of Idaho does not support the proposed rule change.

The rule would do more harm than good:

Comments received by several industry representatives (PNUCC, DSI, PNGG, OMIC) and several eminent researchers in the field of TDG (Drs. Ebel, Bouck, and Fiddler,) and CSI suggested that the proposed rule as written could result in more harm than good. The findings of the National Marine Fisheries Service (NMFS) expert panel and other scientific information was presented to support the contention of greater harm.

The PNCC believes the rule, as written, would set a dangerous precedent. DEQ is responsible for water quality as it impacts all species, anadromous or resident. The proposed rule singles out a use of salmon migration ignoring all others.

Dr. Fiddler questions the implied reliance of biological monitoring in the proposed rule, observing that the NMFS expert panel concluded that scientific literature does not support a clear relationship between field monitoring and ecological damage as suggested by the rule. With lack of reliable data no quantifiable cause-effect relationships exist for relating field observations to ultimate survival. The findings in the rule appear to rely on biological monitoring for which there is no definable cause and effect relationships. Dr. Fiddler observes that it is not possible to interpret any signs of gas bubble symptoms (GBS) to potential mortality. Fiddler observes that there is no way allowing the TDG criteria to exceed EPA guidelines can be controlled in such a manner as to prevent serious problems of GBT to fish and there are no means by which effects on long term survival can be related to DGS or GBT. In an attached letter Dr. Fiddler questions the reliability of last year's smolt monitoring data.

Fiddler concludes that the safest approach for protecting fish from the effects of DGS is to adhere to existing criteria and at the same time rapidly move toward implementing methods for reducing TDG while at the same time allowing for adequate flow for fish. Dr. Fiddler cites scientific literature demonstrating that it is well established that TDG can kill fish. Fiddler summarizes that a great deal is known about the effects of DGS on fish in laboratory experiments and, to a limited extent, from in river observations. However, the ability to interpret this information in terms of overall survival of fish in the Columbia and Snake rivers is quite restricted.

Dr Bouck also provides literature review, and criticizes reviews previously presented by the fisheries agencies as being partial and biased. Bouck observes that it does not take very long to kill 20% of test fish at TDG levels of 120-130%. Bouck observes that it may be more important to understand the relationship between lower mortality rates, or secondary effects on mortality, and TDG. Both Fiddler and Bouck criticized the reliance of field studies on the grounds that without controls it is difficult to ascertain how fish may behave in the confinements as compared to instream behavior.

The lack of a specific cap, implying that the TDG levels could be increased to acutely high levels was frequently cited as a weakness in the proposed rule. Dr. Ebel observes that TDG could go as high as 140% for over 24 hours in the tailrace of a dam, and the biological monitoring which occurs at the next downstream dam would not be detected until days later after considerable damage would already have occurred. At levels exceeding 130% TDG mortalities can occur in less than 8 hours.

The PNGG provided information from Dr. J. Anderson (U. of W.) illustrating that although there may be improvements for in-river survival, overall system survival may decrease because of the reduced number of fish transported. Transported juveniles have a greater survival rate to the estuary than do in river migrants.

Response to Comments: Overall Rule:

The Department recommends that the Commission adopt the proposed rule, with modifications, that allows either the EQC or Director to modify the TDG criteria for the mainstem Columbia River for the purpose of aiding salmonid migration.

The Department agrees with the National Marine Fisheries Service "Expert Panel" that the current TDG criteria is based on sound scientific data, has been extensively peer reviewed, and is the most appropriate criteria for protecting aquatic life from impairment due to GBD. The Department does not agree with the contention that the proposed criteria was developed with only shallow water organisms in mind.

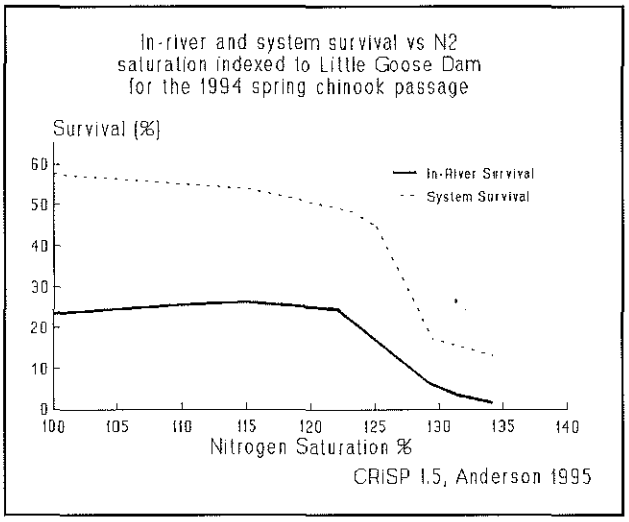
OAR 340-41-XXX (2) (n)

The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceed the ten-year seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation

The development of the existing criteria however, did not incorporate the potential benefits from spill on salmonid survival during migration. The Department believes that the greatest protection to aquatic life will be achieved when the discharge volumes and spill rates needed to improve salmonid survival at

TDG levels below 110% saturation are achieved in the Columbia River. Until that time it may be appropriate to increase the risk associated with TDG level to improve conditions for instream migration.

Current analyses suggest that some benefit to instream migrants would occur from additional spill even at increased levels of TDG. There was substantial, and often conflicting, information presented on the benefits of spill and relative impact of elevated TDG. Much of the literature and information has been previously discussed (Commission report July 21, 1994). This summary suggested that limited risk would be faced at instream TDG levels at 115% TDG. Greater risk would be faced at levels of TDG exceeding 120%. Information on risk and TDG presented during the hearing is being assessed by DEQ. This information will form part of the documents for an evaluation of any potential increase in TDG criteria.



Data received from Anderson (1995) via DSI can be used to illustrate part of the dilemma. Survival rates for spring chinook as influenced by TDG were estimated using a numerical model CRiSP 1.5. Comparing survival to TDG is an oversimplification of the model results. The model provides a numerically intensive analysis of mortality in the system by passage method, depth distribution, time of exposure, predation, and several other factors. The mortality rates, and therefore any benefits to instream survival, are sensitive to the algorithm used to estimate mortality due to TDG. The approach used to estimate mortality due to TDG has been updated, and the predictions of mortality in the range of 115% TDG are lower than in previous versions. The dramatic reduction in system and in-river survival above 122-123% TDG reflects the sensitivity of the estimated mortality for instream migrants.

The simulation indicates that there are benefits to instream survival up to near 115% TDG, which are then negated as TDG exceeds 120%. There is some concern that the approach to simulating mortality due to TDG may underestimate the actual instream response (Fiddler and Anderson via Anderson personal communication). Overall system survival decreases as TDG increases. The reduction in estimated system survival reflects the decrease in transportation and relatively higher mortality rates faced by instream migrants.

Substantially different opinions were expressed on the benefits of transportation. A report by Mundy et al (1994) was frequently cited. The debate is less on whether transportation increases the survival of the juveniles to the estuary, than on the question of whether

transportation improves the survival of salmon for the complete life history, egg to adult. A further question is the degree to which transportation alone will lead to recovery of the listed species.

Mundy (1994) observes that the issue of the effects of transportation has become controversial and proponents and opponents are polarized in their views. Mundy (1994) clearly relates that Snake Basin spring/summer chinook have shown a response to transportation that is best explained in terms of conditions within the hydroelectric system at the time of transportation. Adverse conditions associated with low flow in the hydroelectric system, such as those of 1973, have shown clearly positive relative rates of adult returns for transported spring/summer chinook. However, under passage conditions associated with higher flows than those of 1973 and 1977, the responses of relative survivals of spring summer chinook may be equivocal and possibly negative.

In summary, juvenile transport appears to have the potential to contribute to the recovery of listed stocks. However, Mundy (1994) concludes that available evidence is not sufficient to identify transportation as either a primary or supporting method of choice for a recovery plan, and that given the dependence of the survival of both transported and un-transported juvenile salmon on conditions in the hydroelectric system, transportation alone, as presently conceived and implemented, is unlikely to halt or prevent the continued decline and extirpation of listed species of salmon in the Snake River Basin. While transportation appears to improve relative survival of certain kinds of salmon from the Snake River Basin under certain combinations of dam operation and river flow conditions, it removes only part of the mortalities attendant to passage through the hydroelectric system. In a cover letter to the "Mundy et al Report" the National Marine Fisheries Service and the U.S. Fish and Wildlife Service stated that transportation is one of several measures that have been used to attempt to decrease moralities of juvenile salmon in the hydroelectric system.

It appears reasonable for agencies responsible for developing recovery plans for the endangered salmon to continue to evaluate the relative benefits of transportation options. These benefits may be dependent on instream passage conditions. The appropriate forum for this debate is with the responsible fisheries management agencies, not water quality agencies. The proposed standard modification does not imply a position on the appropriate balance between transportation or in-river migration.

The proposed rule modification recognizes the Department's responsibility to protection resident aquatic life as well as that of the anadromous salmonids. The proposed findings require the Department (Commission) to evaluate the risk to resident aquatic life.

The apparent reliance on biological monitoring in the rule was criticized. The concerns with a reliance on biological monitoring are both reasonable and accurate. However, the Department is not proposing to rely exclusively on biological monitoring. The proposed rule would require that ambient levels of TDG be established and monitored. While DEQ agrees

with the identified monitoring concerns, it appears that the only way to improve the current knowledge base is to obtain additional data. Data collection should occur through controlled laboratory studies, routine biological monitoring with modifications to the current program, and controlled field studies. The rule does by its nature require field monitoring as a method to obtain data and to support management decisions. DEQ anticipates reviewing the NMFS expert panel and other reviews to determine whether the monitoring requirements are achieved.

Authority for Water Quality Management:

The NEDC, SOWS, and NSIA recommended that the EQC provide the discretion for water quality criteria to fisheries agencies where fish management issues are invoked. The DSI correctly observed that the EQC and DEQ have their own statutory responsibilities to fulfill.

Response to Comments, Authority for Water Management Decisions:

The NEDC, SOWS, and NSIA did not recommend which fisheries agency (state, tribal, NMFS, BPA, etc.) to defer authority to. There has been, and will continue to be debate on the fisheries management issues. The NEDC, SOWS, and NSAI comments appear directed at requesting the EQC to give the authority to an agency which currently agrees with them such that debate on the issues would not occur.

The Department recommends that the EQC do not defer their statutory obligation to fisheries management agencies. The EQC and DEQ have statutory responsibility to fulfill. It would not be appropriate to defer that authority or responsibility to other entities.

Rule Implementation by the Commission or Director:

The ODFW, and CRITFC, supported the director having the authority to modify criteria as proposed in the rule. The ODFW and CRITFC correctly observe that granting the authority to the Director would not necessarily reduce the ability of the DEQ or EQC to obtain scientific and public input. Granting authority to the Director would be consistent with the States of Idaho and Washington and could allow for more timely and coordinate response to spill request.

The SFA suggested that any option other than the Director's authority would be too cumbersome and time consuming to implement. Other environmental groups observed that they would normally bemoan the lost opportunity for public input, but recommended that for expediency the authority be granted to the Director.

Dr Bouck was critical of both options because of the lack of opportunity for scientific and public review.

The PNUCC, DSI, PNGG, and Dr. Ebel recommended that, if the rule is modified, the EQC maintain the discretion for determining alternative criteria. The comments observe that changes in TDG can be a major policy decision. The EQC is responsible for establishing policy. Further, the commentators noted the importance of scientific and public input in constructing sound scientific policy. The EQC role would demand a public input process. It was further, and correctly observed, that there is no reason why a spill request can not be made available to DEQ with adequate time for distribution and review. PNUCC observed that DEQ staff had identified a minimum 45 day period of review of any request to modify TDG criteria.

Response to Comments on Whether the EQC or Director should have authority to implement rule:

DEQ staff makes no recommendation to the EQC on whether the EQC or the Director should be delegated the authority and responsibility for modification of the TDG criteria.

It is not the intent of DEQ to stifle public input under either of the two rule options. The DEQ would attempt to obtain and incorporate public and scientific input into discussion to modify TDG criteria. The comments of the DSI are correct, this is not an emergency in the sense that overnight decisions must be made. The EQC is responsible to make certain that there is reasonable notice of impending action, review of available information, and opportunity for all interested parties to be heard and that there is time to do it.

There is a perception that granting authority to the Director, rather than the Commission, would reduce or limit the opportunity for public comment. The Department will address this perception by explicitly requiring a public comment period within the rule. As noted by PNGG, a 45 day period was cited by DEQ staff as an appropriate period for public comment, however, no specific period was defined within the rule.

Also, as observed by PNGG, the establishment of a TDG criteria is an important policy decision. The EQC will need to determine first, whether a rule change as recommended is appropriate. If the EQC elects to modify the criteria then it needs to determine how frequently it wants to provide a forum for public debate on the issues relating to salmonid migration. By undertaking the responsibility for any rule modification for TDG the EQC would provide the forum for debate. By allowing the Director the authority the EQC would establish a process for the State of Oregon that is similar to the States of Washington and Idaho.

Proposed Additions / Clarification:

The DSI and CRITFC observed that section (ii) was confusing and therefore needed clarification. The DSI further noted that the proposed findings were flawed, the findings were not complete.

Several eminent scientists provided suggestions for establishing a cap on how high the EQC (Director) would allow TDG to go in the Columbia River.

Economics:

The DSI suggests that the Commission (or Director) determine whether increased spill is a cost-effective means of salmon protection as compared other mitigative options. The DSI does not suggest the EQC (Director) must weight the economic impacts against survival of the species, rather that rule modification consider the economic impact of the choices available.

33 USC §1313(c)(2)(A)

"such [water quality] standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes and agricultural, industrial and other purposes, and also taking into consideration their use and value for navigation"

ORS 468B.048(1)

"The commission by rule may establish standards of quality and purity for the waters of the state in accordance with the public policy set forth in ORS 468B.015. In establishing such standards, the commission shall consider the following factors ****

(h) The value of stability and the public's right to rely upon standards as adopted for a reasonable period of time to permit institutions, municipalities, commerce, industries, and others to plan, schedule, finance, and operate improvements in an orderly and practical manner.

(v) the economic cost of additional spill at federal hydropower dams, including costs imposed on electrical ratepayers, resulting from increased spill is outweighed by the biological benefit achieved by allowing increased gas saturation,

(vi) increased spill at federal hydropower dams is a cost-effective means to assist salmon populations as compared to other means.

The DSI cite the Federal Clean Water Act (33 USC § 1313(c)(2)(A) and ORS 468(b).048(1) and 468(b).015 to illustrate the fact that costs and impact to industries need to be considered when establishing rules.

The DSI cite, and supply as an attachment to comments, a letter by Douglas Faulkner (of DSI) that estimates the costs associated with lost energy due to increased spill at various levels of TDG. The cost estimates are from $27 million under a 110% TDG cap to $43 million for increased spill with no TDG cap. Because the DSIs pay approximately one third of these costs, the DSI could bear increased costs from $9 to $14 million. Under some spill scenarios there may be insufficient energy available for the DSIs to continue with direct

service. Those DSIs could opt to shut down or attempt to buy replacement energy. Replacement energy could cost those companies an additional $150,000 to $200,000 per week. The OMIC similarly estimates a $35 million cost for a 115% TDG cap that would be imposed on all rate payers in the region.

The NWSAI observed that their trade association generates $3 billion annually. Although they did not suggest additional language the CRITFC did describe the economic and social importance of salmon to the culture of their tribal members "not much less necessary to the existence of the Indians than the atmosphere they breathed". The CRITFC further observes that the instream standards should be established to protect the instream uses and suggests that water quality standards should not be established based upon the ability to remove a use from the water.

System Risk, in- River Migration:

(i) failure to act would result in greater harm to salmonid stock survival ~~[through in-river migration]~~ than would occur by increased spill.

(ii) the modified TDG criterion provides a reasonable balance of the risks associated with elevated TDG on the survival of migration and juvenile salmonids and impairment to the resident biological communities, compared to other options for ~~[in-river]~~ migration of salmonids.

The DSI recommends that the term "in river" be stricken from sections (i) and (ii) of the proposed rule. The DSI observes the mortality rate for in-river migration is roughly double that for transported fish. The EQC (Director) should not be barred by a restrictively drafted rule from considering what respected experts in the field consider to be the most effective of available alternatives. The PNUCC appears to agree with DSI, that the Commission (Director) should be able to include the overall safest passage method for fish by transportation in the deliberations.

The CRITFC observes that even when barging and trucking are maximized a large portion of the salmon still remain in the river. The CRITFC cites Mundy et al (1994) that transportation alone, as presently conceived and implemented, is unlikely to halt or prevent the continued decline and extirpation of listed species of salmon.

ii ~~[the modified TDG criterion provides a reasonable balance of the risks associated with elevated TDG on the survival of migrating adult and juvenile salmonids, and impairment to the resident biological communities, compared to other options for in river migration of salmonids]~~ ***The modified TDG criterion would not likely impair resident fish and aquatic life.***

The CRITFC observes that since none of the resident fish and aquatic life in the Columbia is listed as endangered, the salmonid stocks are obviously the most sensitive beneficial use. Citing Toner 1993, and Toner and Dawley (1994) (unreferenced) suggest that available field data indicates that concern for non salmonid species is

unwarranted. The CRITFC concludes that there is no reasonable basis to constrain salmon protection efforts on the mere possibility that there might be some potential impacts to much healthier populations of fish other than salmon.

Public Notice:

The DSI recommends some specific language describing a public review process. The DSI identified a time period of 45 days which is consistent with earlier DEQ recommendations. The public comment period would provide opportunity for review and comment by the public and the scientific community, and require the Department to review and evaluate information received.

(C) At least 45 days before making the determinations called for in section (B), the Commission (director) will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others.

Established Cap

Dr W. Ebel recommends that TDG levels not exceed 125% in the river for any reason.

Dr. D. Weitkamp observes that it has been thoroughly documented that supersaturation in the range of 125%-130% kills juvenile salmon, adult salmon, resident fish, and invertebrates. The benefits of spill are only to juvenile salmon and they are poorly documented. According to Dr. Weitkamp, these benefits are generally based on calculations made from assumptions, rather than direct measurements of survival benefits.

Dr. Bouck notes the proposed rule is open-ended and therefore dangerous because in conjunction with the lack of experience available at DEQ, or the fisheries agencies to evaluate the impact of elevated TDG, the is no maxima listed for gas levels, durations, or frequency of occurrence.

The CSI questioned the meaning of the term "finding" and "adequate data" contained in the rule. PNGG cites the NMFS expert panel that real time management of TDG by detection of signs of GBD in fish may already indicate probable mortality is not likely to fully protect fish. Management of TDG based on symptoms in fish is not sufficient to fully protect fish. Similarly, Drs. Fiddler and Bouck observes that there is no basis for conducting a meaningful comparative risk assessment with the biological data available.

Response to additions and clarifications:

The Department recommends that EQC

- Retain the language "in-river" in sections i and ii of the rule;
- Do not add language on economic impact;
- Do not add language on cost-effectiveness;
- Not develop a permanent rule change;
- Not identify an absolute cap within the rule;
- Add language on requirements for public input; and
- Retain the language on risk to resident aquatic life;

Instream-use

The Department recommends that the wording "in-river" be retained. The wording "in river" was intended to reflect the position that the Departments responsibility is to maintain water of sufficient purity and quality to protect instream beneficial uses. In-river migration of salmon is one such instream use. The debate on transportation strategies should be addressed by agencies with regulatory and management authority for implementing the transportation strategy. Further, even with a focus on transportation, some fish will remain in-river. The wording "in-river" is not intended to limit the Director's (or EQC's) deliberation on overall effectiveness of alternatives when responding to a request for alternative TDG criteria.

Economics:

The Department recommends that the proposed additions (v) and (vi) which make reference to cost economic and cost-effectiveness, not be included. The debate on the cost-effectiveness of fish transport strategies is appropriately addressed by agencies with the regulatory and management authority to implement those strategies. The proposed language would constrain the Director (or EQC) with cost-effectiveness findings that the Department does not have the resources to develop.

As discussed earlier, the Department believes it is the responsibility of the fisheries management agencies responsible for implementing recovery plans under the endangered species act to determine the economic and environmental costs associated with implementing their recovery plans. The debate on the cost-effectiveness of salmonid transport alternatives should, similarly, be evaluated as part of the development of salmonid recovery strategies. Both fisheries management and environmental regulatory agencies have obligations to protect aquatic life. There is often substantial overlap of the statutory responsibilities of fisheries

and environmental agencies. The debate on fish transportation issues is one such area. The EQC does not, however, provide the appropriate forum for resolving this debate. The EQC is responsible for maintaining water quality necessary to protect the instream beneficial uses.

The development of rules requires a fiscal and economic impact assessment under existing Oregon statutes. In considering the TDG criteria, the Commission is, therefore, required to consider stability for other users of the resource. It is proposed to provide this stability through a public notice provision in the rule. This period will give beneficial users time to be heard and to plan accordingly. Economic and fiscal consideration of various fishery management strategies is beyond the ambit of the Commission. Relaxation of the TDG standard for not more than 48 hours is for emergency situations only. The limited period has been inserted to ensure that emergency spills are of sufficiently limited duration as to minimize the impact on other users.

The proposed language further constrains the EQC to consider two explicit findings. As described earlier the EQC must define the purity of water necessary for protecting beneficial uses. Other agencies, such as the National Marine Fisheries Service, are responsible for evaluating fish transport option and for implementing spill programs. Agencies responsible for developing salmonid recovery strategies provide the appropriate forum for debating whether spill is cost-effective or if the cost of increased spill is outweighed by the biological benefit achieved.

The DSI believed the term "in-river" narrowly defined the discretion of the Director (Commission). The language is not intended to constrain the Director's (Commission) judgement in applying the criteria on a holistic evaluation of beneficial uses. The proposed rule allows that the Director (Commission) **may** modify the criteria. The Director's (Commissions) discretion would not be constrained from maintaining current criteria under a judgement that the overall benefits of a spill program did not justify the risk to aquatic life.

Permanent Criteria:

Although several groups suggested their support for a permanent higher TDG criteria no language was provided suggesting an alternative permanent criteria. The Department recommends against any higher permanent TDG criteria based on the data currently available.

The DEQ agrees with the findings of the NMFS scientific panel that any increase above 110% TDG is in the direction of greater damage and risk. The Department does not believe a permanent TDG criteria greater than 110% of saturation is appropriate.

The NMFS scientific panel correctly observed that "overall reduction of risk to fish may require other groups to consider reconfiguration of engineering structures and water management rather than minor operation adjustments to alter TDG". Effective efforts to provide the water for spill as recommended by the NMFS expert panel at the current standard are not presently available.

f. The panel believes the existing standard of 110% will adequately protect fish on purely biological grounds. Effects above 110% are uncertain but in the direction of damage. More recent reviews suggest that more stringent levels of TDG are advisable for full protection. Further development of information for gas supersaturation criteria is needed for detailed balancing of TDG conditions and availability for water for outmigration.

Reduction of TDG

a) An active search should be made for mechanism to provide water for outmigration at levels of TDG that are not detrimental to fish

b) An active program is needed to reduce TDG below the current standards of 110% of barometric pressure in the Columbia and Snake Rivers

c) Carefully evaluated, innovative engineering and water management projects should be identified and implemented to lower TDG and provide adequate fish passage.

The NMFS scientific panel did not preclude the reasonable option of risk management. Risk management requires that reasonably quantifiable and precise knowledge exists to describe the causal relationships associated with alternatives.

Based on the observation that optimum spill levels can not be attained and meet existing TDG criteria the Department believes that a process for allowing alternative TDG criteria to exceed 110% may be appropriate. The justification for any increase would be provided by an applicant requesting action under the proposed rule. The information submitted by the applicant would provide the justification for an alternative, mechanisms for public and scientific review, and debate on criteria. However, no permanent higher criteria could be supported by the scientific information available. Further, the Department agrees that every effort should be made to achieve the desired spill levels while maintaining TDG below the 110% criterion.

Absolute Cap on TDG within the rule:

The Department recommends that no absolute cap be incorporated into the proposed rule. Although no language was provided, the open ended nature of the proposed rule was identified as a weakness. Alternative criteria were identified in the range of 120 or 125-130% TGP.

The definition of a maximum cap beyond which TDG would not be allowed reach is necessary for the effective application of a standard. The issue is whether to identify the maximum cap within the proposed rule, or to allow the Director (or Commission) to identify the maximum as part of the modified criteria allowed under the rule.

In drafting the proposed rules the Department elected to focus on the administrative requirements. The proposed administrative process does not provide the scientific information and review needed to determine a cap. By not specifying a cap in the rule the EQC does not constrain the range of options that may become available as scientific information improves. The Department believes future efforts and planning or financing improvements should be aimed at achieving an instream criterion of 110% TDG.

The definition of a maximum cap within the rule could be perceived as better meeting the requirements of ORS 468(b).048(1)(H) by providing a measure of stability toward achieving the public's right to rely upon standards as adopted for a reasonable period of time to permitting institutions, municipalities, commerce, industries and others to plan schedule, finance, and operate improvements in an orderly fashion. However, it is the Department's position that the appropriate criteria to base future improvements on is 110% saturation.

If the Commission elects a cap at this time rather than during the evaluation of a proposal the Department would rely on previous reviews, and review of information presented during this hearing, to recommend a cap of 120% as an average with a maximum value of 125% TGP. The cap would not necessarily be a recommendation of this criteria, rather that potential criteria not exceed this range. This cap would be consistent with the recommendations of Drs. Ebel and Weitkamp.

Public Notice:

The Department agrees with the principle described in the proposed language for public notice recommended by DSI. The public/scientific comment and review process provides a critically important component in the establishment of appropriate water quality standards. The scientific review of the TDG modifications has not undergone the rigorous scientific review and public review that typically accompanies a standard setting process.

For example, in the triennial standards review, the DEQ established an overall technical advisory committee to review proposed standards modification, established technical advisory committees of recognized experts for each parameter, and established a policy advisory committee. These committees provided extensive scientific and policy input on the development of water quality standards issue papers for proposed standards modifications. The proposed modifications will further be distributed for public review, comment, and response prior to action by the DEQ. The TDG criteria under the proposed rule would not undergo such extensive scientific and public review. However, TDG criteria are no less important than those criteria being evaluated under the triennial review process.

In order to obtain the scientific and public review needed to develop defensible water criteria a public comment period is needed. The Department recommends one significant change to the language proposed by DSI and that is to drop the identified 45 day period such that the proposed language reads:

> ***(C) the commission (director) will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others.***

The 45 day period was dropped to allow the Director (or EQC) to react to emergency situations if they arise. However, the Department agrees with DSI that, in general, there is no good reason why requests can not be made in time to allow a review period. The 45-day period is the minimum required to obtain and evaluate substantive public comment.

Conditions may occur where prompt action to modify the TDG would be appropriate. The most apparent example is the fish kill due to elevated temperature at the McNary holding facilities during 1994. Apparently, increased spill could have alleviated this problem. In order to be able to respond to like emergencies the Department modifies paragraph C of the proposed rule to include:

> ***except that the director may modify the TDG criteria for emergencies for a period not exceeding 48 hours.***

This addition would allow the director to modify the TDG criterion for a period not to exceed 48 hours even if the Commission elects to retain authority to modify the rule under section B.

Clarification and modification to section (ii).

The Department recommends against replacing section (ii) with the language proposed by CRITFC stating that "the resident biological community not be impaired" .

The language in the proposed rule was criticized by CRITFC and DSI for being unclear. The intent perhaps can be identified and then better clarified.

> 1) The potential of mortality to migrating juvenile and adult salmon from elevated TDG is considered;
>
> 2) The potential of mortality to migrating juvenile and adult salmon from risks associated with other passage strategies, such as turbine mortality, predation, etc, is considered;

3) The potential impairment of the resident biological communities or other migrating species due to elevated TDG is considered; and

4) The overall risks associated with 1-3 are not considered independently.

As described earlier the Department believes its focus should be on defining the in river options that provide protection for the beneficial uses of in-river migration and resident biological communities.

The term reasonable was used to reflect the understanding that absolute findings are not possible and the Director (Commission) will need to make judgements based on the information available and presented.

The proposed language is therefore:

(ii) the modified TDG criterion associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated TDG to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon.

Attachment E

Detailed Changes to the Proposed Rule

The Hearings Officer's Report, Attachment D, provides a detailed discussion of the suggested changes to the proposed rule. The Department considered four (4) alternative draft rules that incorporated various alternatives of the suggested modifications. These alternatives are summarized as:

1) The Commission's authority with required public input except for a maximum 48 hour emergency action,

2) The Director's authority with required public input except for a maximum 48 hour emergency action,

3) The Commission's authority with cost effectiveness findings, without the in-river constraints, and a required 45-day public input process except for a maximum 48 hour emergency action,

4) The Director's authority, without inherent public input requirement,

5) The Commission's (Director's) authority with a specific 45-day public review period and without the "in-river" constraint,

6) The Commission's (Director's) authority with a specific 45-day public review period.

7) The Commission's (Director's) authority without a specific 45-day period and without the Directors authority to act during an emergency not to exceed 48 hours.

The Department recommends Alternative 1 or 2.

Proposed Rule Language
Option 1

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Proposed Rule Language
Option 2

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

*(A)*The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

(B) The Director may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Director must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Director will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Proposed Rule Language

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

Including Comments from DSI

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

Change from proposed rule:

Deletes the wording "in river"

Adds findings (v) and (vi) on relative costs, and

Adds a 45 day period

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) failure to act would result in greater harm to salmonid stock survival than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(v) the economic cost of additional spill at federal hydropower dams, including costs imposed on electrical ratepayers, resulting from increased spill is outweighed by the biological benefit achieved by allowing increased gas saturation,

(vi) increased spill at federal hydropower dams is a cost effective means to assist salmon populations as compared to other means.

(C) At least 45 days before making the determinations called for in section (B) the Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Proposed Rule Language

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

Incorporating changes suggested by CRITFC

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

Changes from proposed rule:

Focuses finding ii on residence fish and aquatic life,

Eliminates section C, defined public input requirement

(B) The Director may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Director must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria would not likely impair resident fish and aquatic life

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

Proposed Rule Language

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

Changes from proposed rule:

Removes the in-river constraint

Adds a 45-day clause for public input

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) failure to act would result in greater harm to salmonid stock survival than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) At least 45 days before making the findings called for in section (B) the Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Proposed Rule Language

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

Changes from proposed rule:

Adds specific 45-day period for public comment and review.

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C)At least 45 days before making the findings called for in section (B) the Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours.

Proposed Rule Language

To amend OAR 340-41-205(2)(n),
OAR 340-41-445(2)(n),
OAR 340-41-485(2)(n),
OAR 340-41-525(2)(n),
OAR 340-41-565(2)(n),
OAR 340-41-605(2)(n), and
OAR 340-41-645(2)(n).

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110% of saturation, except when stream flow exceeds the ten-year, seven day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105% of saturation.

Changes from proposed rule:

Eliminates the Directors authority to act in emergencies for a period not to exceed 48 hours.

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill,

(ii) the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon,

(iii) adequate data will exist to determine compliance with the standards, and

(iv) biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Attachment F

Rulemaking Proposal
for
Modification of Total Dissolved Gas (TDG) Criteria
for the Mainstem Columbia River

Rule Implementation Plan

Summary of the Proposed Rule

The rule would provide language allowing the director (commission) the flexibility to modify the TDG criteria for the purpose of aiding juvenile salmonid migration through increased spill at Columbia River hydro-project contingent upon required findings and reasonable time period for public input.

Proposed Effective Date of the Rule

Following Commission action.

Proposal for Notification of Affected Persons

A mailing list has been developed to include those person and agencies who have previously appeared before the Commission to testify on emergency criteria for total dissolved gas, requested additional to the mailing list as part of the public record, or were assumed to be interested in the Departments actions concerning TDG in the Columbia River. Persons will be notified through appropriate mailings.

Proposed Implementing Actions

The proposed criteria would be implemented upon receipt of a request by an individual or agency proposing an alternative TDG criteria. The Department will provide a review of the proposal to determine if it is complete. An acceptable proposal will include:

Definition of agency requesting modification
Proposed TDG criteria
Location and timing for application of proposed criteria
Statement of need for the proposed criteria
Rational for the derivation of the proposed criteria

Documentation of findings (i) through (iv)
Supporting material
Description of physical monitoring of TDG
Description of biological monitoring

The Department will then provide public notice of the proposed rule modification and identify the submitting agency where supporting documentation may be obtained.

The Department will review and evaluate information presented in the submittal and additional comments and information presented during the comment period. The Department will provide a summary report and review to the director (commission) with recommendations.

The director (commission) will determine whether or not to modify the criteria, and the duration of the modified criteria. Interested persons/agencies will then be notified of the modified criteria by mail. The Department will maintain a record of the proceedings and modified criteria.

Proposed Training/Assistance Actions

No training is proposed.

SA\WC13\WC13171.5

Environmental Quality Commission

☐ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item B
February 16, 1995 Meeting

Title:

Rule Action Item: Proposed Amendment to OAR 340-41-470 (1), the "Three Basin Rule"

Summary:

The Commission directed the Department to follow normal rulemaking procedures to consider revising OAR 340-41-470 (1) on January 28, 1994. An Advisory Committee of 24 members representing diverse local and statewide interests was established. The group met nine times over a period of as many months, and several subcommittees formed, which met numerous times. Committee members agreed that recommendations would be made by consensus, or by a 90 percent favorable vote. This level of agreement was never reached and no recommendation resulted from the group's discussions.

The Department took concepts from the Advisory Committee discussions and modified them to create a rule that was intended to keep overall water quality at nearly existing levels, while allowing most types of discharges if they met strict water quality criteria. This proposed rule was sent out for public comment in December, 1994. Public hearings were held in January, 1995 in Eugene, Salem, and Oregon City. Approximately 500 comments were received, with a significant majority opposed to adoption of the proposed rule on the grounds that it would not provide the desired level of water quality protection.

Based on evaluation of testimony and additional information received since the proposed rule was written, staff believes that the rule sent out for public comment could result in more degradation than intended because of the high level of staff resources that would be required to fully implement certain provisions. Staff therefore recommend adoption of a modified rule that will provide a high level of water quality protection, but require relatively few staff resources. The staff-recommended rule allows somewhat less flexibility for growth and development than the rule sent out for comment, but accommodates essential discharges needed for public safety and environmental cleanup and allows significantly more room for growth and development than the existing rule. Several other alternatives are also provided should the Commission determine that a different level or form of water quality protection is desired for these basins.

Department Recommendation:

It is recommended that the Commission adopt the rule amendments regarding the proposed modification to OAR 340-41-470 (1) as presented in Attachment A1 of the Department Staff Report.

Lynn S. Kennedy	Michael Downs	Lydia Taylor
Report Author	Division Administrator	Director

February 2, 1995

†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

State of Oregon
Department of Environmental Quality Memorandum†

Date: February 1, 1995

To: Environmental Quality Commission

From: Lydia Taylor, Interim Director

Subject: Agenda Item B, February 16, 1995, EQC Meeting

Revisions to OAR 340-41-470 (1), the "Three Basin Rule"

Background

On November 15, 1994, the Director authorized the Water Quality Division to proceed to a rulemaking hearing on proposed rules which would amend OAR 340-41-470 (1), also known as the Three Basin Rule, to allow minimal discharges necessary for public safety and environmental cleanup and to allow flexibility to accommodate growth and development within the Clackamas, North Santiam, and McKenzie River subbasins, while maintaining water quality at approximately current levels.

Pursuant to the authorization, hearing notice was published in the Secretary of State's Bulletin on December 1, 1994. The Hearing Notice and informational materials were sent to the mailing list of those persons who have asked to be notified of rulemaking actions, and to a mailing list of persons known by the Department to be potentially affected by or interested in the proposed rulemaking action, on December 9, 1994.

Three Public Hearings were held:

DATE:	TIME:	LOCATION:
January 10, 1995	7:00 p.m.	Lane County Fairgrounds Meeting Room 1 796 W. 13th Avenue Eugene, Oregon

†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

January 11, 1995	6:00 p.m.	Loucks Lecture Hall Salem Public Library 585 Liberty Street, S.E. Salem, Oregon
January 12, 1995	6:00 p.m.	Gregory Forum Building, Rm 108 B&C Clackamas Community College Oregon City, Oregon

Alan Scott, Nadine Faith, and Tom Barkin of the Public Utilities Commission served as Presiding Officers at the respective hearings. The Presiding Officer's Reports (Attachments C1 through C3 in the report sent to Commissioners) summarize the oral testimony presented at the hearings. Written comment was received through January 16, 1995. Copies of original letters and a summary of the letters is available to Commissioners as Attachment D2. (The summaries of written and oral testimony total nearly 150 pages. Rather than mailing such a large volume of paper to a mailing list of over 1200 persons, the Department will provide copies to those who request them. Requests should be made by calling 229-5437 or by writing to Darlene Hoge: DEQ Water Quality Division, 811 SW Sixth Avenue, Portland, Oregon, 97204.)

Department staff have evaluated the comments received, and a summary of the major issues raised by the public, followed by the Department's response, is enclosed as Attachment E. Based upon that evaluation, modifications to the initial rulemaking proposal are being recommended by the Department. These modifications are summarized in this memo and are detailed further in Attachment F.

The following sections of this staff report summarize:

- The issue that this proposed rulemaking action is intended to address;
- The relationship of this rule to other state and federal requirements;
- The authority to address the issue;
- The process for development of the rulemaking proposal including alternatives considered;
- Possible alternatives for revising the rule;
- A summary of the rulemaking proposal presented for public hearing;
- A summary of the significant public comments and the changes proposed in response to those comments;
- A summary of how the rule will work and how it is proposed to be implemented;

- A recommendation for Commission action.
- A list of attachments is found at the end of this memo.

Issue this Proposed Rulemaking Action is Intended to Address

OAR 340-41-470 (1), known as the "Three Basin Rule," prohibits the discharge of any further waste into the Clackamas River, North Santiam River and the McKenzie River (above Hayden Bridge) sub-basins. This prohibition effectively eliminates most potential new activities that result in discharges to waters of the state, including among others: road and bridge repairs, tourism, small businesses with cooling systems, drinking water treatment systems that backflush their filters, and homebuilding. As the scope or enforcement of EPA's stormwater regulatory program expands, the Three Basin Rule will become increasingly more restrictive. The proposed rule revision is necessary to allow flexibility for essential activities (such as bridge repairs in the interest of public safety) as well as some of the current and projected growth and development in the three basins.

In addition to substantive reasons for revising the Three Basin Rule, the existing rule language is unclear, and needs to be revised to clarify whether the scope of the rule includes only permitted activities, and discharges to both surface and groundwater.

Relationship to Federal and Adjacent State Rules

For most water quality parameters, the three river basins fall under the federal antidegradation policy of the Clean Water Act (40 CFR 131.12). This policy limits the rate and total amount of degradation allowable in "High Quality Waters" such as those in the three basins. The antidegradation policy is adopted in State rules under OAR 340-41-026. Although the intent of both federal and state law is to maintain high quality waters at very close to existing levels of purity, such waters are the only class of waters that may legally be degraded. (The alternative classifications are Outstanding Resource Waters (ORWs), which may not be degraded from specified high levels, and Water-Quality Limited waters, which fail to meet the state-adopted standards set to protect beneficial uses.)

The existing Three Basin Rule essentially treats the basins as if they were in the Outstanding Resource Waters classification, although ORW designations are water-quality based, and OAR 340-41-470 (1) prohibits discharges irrespective of water quality. Currently, no river reaches have been designated ORWs in Oregon. Some other states have designated a number of river reaches, but fewer designations have

occured nationwide than EPA originally envisioned. EPA Region VIII recently distributed guidlines to help states create a classification between High Quality Waters and ORWs. This classification has become known as "Tier 2.5" and would be the classification into which the staff-recommended rule amendments would place the three basins. The three basins are not designated ORWs, and the staff-recommended revisions would comply with federal antidegradation requirements.

Further information on the relationship of the Three Basin Rule to federal laws is available in Attachment B-6 of this Staff Report.

Authority to Address the Issue

Oregon Revised Statutes (ORS) 468.020 authorizes the Commission to adopt rules and standards as considered necessary to perform its statutory functions. ORS 468B.035 authorizes the Commission to adopt rules as needed to carry out provisions of the Federal Water Pollution Control Act (Clean Water Act) and federal regulations and guidelines issued pursuant to the Act. The Commission may adopt, modify or repeal rules, pursuant to ORS 183.310 to 183.550, for the administration and implementation of the Act.

Process for Development of the Rulemaking Proposal

In January 1994, the Environmental Quality Commission adopted an interim revision to OAR 340-41-470 (1), the three basin rule, and directed the Department to begin formal review of the permanent rule. The Commission specified a process for the Department to follow in reviewing the rule, and directed it to establish a public advisory committee to facilitate input from local and statewide interests with stakes in the basins. A public advisory committee composed of 24 persons was established in March, 1994. (A list of members is provided in Attachment G.) The Advisory Committee met monthly through September, with two meetings in August. At the September meeting, which was anticipated to be the last, the Committee did not reach consensus on a recommended rule revision. The Department believed that a recommendation might still be possible if additional time were allowed and a smaller group from the Advisory Committee were convened to discuss the issues at a level of detail not possible in such a large group.

Three members of the Advisory Committee who had previously served as spokespersons for fellow members then agreed to meet with Department staff on a weekly basis to develop a proposed rule or rules for presentation to the larger Committee. These three

individuals were charged to represent the interests of the three major groups on the Committee: environmental and recreation interests, industrial and commercial interests, and municipal interests. A proposed rule was developed which did not have full agreement by the three spokespersons. This proposed language was mailed to the full Advisory Committee and members of the public for their review prior to a final Advisory Committee meeting held on November 9, 1994. No formal recommendation resulted from that meeting, but some agreement on specific details of the proposed rule was reached.

Based primarily on Advisory Committee discussion and staff resources available to implement a new rule, the Department wrote a rule proposal which was sent to a mailing list of nearly 1,000 persons for comment.

Some Possible Alternatives for Revising the Rule

The Advisory Committee discussed a number of alternatives for revising the rule. The Department considered additional alternatives, and described five options that differ in the level of risk they allow to water quality and the level of staff resources required for implementation. These options were outlined in a special "Easy Comment Form" which was distributed at the public hearings. (A sample form, with tallied responses is included as Attachment D1.) Following the public hearings, the Department identified five alternative rules, which are described below. Four of the alternatives are the same as options that appeared on the Comment Form. A new alternative, the staff-recommended rule, was created following the close of public comment.

The staff-recommended rule is listed as the third alternative below. However, any of the alternatives could legally be adopted by the Commission. As mentioned elsewhere in this report, federal and state law provide the most regulatory flexibility with respect to High Quality Waters, such as are found in these basins.

Alternatives for EQC Consideration:

I. Keep the Original Rule. Do not allow any discharges in the three basins.

Effect: This option would maintain water quality at approximately current levels, but would prohibit many necessary or beneficial activities and limit many types of new development that require a discharge permit. Current land use plans would need to change, affecting property values.

Prohibited Activities: Bridge repairs, leaking underground storage tank cleanups, replacement of failing septic systems with community sewage treatment facilities, control of existing stormwater runoff would not be allowed. This option would also prohibit new growth including housing developments, businesses, roadside rest stops, recreational development and new roads.

Department Evaluation: The original rule does not provide the flexibility needed to allow discharges that are clearly in the public interest. Even if a strict discharge prohibition were desirable, the rule language needs to be changed to clarify the scope of the prohibition.

2. Allow Only Discharges Needed for Public Safety and to Improve Water Quality.

Effect: This option could improve water quality beyond present high levels but would ban discharges from new growth and development. Current land use plans would need to change, affecting property values.

Allowed Activities: Bridge repairs, leaking underground storage tank cleanups, replacement of failing septic systems with community sewage treatment facilities, control of existing stormwater runoff.

Prohibited Activities: New housing developments, businesses, recreational development and roads.

Department Evaluation: This alternative would result in the highest level of water quality of all the options, and would allow discharges that are clearly in the public interest. However, the Department does not recommend this rule. It allows little room for growth and development because stormwater discharges from new activities would not be allowed. This would create conflicts with local land-use plans, and would cause hardship among communities located in the upper basins.

3. Allow Only Discharges Needed for Public Safety, Environmental Cleanup, and Some Growth & Development.

Effect: This option would protect water quality at close to existing levels, and would prevent harmful effects from accumulation of toxics or other pollutants. Some limitations would still be felt by communities located in the upper basins, but many activities could comply with the rules requirements.

Allowed Activities: Bridge repairs; leaking underground storage tank cleanups; replacement of failing septic systems with community sewage treatment facilities; control of existing and new stormwater runoff; construction of houses, roads, and shopping centers; backflushing of municipal drinking water filters, and business activities that require cooling systems could all be allowed.

Prohibited Activities: Discharge of industrial process wastewater and sewage to surface waters would be prohibited. Surface water discharges from new fish hatcheries, log ponds, some forms of mining, and vehicle washing activities that require a discharge permit would not be allowed.

Department Evaluation: Staff recommend adoption of this alternative because it would protect water quality at high levels, while allowing activities that are clearly in the public interest, also including those needed for some growth and development in compliance with local land-use plans.

4. Allow Most Discharges if their Cumulative Impact Isn't Measurable. If an impact is detected, require new sources to reduce pollution by the same amount they want to add (offsets).

Effect: Basinwide, this should result in water quality that is not measurably different from present levels. However, there would be some limited degradation in localized areas, and some risk to water quality would exist.

Allowed Activities: Most types of activities could be allowed, if they meet strict water quality criteria and protect drinking water. If an adverse trend was noted, new facilities or developments would face high costs or might be unable to meet the rule's requirements.

Department Evaluation: This is the alternative that was sent out for public comment. The Department does not recommend this option due to the potential risk to water quality that would result if resources should prove inadequate to fully implement the monitoring and enforcement provisions.

5. Repeal the Three Basin Rule. Require the same standards that are used in the rest of the Willamette Basin.

Effect: Beneficial uses such as drinking water, recreation, and aquatic life would continue to be protected, but some degradation of water quality could occur. Current land use plans would not need to change.

Allowed Activities: Most activities could be allowed if the discharge can meet DEQ's standards.

Department Evaluation: The State could legally choose to repeal OAR 340-41-470 (1), since Willamette basin standards are considered adequate to fully protect the designated beneficial uses. However, the Department does not recommend this option. Staff believe that long-term demand for drinking water, recreation opportunities, and protection of aquatic life justifies an especially high level of water quality protection in these basins.

Actual rule language for these alternatives is found in Attachments A1 and A2. Attachment A1 includes the staff-recommended alternative. The other alternative rules are found in Attachment A2.

Summary of Rulemaking Proposal Presented for Public Hearing and Discussion of Significant Issues Involved.

The rule revision sent out for public comment (referred to as "the comment rule" throughout this staff report) would have allowed most types of discharges, provided they met stringent requirements and overall water quality would be maintained at virtually existing levels. New or increased discharges of domestic waste to surface waters were an exception: discharge to surface waters would have continued to be prohibited, but treatment followed by sub-surface disposal or land application could have been allowed. The comment rule was intended to fulfill the original intent of OAR 340-41-470 (1), which was to minimize risk to drinking water and recreational uses in the sub-basins.

The comment rule included an innovative regulatory mechanism for control of industrial wastes. Applicants for new individual industrial waste permits would have been required to find an equivalent discharge within the basin and reduce significant pollutants by the amount they wished to add to the river. This requirement was known as the offsets provision. Because there are few existing dischargers in the basins from which to obtain offsets, another mechanism (often called the variance procedure) was provided by which a discharge could be allowed. This mechanism mandated use of high level treatment technologies and compliance with strict water quality criteria. The variance procedure would only apply if the permit applicant demonstrated that no offset was reasonably available, and if the EQC determined that the discharge was in the public interest.

Because the comment rule would have allowed most types of discharges, the rule also required increased monitoring by both dischargers and the Department to assure that water quality would be maintained at nearly current levels. Several drinking water suppliers agreed to work with DEQ laboratory staff to develop a monitoring network that would provide more information than is now available. DEQ's lab agreed to add another monitoring site to its ambient network that would reflect conditions higher in each basin. The Department was to look for adverse water quality trends in the basins and report any findings in the biennial 305(b) Report. If an adverse trend was discovered, the Department would be required to identify the reason for the trend and take action to reverse it. New discharges of the parameter for which a negative trend existed would either have to be offset or would not be allowed, except under some special circumstances.

Staff estimate that the comment rule would require between one and two full-time, permanent equivalents (FTE's) to implement, in addition to the effort that is normally required in oversight of the three basins. The estimate is relatively low, based on an assumption that the offsets requirement would discourage sources from seeking individual industrial discharge permits in the basins. (Many dischargers could choose technologies or scales of operation that would qualify them for general permits, which would not require an offset.) The FTE required would be significantly higher if adverse trends were found.

Summary of Significant Public Comment and Changes Proposed in Response

Public Comment: A total of 107 oral comments were made, and 295 written responses were received. 137 persons submitted a comment form distributed by the Department at the hearings. Among those who commented were representatives from agencies, local governments, industry, special interest groups, Native American tribes, and the general public. Legislators, physicians, environmentalists, citizens with technical expertise in water quality, and parents and grandparents spoke eloquently about their desire to maintain high water quality in Three Basins. Evaluation of, and response to public comment is found in Attachment E.

The testimony was overwhelmingly opposed to adoption of the comment rule. Many persons also chose to comment on the application for a proposed mining discharge in the North Santiam basin; the testimony was overwhelmingly opposed to allowing such activities in the three basins.

Major issues raised by a large majority of those who commented include the following:

1) The reasons to protect the basins are still valid. As population pressure increases the need for pure drinking water, recreational opportunities, and habitat for aquatic life will only become greater.

2) Some discharges necessary for public safety or environmental cleanup should be allowed, but there is no need to allow discharges to accommodate development.

3) Too little is known about the long-term effects of pollution. The Department should be protecting resources in the face of doubt, not plunging headlong into problems that our children will have to solve. Allowing mining discharges in the headwaters of drinking water supplies is short-sighted.

4) DEQ doesn't have the resources to effectively implement the proposed rule. Without effective implementation the rule will put lives and entire species at risk.

5) The comment rule allows too much discretion to DEQ staff, who are pressured into political decisions that are not in the public interest. Stick with the simple, straightforward discharge prohibition.

Issues raised by a significant number of those who testified include:

6) Some flexibility for growth and development must be allowed. Those in the upper basins must not be forced to bear the entire cost of maintaining clean water for those in the lower basins.

7) The comment rule does not consider cumulative impacts to sediment or organisms. The variance procedure is especially worrisome and should be deleted.

8) Polluters should pay the full cost of their discharges. They should not be trusted to self-monitor.

9) The public should be allowed to testify before the EQC.

Some members of the public raised the following concerns:

10) The offsets provision requires too many resources from both DEQ and dischargers for the environmental benefit that it will produce.

11) The rule review is a sham, designed primarily to cover for decisions that have already been made. The public has been excluded from the rule review.

Proposed Changes:

Staff recommends that significant changes be made in the Comment Rule. The changes reflect the need to minimize risk to the water quality in the basins. From information provided by public input and through further staff evaluation of the Comment Rule, the Department believes that resources required for monitoring and enforcement could prove inadequate. Because the Comment Rule would have allowed most types of discharges, inadequate oversight could have resulted in risks to water quality that were not intended. The staff-recommended rule takes a different regulatory approach that is less resource-intensive than the innovative but complex Comment Rule. The staff-recommended rule protects water quality by prohibiting the most risky discharges, and assuring that the remaining allowable discharges are minimal.

The staff-recommended changes would allow a few select types of surface discharges necessary for public safety, environmental cleanup, and some growth and development. Other types of discharges, including process waste water from industry and sewage would be restricted to land application or subsurface disposal. The major changes to the comment rule which are proposed by staff are outlined below. Additional explanation and detail is available in Attachment F.

- Sections 6, 7, 8, and 9 of the Comment Rule have been deleted, meaning that some general permits and all individual industrial permits for discharge to surface waters are prohibited. Some general permits which are needed for public safety, environmental cleanup, construction, or routine business ventures are allowed, including all stormwater general permits. Individual stormwater permits are also allowed.

- Section 10, which restricts new sewage discharges to land application or subsurface disposal (WPCF) permits is modified to include industrial discharges--if there will be no impacts to either surface or groundwater. This puts industrial wastewater discharges on the same footing as domestic wastewater discharges; i.e. no discharges of pollutants to surface water are allowed.

- Sections 12 and 13 which required increased monitoring, analysis, and enforcement activities have been deleted. These sections required substantial staff resources for regulation of nonpoint discharges, monitoring, and analysis of water

quality trends. Because the rule allows less types of discharges, these provisions are no longer considered as essential. The Department will still increase monitoring in the three basins, but the effort will not be specified in rule language.

A panel composed of eighteen citizens who submitted testimony on the Comment Rule has been asked to respond to these proposed changes at the Commission meeting. The panelists were selected to represent the wide range of viewpoints communicated during the Comment Period. A list of panelists is included as Attachment I.

Summary of How the Proposed Rule Will Work and How it Will be Implemented

The recommended rule protects water quality by prohibiting discharges that could adversely impact water quality. Only some types of general permits would be allowed for discharges to surface waters. By definition, those discharges that qualify for general permits should be minimal.

To protect drinking water, water-contact recreation, and aquatic life, some discharges that would normally be allowed to surface waters would be permitted only for land application, subsurface disposal, or other means that do not result in a discharge to surface water.

The Department will implement the provisions of this rule through the same mechanisms that are used to protect water quality elsewhere in the state. Protection will be achieved by prohibiting some discharges, and by expanding the monitoring network.

Recommendation for Commission Action

It is recommended that the Commission adopt the rule amendments regarding the Three Basin Rule as presented in Attachment A of the Department Staff Report.

Attachments

A1.	Rule (Amendments) Proposed for Adoption
A2.	Alternative Rules that Could be Adopted
B.	Supporting Procedural Documentation:
	1. Legal Notice of Hearing
	2. Public Notice of Hearing (Chance to Comment)
	3. Rulemaking Statements (Statement of Need)
	4. Fiscal and Economic Impact Statement
	5. Land Use Evaluation Statement
	6. Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements
C1.	Presiding Officer's Report on Eugene Public Hearing
C2.	Presiding Officer's Report on Salem Public Hearing
C3.	Presiding Officer's Report on Oregon City Public Hearing
D1.	Public Response to Comment Form Options
D2.	Summary of Written Comments Received
E.	Department's Evaluation of Public Comment
F.	Detailed Changes to Original Rulemaking Proposal made in Response to Public Comment
G.	Advisory Committee Membership
H.	Rule Implementation Plan
I.	List of Panelists Invited to Speak at EQC Meeting

Reference Documents (available upon request)

Summary of Oral and Written Comments Received

Approved:

Section: Thomas J. Lucas

Division: Michael Downs

Report Prepared By: Lynne Kennedy

Phone: 229-5371

Date Prepared: January 29, 1995

STAFF-RECOMMENDED ALTERNATIVE

PROPOSED AMENDMENTS TO
OREGON ADMINISTRATIVE RULES

SPECIAL POLICIES AND GUIDELINES

OAR 340-41-470

NOTE:

The *bold underlined* portions of text represent proposed additions made to the rules.

The ~~*[bold bracketed]*~~ portions of text represent proposed deletions made to the rules.

SPECIAL POLICIES AND GUIDELINES

340-41-470

(1) In order to preserve or improve the existing high quality water for municipal water supplies, ~~[and]~~ recreation, and preservation of aquatic life, new or increased ~~[it is the policy of the EQC to prohibit any further]~~ waste discharges shall be prohibited, except as provided by this rule, to the waters of:

(a) The Clackamas River Subbasin;

(b) The McKenzie River Subbasin above Hayden Bridge;

(c) The North Santiam River Subbasin;

(2) Except as otherwise provided for in this rule, this rule becomes effective and applies to all permits pending or applied for after the date of filing with the Secretary of State. For the purposes of sections (1) through (7), the following definitions apply:

(a) "Waste discharges" are defined to mean any discharge that requires an NPDES permit, WPCF permit, or 401 Certification. Individual on-site sewage disposal systems subject to issuance of a construc-

tion-installation permit are excluded from this definition.

(b) "Existing discharges" are defined as those discharges from point sources which existed prior to January 28, 1994.

(c) "Existing facilities" are defined as those for which construction started prior to January 28, 1994. Where existing facilities are exempted from requirements placed on new facilities, the exemption applies only to the specific permit(s) addressed in the subsection which allows the exemption.

(d) "New" NPDES and WPCF permits are defined to include permits for potential or existing discharges which did not previously have a permit, and existing discharges which have a permit, but request an increased load limitation.

(3) To respond to emergencies or to otherwise avoid imminent serious danger to public health or welfare, the Director or a designee may allow lower water quality on a short-term basis.

(4) The Director or a designee may renew or transfer NPDES and WPCF permits for existing facilities. Existing facilities with NPDES permits may not be granted increases in their permitted mass load limitations. The following restrictions and exceptions apply:

(a) The Department shall conduct an inspection prior to permit renewal. Existing sources with general permits who are found not to qualify for a general permit, and who wish to continue discharging, shall be required to apply for an individual permit;

(b) Fish hatcheries (General Permit 300) and log ponds (General Permit 400) shall be required to apply for an individual permit at the time of permit renewal;

(c) Additional industrial, confined animal feeding operation, or domestic waste loads that are irrigated on land at agronomic rates or that otherwise meet the conditions of Section (7) of this rule shall not be considered an increase in the permitted wasteload.

(5) The Director or a designee may issue the following General Permits or Certifications subject to the conditions of the Permit or Certification:

(a) Storm water construction activities (General Permits 1200C and 1200CA);

(b) Underground storage tank cleanups using best available treatment technology (General Permit 1500);

(c) Non-contact cooling water (General Permit 100);

(d) Filter backwash (General Permit 200);

(e) Boiler blowdown water (General Permit 500);

(f) Suction dredging (General Permit 700) only in portions of the basins that are not designated as Scenic Waterways under ORS 390.805 to 390.925.

(g) Federal Clean Water Act Section 401 water quality certifications.

(6) Long-term general and individual storm water permits may be allowed as required by State and/or Federal law. The following requirements apply:

(a) New storm water discharge permittees shall maintain a monitoring and water quality evaluation program which is effective in evaluation of the in-stream water quality impacts of the discharge; and

(b) When sufficient data is available to do so, the Department shall assess the water quality impacts of storm water discharges. Within a subbasin, if the proportion of total degradation that is contributed by storm water is determined to be significant compared to that of other permitted sources, or if the Department determines that reducing degradation due to storm water is cost-effective when compared to other available pollution control options, the Department may institute regulatory mechanisms or modify permit conditions to require control technologies and/or practices which result in protection that is greater than that required statewide.

(7) Industrial waste discharge sources, confined animal feeding operations, and domestic sewage treatment facilities shall meet the following conditions:

(a) No NPDES permits for new industrial or new confined animal feeding operation waste discharges, or new domestic sewage treatment facilities shall be issued, except as allowed under Sections (3), (4), (5), and (6) of this rule.

(b) The Department may issue WPCF permits for new industrial or

confined animal feeding operation waste discharges provided:

(A) There is no waste discharge to surface water; and

(B) All groundwater quality protection requirements of OAR 340-40-030 are met. Neither the Department nor the Commission shall grant a concentration limit variance as provided in OAR 340-40-030, unless the Commission finds that all appropriate groundwater quality protection requirements and compliance monitoring are met and there will be no measurable change in the water quality of the surface water that would be potentially affected by the proposed facility. For any variance request, a public hearing shall be held prior to Commission action on the request.

(c) The Department may issue WPCF permits for new domestic sewage treatment facilities provided there is no waste discharge to surface water and provided:

(A) All groundwater quality protection requirements of OAR 340-40-030 are met. Neither the Department nor the Commission shall grant a concentration limit variance as provided in OAR 340-40-030, unless the Commission finds that all appropriate groundwater quality protection requirements and compliance monitoring are met and there will be no measurable change in the water quality of the surface water that would be potentially affected by the proposed facility. For any variance request, a public hearing shall be held and the permit application will be evaluated according to (B) and (C).

(B) The Commission finds that the proposed, new domestic sewage treatment facility provides a preferable means of sewage collection, treatment and disposal as compared to individual on-site sewage disposal systems. To be preferable, the Commission shall find that one of the following criteria applies:

(i) The new sewage treatment facility will eliminate a significant number of failing individual on-site sewage disposal systems that cannot be otherwise reliably and cost-effectively repaired, or

(ii) The new sewage treatment facility will treat domestic

sewage that would otherwise be treated by individual on-site sewage disposal systems, from which the cumulative impact to groundwater is projected to be greater than that from the new facility, or

(iii) If an individual on-site sewage disposal system, or several such systems, would not normally be utilized, a new sewage treatment facility may be allowed if the Commission finds that the social and economic benefits of the discharge outweigh the possible environmental impacts.

(C) All applicants for domestic wastewater WPCF permits must meet the following requirements:

(i) Application must be for an individual permit; and

(ii) The proposed discharge must not include wastes that incapacitate the treatment system; and

(iii) The facility must be operated or supervised by a certified wastewater treatment plant operator as required in OAR 340-49-015, except as prohibited by ORS 448.430; and

(iv) Annual written certification of proper treatment and disposal system operation shall be obtained from a qualified Registered Sanitarian, Professional Engineer, or certified wastewater treatment system operator.

THE ORIGINAL RULE

OREGON ADMINISTRATIVE RULES

SPECIAL POLICIES AND GUIDELINES

340-41-470

(1) In order to preserve the existing high quality water for municipal water supplies and recreation, it is the policy of the EQC to prohibit any further waste discharges to the waters of:

(a) The Clackamas River Subbasin;

(b) The McKenzie River Subbasin above the Hayden Bridge (river mile 15);

(c) The North Santiam River Subbasin;

DISCHARGES NEEDED FOR PUBLIC SAFETY AND TO IMPROVE WATER QUALITY

OREGON ADMINISTRATIVE RULES

SPECIAL POLICIES AND GUIDELINES

340-41-470

(1) In order to preserve the existing high quality water for municipal water supplies and recreation, it is the policy of the EQC to prohibit any ~~[further]~~ new or increased waste discharges to the waters of:

(a) The Clackamas River Subbasin;

(b) The McKenzie River Subbasin above the Hayden Bridge (river mile 15);

(c) The North Santiam River Subbasin;

(2) Except as otherwise provided for in this rule, this rule becomes effective and applies to all permits pending or applied for after the date of filing with the Secretary of State. For the purposes of sections (1) through (3), the following definitions apply:

(a) "Waste discharges" are defined to mean any discharge that requires an NPDES permit, WPCF permit, or 401 Certification.

(b) "Existing discharges" are defined as those point sources which existed prior to January 28, 1994.

(c) "Existing facilities" are defined as those for which construction started prior to January 28, 1994. Where existing facilities are exempted from requirements placed on new facilities, the exemption applies only to the specific permit(s) addressed in the subsection which allows the exemption.

(3) The Director or a designee may allow lower water quality for the following purposes:

(a) To respond to emergencies or to otherwise avoid imminent serious

danger to public health or welfare on a short-term basis; or

(b) To allow for short-term discharges, including storm water runoff from construction activities and discharges subject to Federal Clean Water Act Section 401 water quality certifications; or

(c) To allow substitution of a new waste discharge for one or more waste discharges or discharges from failing septic systems, provided the main purpose of the new waste discharge is to reduce water quality impacts from the existing discharge(s). The new discharge may only be allowed if a net gain in environmental quality will result and beneficial uses will be fully protected.

(4) The Director or a designee may renew or transfer NPDES and WPCF permits for existing facilities provided there are no increases in permitted mass load limitations.

THE RULE SENT OUT FOR PUBLIC COMMENT

OREGON ADMINISTRATIVE RULES

SPECIAL POLICIES AND GUIDELINES

340-41-470

(1) In order to preserve or improve the existing high quality water for municipal water supplies, ~~[and]~~ recreation, and preservation of aquatic life, new or increased ~~[it is the policy of the EQC to prohibit any further]~~ waste discharges shall be prohibited, except as provided by this rule, to the waters of:

(a) The Clackamas River Subbasin;

(b) The McKenzie River Subbasin above Hayden Bridge;

(c) The North Santiam River Subbasin;

(2) Except as otherwise provided for in this rule, this rule becomes effective and applies to all permits pending or applied for after the date of filing with the Secretary of State. For the purposes of sections (1) through (13), the following definitions apply:

(a) "Waste discharges" are defined to mean any discharge that requires an NPDES permit, WPCF permit, or 401 Certification source.

(b) "Existing discharges" are defined as those point sources which existed prior to January 28, 1994.

(c) "Existing facilities" are defined as those for which construction started prior to January 28, 1994. Where existing facilities are exempted from requirements placed on new facilities, the exemption applies only to the specific permit(s) addressed in the subsection which allows the exemption.

(d) "New" NPDES permits are defined to include permits for potential or existing discharges to surface water which did not previously have a permit, and existing discharges which have a permit, but request an increased load limitation.

(e) "Best Achievable Technology" as defined in OAR 340-47-010 (3) means the technology that provides the greatest degree of protection, taking into consideration processes that are developed, or could feasibly be developed given overall reasonable expenditures on research and development, and processes that are currently in use. In determining what is best achievable technology, the Director shall consider the effectiveness, engineering feasibility, and commercial availability of the technology.

(f) For the purpose of making the findings required prior to issuance of a permit as required in Subsection (8)(c) of this rule, a "measurable water quality impact" shall be deemed to occur if:

(A) A projected increase or decrease in in-stream water quality for a given parameter is greater than the precision or accuracy of the analytical procedure in common use for that parameter at the time of original permit issuance. The appropriate analytical procedure and its precision or accuracy will be determined by the Department and specified in the issued permit; or

(B) The Department determines that the projected increase or decrease in a given water quality parameter would likely result in adverse impacts to beneficial uses.

(3) To respond to emergencies or to otherwise avoid imminent serious danger to public health or welfare, the Director or a designee may allow lower water quality on a short-term basis.

(4) The Director or a designee may renew or transfer NPDES and WPCF permits for existing facilities provided there are no increases in currently permitted mass load limitations. The following restrictions apply:

(a) The Department shall conduct an inspection prior to permit renewal. Existing sources with general permits who are found not to qualify for a general permit, and who wish to continue discharging, shall be required to apply for an individual permit;

(b) Fish hatcheries (General Permit 300) and log ponds (General Permit 400) shall be required to apply for an individual permit at the time of permit renewal, but will not be considered new permits and do not need to meet the requirements of Sections (7) and (8) unless an increased load is requested.

(5) The Director or a designee may issue the following General Permits or Certifications subject to the conditions of the Permit or Certification:

(a) Storm water construction activities (General Permits 1200C and 1200CA);

(b) Underground storage tank cleanups using best available treatment technology (General Permit 1500);

(c) Non-contact cooling water from building air conditioning (Certain permits under General Permit 100);

(d) Filter backwash (General Permit 200);

(e) Suction dredging (General Permit 700);

(f) Wash water (General Permit 1700);

(g) Federal Clean Water Act Section 401 water quality certifications.

(6) The Director or a designee may allow new NPDES and WPCF general permits in addition to those listed in Section (5), provided the following conditions are met:

(a) Sources granted new general permits shall be inspected prior to permit issuance and renewal. If a source is found not to qualify for a general permit, the applicant shall be required to apply for an individual permit;

(b) New fish hatcheries (General Permit 300) and log ponds (General Permit 400) shall be required to apply for an individual permit;

(c) New permits for discharges that include domestic waste must comply with the requirements of section (10).

(7) The Director or a designee may allow new, individual NPDES permits for discharges other than those listed in sections (10) and (11) provided the following conditions are met:

(a) The permit applicant shall demonstrate to the Department that the applicant will offset the proposed pollutant load with an equivalent discharge reduction elsewhere in the subbasin in significant pollutant parameters to be specified by the Department. The

following requirements apply, except as noted in sections (7) through (9):

(b) An "equivalent discharge reduction" shall be defined to have the following characteristics:

(A) New discharges must result in in-stream pollutant concentrations that comply with mixing zone rules, and;

(B) The permitted load limit for each significant parameter in a new discharge may not exceed the load reduction in the discharge from which the offset is taken, and;

(C) The source of the offset and the new discharge should be located so that they achieve the greatest practicable benefit to beneficial uses.

(c) The offset may be achieved from point or nonpoint sources;

(d) The offset shall only be allowed by permit or other enforceable instrument, obtained for both the new source and the offset source;

(e) The amount of the offset shall be calculated to include only the decreased load that results from practices or technologies adopted in addition to those already required by rule or statute;

(f) The offset for a given parameter must be realized coincident with the new discharge load, and must continue as long as the new discharge continues. Permits for both the new or increased discharge and the source from which the offset is obtained may be reopened if monitoring data shows that actual loads are higher than those used to calculate permit limits;

(g) The offset must not adversely affect downstream drinking water intakes;

(h) Permits allowed under this section shall require the permittee to maintain a monitoring and water quality evaluation program to ensure that the offset requirements are consistently met. Permittees shall be held accountable for monitoring of effluent, and upstream and downstream ambient water quality with respect to both the permitted outfall(s) and the site(s) from which the offset is obtained;

(8) If an applicant for a new NPDES permit demonstrates that no practicable, equivalent discharge reduction exists within the subbasin to provide the offset required in section (7) for a specific parameter, as determined by the Department, the permit may be allowed despite the lack of offset for that parameter if the Environmental Quality Commission finds that:

(a) The discharge will not significantly, adversely affect municipal drinking water intakes; and

(b) The Best Achievable Technology will be attained; and

(c) The discharge will have no measurable water quality impacts beyond 500 feet downstream from the outfall; and

(d) The action is necessary and justifiable for economic or social development benefits which outweigh both the environmental costs and the potential risk of accidental discharge which would adversely impact water quality; and

(e) No other reasonable alternatives exist except to lower water quality.

(9) Permits allowed under section (8) shall require the permittee to maintain a monitoring and water quality evaluation program to ensure that the requirements are consistently met. Permittees shall be required to monitor effluent, and upstream and downstream ambient water quality.

(10) Domestic sewage treatment facilities shall meet the following conditions:

(a) No NPDES Permits for new domestic sewage treatment facilities shall be issued.

(b) The Department may issue NPDES permits to owners of domestic sewage treatment facilities currently under permit provided that currently permitted mass load limitations are not increased. Additional waste loads that are irrigated on land at agronomic rates shall not be considered an increase under this subsection.

(c) The Department may issue WPCF permits for new domestic sewage treatment plants, provided:

(A) All groundwater quality protection requirements of OAR 340-40-030 are met. Neither the Department nor the Commission shall grant a variance as provided in OAR 340-40-030, unless the Commission finds that there will be no

measurable change in the water quality of the closest surface water that would be potentially affected by the proposed facility. For any variance request, a public hearing shall be held and the permit application will be evaluated according to (B) and (C).

(B) The Commission finds that the proposed, new domestic sewage treatment facility provides a preferable means of sewage collection, treatment and disposal as compared to individual on-site sewage disposal systems. To be preferable, the Commission shall find that one of the following criteria applies:

(i) The new sewage treatment facility will eliminate a significant number of failing individual on-site sewage disposal systems that cannot be otherwise reliably and cost-effectively repaired, or

(ii) The new sewage treatment facility will treat domestic sewage that would otherwise be treated by individual on-site sewage disposal systems, from which the cumulative impact to groundwater is projected to be greater than that from the new facility, or

(iii) If an individual on-site sewage disposal system, or several such systems, would not normally be utilized, a new sewage treatment facility may be allowed if the Department finds that the social and economic benefits of the discharge outweigh the possible environmental impacts.

(C) All applicants for domestic wastewater WPCF permits must meet the following requirements:

(i) Application must be for an individual permit; and

(ii) The proposed discharge must not include wastes that incapacitate the treatment system; and

(iii) The facility must be operated or supervised by a certified wastewater treatment plant operator as required in OAR 340-49-015, except as prohibited by ORS 448.430; and

(iv) Annual written certification of proper treatment and disposal system operation shall be obtained from a qualified Registered Sanitarian, Professional Engineer, or certified wastewater treatment system operator.

(11) Long-term general and individual storm water permits may be allowed as required by State and/or Federal law. The following requirements apply:

(a) New storm water discharge permittees shall maintain a monitoring and water quality evaluation program which is useful for evaluation of the in-stream water quality impacts of the discharge; and

(b) When sufficient data is available to do so, the Department shall assess the water quality impacts of storm water discharges. Within a subbasin, if the proportion of total degradation that is contributed by storm water is determined to significantly exceed that of other permitted sources, or if the Department determines that reducing degradation due to storm water is cost-effective when compared to other available pollution control options, the Department may institute regulatory mechanisms or modify permit conditions to require control technologies and/or practices which result in protection that is greater than that required statewide.

(12) Discharges from nonpoint sources, including forestry and agricultural activities, shall be minimized through adherence to best management practices as required by Oregon statute and rules. If the Department has reason to believe that agricultural discharges have made a significant contribution toward the adverse trend, the Department shall hold a consultation with the Department of Agriculture. If water quality impacts are likely from agricultural sources in addition to confined animal feeding operations, and the Department determines that a management plan is necessary, the Department shall ask the Commission to adopt a rule requiring an agricultural water quality plan. The Department shall then ask the Department of Agriculture to prepare and implement such a plan pursuant to ORS 568.900 to 568.933. If the Department of Agriculture declines to prepare and implement the requested plan, the Department shall do so.

(13) The Department shall develop and maintain a long-term water quality monitoring program for the mainstem Clackamas, North Santiam, and McKenzie Rivers covered by this rule.

(a) As part of the biennial, statewide water quality assessment required by Section 305(b) of the federal Clean Water Act, the Department

shall conduct a water quality trends analysis for appropriate water quality parameters.

(b) If a trend analysis shows a statistically significant, adverse water quality trend for any water quality parameter in any of the three subbasins, the Department shall issue no new permits for discharges that include concentrations of that parameter in excess of background levels in the relevant basin until the adverse trend has been reversed. The following four exceptions apply:

(A) A discharge may be allowed in an emergency or to otherwise avoid imminent serious danger to public health or welfare; or

(B) New NPDES or WPCF permits may be issued to dischargers who are replacing an existing treatment system with another system that results in reduced water quality impacts, provided there will be no measurable, adverse impact to municipal drinking water intakes; or

(C) New discharges may be allowed if they are offset such that impacts to beneficial uses are reduced; or

(D) When the Department has determined the cause of the adverse trend and established a management plan to reverse the trend, new discharges of the affected parameter in concentrations above background levels may be allowed, if they will not interfere with the reversal of the trend or prolong the period during which the adverse trend continues.

REPEAL THE THREE BASIN RULE

OREGON ADMINISTRATIVE RULES

SPECIAL POLICIES AND GUIDELINES

340-41-470

~~(1) In order to preserve the existing high quality water for municipal water supplies and recreation, it is the policy of the EQC to prohibit any further waste discharges to the waters of:~~

~~(a) The Clackamas River Subbasin;~~

~~(b) The McKenzie River Subbasin above the Hayden Bridge (river mile 15);~~

~~(c) The North Santiam River Subbasin;~~

NOTICE OF PROPOSED RULEMAKING HEARING

(Rulemaking Statements and Statement of Fiscal Impact must accompany this form.)

Department of Environmental Quality — Water Quality Division

OAR Chapter 340-41-470 (1)

DATE:	TIME:	LOCATION:
January 10, 1995	7:00 p.m.	Lane County Fairgrounds Meeting Room 1 796 W. 13th Avenue Eugene, Oregon
January 11, 1995	6:00 p.m.	Loucks Lecture Hall Salem Public Library 585 Liberty Street, S.E. Salem, Oregon
January 12, 1995	6:00 p.m.	Gregory Forum Building, Rm 108 B&C Clackamas Community College Oregon City, Oregon

HEARINGS OFFICER(s):

Eugene:	Barbara Burton or alternate
Salem:	Barbara Burton or alternate
Portland:	Tom Lucas

STATUTORY AUTHORITY: ORS 468.020

ADOPT:

AMEND: OAR 340-41-470 (1)

REPEAL:

☒ This hearing notice is the initial notice given for this rulemaking action.
☒ Auxiliary aids for persons with disabilities are available upon advance request.

SUMMARY:

OAR 340-41-470 (1) prohibits the discharge of any further waste into the Clackamas River, North Santiam River and the McKenzie River (above Hayden Bridge) sub-basins. This prohibition effectively eliminates most potential new activities, which would need wastewater discharge permits. The proposed rule revision is necessary to allow flexibility for some growth and development in the three sub-basins.

The proposed rule language amends OAR 340-41-470 (1), the "Three Basin Rule," to allow some minimal permitted discharges, provided that water quality in each sub-basin is maintained at levels

that are not measurably different from current levels, as determined by biennial trends analyses of specific water quality parameters. Protection of municipal drinking water, recreation, and aquatic life are specifically cited as the reason for maintaining existing water quality. The amended rule would require some potential industrial and commercial activities to reduce pollution elsewhere in the sub-basin by an amount equivalent to what they propose to discharge. If no such reduction is possible, new or increased discharges could be allowed if they would not result in measurable water quality impacts 500 or more feet downstream from the outfall. New or increased discharges of domestic sewage to surface waters would continue to be prohibited; such discharges could be allowed through treatment and subsurface disposal or land application. Nonpoint sources of waste would be required to minimize impacts from runoff through adoption of effective management practices.

LAST DATE FOR COMMENT: January 16, 1995

DATE PROPOSED TO BE EFFECTIVE: Upon adoption by the Environmental Quality Commission and subsequent filing with the Secretary of State.

AGENCY RULES COORDINATOR:	Chris Rich, (503) 229-6775
AGENCY CONTACT FOR THIS PROPOSAL:	Lynne Kennedy
ADDRESS:	Water Quality Division 811 S. W. 6th Avenue Portland, Oregon 97204
TELEPHONE:	(503) 229-5371 or Toll Free 1-800-452-4011

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments will also be considered if received by the date indicated above.

Thomas J. Lucas — Signature

9/15/94 — Date

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Proposed Revisions to OAR 340-41-470 (1), the "Three Basin Rule"

Date Issued:	December 9, 1994
Public Hearings:	January 10,11,12, 1995
Comments Due:	January 16, 1995

WHO IS AFFECTED:

Citizens living in the **Clackamas, North Santiam, and McKenzie drainage basins,** municipal water suppliers who obtain water from these basins, citizens statewide who use the rivers for recreation, and citizens and businesses that derive their income from aquatic life or natural resources present in the basins.

WHAT IS PROPOSED:

Revision of OAR 340-41-470 (1), the Three Basin Rule. The existing rule prohibits the discharge of any further waste into the **Clackamas River, North Santiam River and the McKenzie River (above Hayden Bridge) subbasins.** This prohibition rules out activities that are necessary for public safety, such as bridge repairs, as well as activities that would improve water quality such as regulation of existing stormwater runoff. The discharge prohibition also effectively eliminates most potential new activities, including among others: many small businesses, road building, and other construction projects that disturb five or more acres.

The proposed rule amendments would allow for some minimal discharges necessary for growth and development, while requiring that water quality in the three subbasins be maintained at approximately existing levels.

WHAT ARE THE HIGHLIGHTS:

The goal of the proposed rule is to maintain or improve the quality of water in the three subbasins for the protection of municipal drinking water, recreation, and aquatic life, while also allowing certain discharges that meet stringent pollution-control requirements. Because the three subbasins currently receive relatively few discharges, the rivers are able to remove small amounts of many types of pollutants. This means that some discharges could be allowed, and although they would cause some degradation of water quality at the point where they enter the river, no change in water quality could be measured at a point not far downstream, nor would cumulative effects be measurable basin-wide.

811 S.W. 6th Avenue
Portland, OR 97204

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

To adequately address the different types of discharges for which permits might be requested, the proposed rule amendment is necessarily complex. Major elements include:

Monitoring to Assure that Water Quality is Maintained:

- The Department would increase the number of ambient water quality monitoring sites in the subbasins, and would cooperate with drinking water suppliers to increase available data.
- A biennial trends analysis would be done; if an adverse trend were found, new discharges that include the water quality parameter for which the adverse trend existed would not be allowed until the trend was reversed, or unless certain requirements were met.
- To provide some idea of which activities were contributing to any problems that might be found, additional monitoring would be required of some categories of new permittees.

Some Discharges Would Be Allowed with Normal, or Slightly Increased Oversight:

- Existing discharges would be allowed to continue, but some would be required to obtain individual permits--which have more requirements.
- Some new discharges which are emergency, short-term, de-minimus, or impossible to regulate more closely could be allowed to continue to apply for general permits. Most remaining categories of general permits could also be issued to new sources, provided an inspection was done prior to permit issuance and renewal. Sources which did not qualify for a general permit would then be required to apply for an individual permit.
- Stormwater permits for industrial sites and municipalities could be allowed in compliance with Federal requirements.
- Nonpoint sources such as agriculture and forestry would be required to follow best management practices as required by Oregon law. If these sources were shown to create adverse impacts on water quality, more effective management practices would be required.

Some Dischargers Would Face Requirements Unique to the Three Basins

- Potential new sources with significant waste loads to surface waters (with the exception of sewage discharges--which would not be allowed, and long-term stormwater discharges) would be required to offset their proposed discharge, or if that weren't possible, meet

some strict water quality criteria, hold a public hearing to learn whether citizens think the benefits of the proposed discharge would justify the environmental costs and risk, and get specific approval to discharge from the Environmental Quality Commission.

- New or increased sewage discharges would be restricted to treatment followed by sub-surface disposal or land application, which would only be allowed if there would be no measurable change in the quality of nearby surface waters.

HOW TO COMMENT:

Public Hearings to provide information and receive public comment are scheduled as follows:

DATE:	TIME:	LOCATION:
January 10, 1995	7:00 p.m.	Lane County Fairgrounds Meeting Room 1 796 W. 13th Avenue Eugene, Oregon
January 11, 1995	6:00 p.m.	Loucks Lecture Hall Salem Public Library 585 Liberty Street, S.E. Salem, Oregon
January 12, 1995	6:00 p.m.	Gregory Forum Building, Rm 108 B&C Clackamas Community College Oregon City, Oregon

The first half hour of each hearing will be dedicated to a short explanation of the rule, followed by a question and answer period.

Written comments must be received by 5:00 p.m. on January 16, 1995 at the following address:

Department of Environmental Quality
Water Quality Division
811 S. W. 6th Avenue
Portland, Oregon, 97204

A copy of the Proposed Rule is included in this packet. The proposed rule may also be reviewed at the above address, or obtained from the Department by calling the Water Quality Division at 229-5437 or calling

Oregon toll free 1-800-452-4011. Information on the rule may be obtained by calling Lynne Kennedy at 229-5371.

WHAT IS THE NEXT STEP:

The Department will evaluate comments received and will make a recommendation to the Environmental Quality Commission at the Commission meeting currently scheduled for February 16, 1995. Persons on the Three Basin Rule mailing list will receive notice prior to the Commission meeting. To receive a copy of the revised rule proposal, call Darlene Hoge at 229-5437, or write to the Department at the above address.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Revisions to OAR 340-41-170 (1)

Rulemaking Statements

Pursuant to ORS 183.335(7), this statement provides information about the Environmental Quality Commission's intended action to adopt a rule.

1. Legal Authority

Oregon Revised Statutes (ORS) 468.020 authorizes the Commission to adopt rules and standards as considered necessary to perform its statutory functions. ORS 468B.035 authorizes the Commission to adopt rules as needed to carry out provisions of the Federal Water Pollution Control Act (Clean Water Act) and federal regulations and guidelines issued pursuant to the Act. The Commission may adopt, modify or repeal rules, pursuant to ORS 183.310 to 183.550, for the administration and implementation of the Act.

2. Need for the Rule

OAR 340-41-470 (1) prohibits the discharge of any further waste into the Clackamas River, North Santiam River and the McKenzie River (above Hayden Bridge) sub-basins. This prohibition effectively eliminates most potential new activities, including among others: road and bridge repairs, tourism, and homebuilding. The proposed rule revision is necessary to allow flexibility for some growth and development in the three sub-basins.

The proposed rule revision would allow most types of discharges, provided they meet stringent requirements and overall water quality is maintained at virtually existing levels. New or increased discharges of domestic waste to surface waters are an exception: discharge to surface waters would continue to be prohibited, but treatment followed by sub-surface disposal or land application could be allowed. The proposed rule revision should fulfill the original intent of OAR 340-41-470 (1), which was to minimize risk to drinking water and recreation uses in the sub-basins.

3. Principal Documents Relied Upon in this Rulemaking

- Written and oral testimony submitted to the Environmental Quality Commission for a public hearing held on January 27, 1994.
- Memo dated March 29, 1994 on: History/Background: 3 Basin Rule.
- Minutes, public testimony, and letters associated with Advisory Committee meetings held between March 31, 1994 and November 9, 1994.

The above documents are available from the Department of Environmental Quality, Water Quality Division, by calling 229-5437.

4. Advisory Committee Involvement

A public advisory committee comprised of 24 persons was established in March, 1994. The Advisory Committee met monthly through September, with two meetings in August. At the September meeting, which was anticipated to be the last meeting, the Committee did not reach consensus on a recommended rule revision. The Department believed that a recommendation might be possible if additional time were allowed and a smaller group were convened to discuss the issues at a level of detail not possible in such a large group.

Three members of the Advisory Committee who had previously served as spokespersons for fellow members agreed to meet with Department staff on a weekly basis to negotiate a proposed rule or rules for presentation to the larger Committee. The three individuals were charged to represent the interests of the three major groups on the Committee: environmental and recreation interests, industrial and commercial interests, and municipal interests. A proposed rule was developed which did not have full agreement by the three negotiators. The proposed language was mailed to the full Advisory Committee and members of the public for their review prior to a final Advisory Committee meeting held on November 9, 1994. No formal recommendation resulted from that meeting, but some agreement on specific details of the proposed rule was reached.

The rule revision proposed by the Department is very similar to that discussed by the Committee, and reflects the Department's best effort to meet the goals expressed by Committee members and the public, while taking into account Department priorities in allocating limited staff resources.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Revisions to OAR 340-41-470 (1)

Fiscal and Economic Impact Statement

Introduction

The proposed rule revision would allow most types of development in the three affected sub-basins, as long as water quality is maintained at desired levels. Compared to the existing rule which prohibits all new discharges, significant, positive economic impacts would result from the proposed rule revision.

General Public

The economic impact of the proposed rule would be positive. Depending on local soils and hydrology, examples of activities that would not have been allowed by the original rule, but could be permitted under the proposed rule include: developments that disturb more than five acres, such as some campgrounds, recreational vehicle parks, multiple housing units, and commercial ventures. Industrial developments that provide jobs to local citizens could also be allowed under the proposed rule revision, provided they meet the offsets and water quality requirements of the rule.

Large and Small Businesses

The economic impact of the proposed rule would be positive. Small or large businesses that meet the requirements of the proposed rule revision could be permitted. Although small businesses would be better off under the proposed rule revision than under the current rule, they might be at some disadvantage compared to larger businesses due to the costs imposed by the requirement to offset their discharge and provide ongoing monitoring and pollution reduction controls, since these costs would constitute a greater percent of the gross expenditures than would be true for larger businesses.

Local Governments

The economic impact of the proposed rule would be positive. Revenues to local governments should increase as development occurs due to the flexibility allowed by the proposed rule revision. Because water quality will be protected at very high levels, costs to treat drinking water should not be affected. However, drinking water suppliers may

choose to cooperate with the Department of Environmental Quality to expand the ambient water quality monitoring network. This voluntary collaboration would result in small costs for additional sampling.

State Agencies

The fiscal impact of the proposed rule for the Department of Environmental Quality would likely be slightly negative. The Department will receive more fees from permits under the proposed rule revision than under the existing rule because more permits will be issued. However, the additional revenue will be needed to implement the proposed rule. The offset requirement and the strict water quality criteria will require additional oversight and permit review from the Department. In addition, the proposed rule revision calls for more inspections for general permits and an increase in the number of ambient monitoring sites in the basins. Department staff estimate that between one to two additional FTE will be required to implement the rule in the three sub-basins.

The rule could result in additional workload for the Departments of Forestry and Agriculture if existing management practices are found to result in significant degradation of water quality.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Revisions to OAR 340-41-470 (1)

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

OAR 340-41-470 (1) prohibits the discharge of any further waste into the Clackamas River, North Santiam River and the McKenzie River (above Hayden Bridge) sub-basins. This prohibition effectively eliminates most potential new activities, which would need wastewater discharge permits. The proposed rule revision is necessary to allow flexibility for some growth and development in the three sub-basins.

The proposed rule revision would allow most types of discharges, provided they meet stringent requirements and overall water quality is maintained at virtually existing levels. New or increased discharges of domestic waste to surface waters are an exception; discharge to surface waters would continue to be prohibited, but treatment followed by sub-surface disposal or land application could be allowed. The proposed rule revision should fulfill the original intent of OAR 340-41-470 (1), which was to minimize risk to drinking water and recreation uses in the sub-basins.

2. Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program?

Yes X No___

a. If yes, identify existing program/rule/activity:

National Pollutant Discharge Elimination System (NPDES)
Water Pollution Control Facilities permitting system (WPCF)

NPDES and WPCF permitting programs require land use compatibility statements (LUCS) for all new sources. The LUCS must be sent in before the Department can initiate review of engineering plans and specifications.

b. **If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?**

Yes X No____ (if no, explain):

c. **If no, apply the following criteria to the proposed rules.**

Staff should refer to Section III, subsection 2 of the SAC document in completing the evaluation form. Statewide Goal 6 - Air, Water and Land Resources is the primary goal that relates to DEQ authorities. However, other goals may apply such as Goal 5 - Open Spaces, Scenic and Historic Areas, and Natural Resources; Goal 11 - Public Facilities and Services; Goal 16 - Estuarine Resources; and Goal 19 - Ocean Resources. DEQ programs or rules that relate to statewide land use goals are considered land use programs if they are:

1. Specifically referenced in the statewide planning goals; or

2. Reasonably expected to have significant effects on
   a. resources, objectives or areas identified in the statewide planning goals, or
   b. present or future land uses identified in acknowledged comprehensive plans.

In applying criterion 2. above, two guidelines should be applied to assess land use significance:

- The land use responsibilities of a program/rule/action that involves more than one agency, are considered the responsibilities of the agency with primary authority.
- A determination of land use significance must consider the Department's mandate to protect public health and safety and the environment.

In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.

3. **If the proposed rules have been determined a land use program under 2. above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.**

Division _____ Intergovernmental Coord. _____ Date 11/17/94

Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements.

The following questions should be clearly answered, so that a decision regarding the stringency of a proposed rulemaking action can be supported and defended:

Note: If a federal rule is relaxed, the same questions should be asked in arriving at a determination of whether to continue the existing more stringent state rule.

1. *Are there federal requirements that are applicable to this situation? If so, exactly what are they?*

   The antidegradation policy of the Federal Clean Water Act (40 CFR 131.12) limits the rate and total amount of degradation allowable in the three river basins affected by the proposed rule amendments. The antidegradation policy is adopted in State rules under OAR 340-41-026.

   Under the Federal antidegradation policy, several classes or "tiers" of water bodies are identified. Within certain bounds, states have flexibility to determine which waters are placed into each of these tiers. The tiers include: Existing Uses Protected (in Oregon, water quality limited streams), or Tier 1; High Quality Waters, or Tier 2; and Outstanding National Resource Waters, or Tier 3. EPA Region VIII has developed guidance for Tier 2.5, a hybrid between High Quality Waters and Outstanding National Resource Waters, which is not identified in statute or regulation. The original Three Basin Rule was roughly equivalent to Tier 3, although the latter is water-quality based and the former simply prohibited discharges without respect to water quality. The proposed rule amendments would qualify as Tier 2.5.

2. *Are the applicable federal requirements performance based, technology based, or both with the most stringent controlling?*

   Implementation of the antidegradation policy results in requirements that are both technology-based and performance based, with the most stringent controlling.

3. *Do the applicable federal requirements specifically address the issues that are of concern in Oregon? Was data or information that would reasonably reflect Oregon's concern and situation considered in the federal process that established the federal requirements?*

Tier 2.5 was designed with situations such as occur in the Clackamas, North Santiam, and McKenzie river basins in mind. The goal of the EPA guidance is to allow some growth and development, while maintaining water quality at very high levels.

4. *Will the proposed requirement improve the ability of the regulated community to comply in a more cost effective way by clarifying confusing or potentially conflicting requirements (within or cross-media), increasing certainty, or preventing or reducing the need for costly retrofit to meet more stringent requirements later?* N/A

5. *Is there a timing issue which might justify changing the time frame for implementation of federal requirements?* No timing issues are involved.

6. *Will the proposed requirement assist in establishing and maintaining a reasonable margin for accommodation of uncertainty and future growth?*

   The purpose of the proposed amendments is to provide some flexibility for growth that does not exist in the original rule.

7. *Does the proposed requirement establish or maintain reasonable equity in the requirements for various sources? (level the playing field)*

   The proposed rule amendments are equitable in some ways and inequitable in others:

   - The requirements specified in the amendments are consistent across the basins and would result in decisions that are based on the effective "water quality carrying capacity" at different locations along the rivers.
   - Municipal drinking water intakes are given specific protection, resulting in a greater level of regulatory stringency for sources that could potentially impact the functioning of drinking water treatment systems than for other sources.
   - New point sources that are considered to have a significant discharge would need to meet requirements not demanded of sources that have less potential impact. Stormwater discharges are an exception to this; nationwide, the regulatory program for stormwater is very new and relies on development of best management practices.
   - The pollution control requirements in the proposed amendments could prove more burdensome for small firms or governments than for larger

ones since the cost of pollution-control measures could represent a higher percent of gross income.

- Point sources would face greater regulatory control than nonpoint sources, a fact that is inconsistent with the relative contribution of pollutant loadings from the two types of sources.
- Existing sources would not be required to meet the same requirements as new sources, unless they (the existing source) were to request an increased load.

8. *Would others face increased costs if a more stringent rule is not enacted?*

N/A. [If a rule **less stringent than** the proposed amendments or the original rule were adopted, drinking water suppliers who use slow sand filtration systems could be forced to upgrade to a more expensive technology. As the level of technological complexity for treating drinking water increases, small communities could be highly taxed to provide adequate maintenance and oversight of the system.]

9. *Does the proposed requirement include procedural requirements, reporting or monitoring requirements that are different from applicable federal requirements? If so, Why? What is the "compelling reason" for different procedural, reporting or monitoring requirements?*

N/A. The Federal regulations leave implementation of the antidegradation policy largely to the discretion of each State.

10. *Is demonstrated technology available to comply with the proposed requirement?*

The offsets provision of the proposed rule amendment could be technology-driving, since it would be to a permit applicant's advantage to reduce the proposed discharge by as much as possible, when weighed against the cost of providing an equivalent offset. Those applicants who were unable to locate an appropriate offset would be expected to meet a 500 foot non-measurable standard. Some sources might not be able to meet this standard using available technology and would either develop innovative ways to minimize the pollution they generate, or would choose to locate elsewhere.

11. *Will the proposed requirement contribute to the prevention of pollution or address a potential problem and represent a more cost effective environmental gain?*

The offsets provision of the proposed rule amendments could result in development of processes and/or management practices that are less polluting than normal and could have statewide application for basins where additional degradation is not allowed.

Name: _____ Address: _____
Affiliation: _____ _____
_____

EASY COMMENT FORM:
THREE BASIN RULE OPTIONS*

137 responses were received. The preferences expressed are noted below.

(There are a range of options available for regulating activities that may affect water quality in the Three Basins. Please circle one of the following options which most closely matches your views.)

I. **Keep the Original Rule.** (45 responses) Do not allow any discharges in the three basins.

Effect: This option would maintain water quality at approximately current levels, but would prohibit many necessary or beneficial activities and limit many types of new development that require a discharge permit. Current land use plans would need to change, affecting property values.

Prohibited Activities: Bridge repairs, leaking underground storage tank cleanups, replacing failing septic systems with community sewage treatment facilities, control of existing stormwater runoff would not be allowed. This option would also prohibit new growth including housing developments, businesses, roadside rest stops, recreational development and new roads.

2. **Allow Only Discharges Needed for Public Safety and to Improve Water Quality.** (81)

Effect: This option could improve water quality beyond present high levels but would ban discharges from new growth and development. Current land use plans would need to change, affecting property values.

Allowed Activities: Bridge repairs, leaking underground storage tank cleanups, replacing failing septic systems with community sewage treatment facilities, control of existing stormwater runoff.

Prohibited Activities: New housing developments, businesses, recreational development and roads.

3. **Adopt the Proposed Rule.** (6) Allow Most Discharges if their Cumulative Impact Isn't Measurable. If an impact is detected, require new sources to reduce pollution by the same amount they want to add (offsets).

Effect: Basinwide, this should result in water quality that is not measurably different from present levels. However, there would be some limited degradation in localized areas, and some risk to water quality would exist.

Allowed Activities: Most types of activities could be allowed, if they meet strict water quality criteria and protect drinking water. If an adverse trend was noted, new facilities or developments would face high costs or might be unable to meet the rule's requirements.

4. **Allow a Specified Level of Degradation.** (0) Once that level is reached, require new sources to reduce pollution by the same amount they want to add (offsets).

Effect: Water quality would be protected at the specified level. Some localized and basinwide degradation of water quality would occur, and some risk to water quality would exist.

Allowed Activities: Most types of activities could be allowed, however, once the specified level of degradation had been reached, new facilities or developments would face high costs or might be unable to meet the rule's requirements.

5. **Repeal the Three Basin Rule.** (5) Require the same standards that are used in the rest of the Willamette Basin.

Effect: Beneficial uses such as drinking water, recreation, and aquatic life would continue to be protected, but some degradation of water quality could occur. Current land use plans would not need to change.

Allowed Activities: Most activities could be allowed if the discharge can meet DEQ's standards.

6. **Your Own Option.**

_____

_____

_____

OTHER COMMENTS:

_____

_____

_____

*The effects predicted for each rule option are the best judgement of DEQ staff, assuming full implementation and existing or planned federal stormwater regulations.

Attachment E

EVALUATION OF PUBLIC COMMENT

Part I: SUMMARY OF MAJOR ISSUES AND CONCERNS: A total of 107 oral comments were made at the three public hearings held between January 10 and January 12, 1995. Written comments were received from 295 members of the public. A comment form was also distributed by DEQ at the hearings; 137 were completed and submitted to the Department. The following are the major issues and concerns expressed by commenters about the proposal to revise the Three Basin Rule to allow some discharges.

A large majority of those who commented expressed some or all of the following viewpoints:

1) **Stringent Protection Still Needed.** The need to protect drinking water and recreation hasn't changed since the rule was initially adopted; more people now draw their drinking water from these rivers than ever before. High quality water should also be maintained to protect aquatic life, since the basins are home to a number of sensitive species, including wild salmonid runs. These basins are unusual and should be appropriately valued; population growth will only increase the demand for safe drinking water and nearby recreational opportunities. Keep the existing rule and designate the basins as Outstanding Resource Waters.

2) **Necessary Discharges Only.** Some discharges are necessary to protect public health and safety, or to improve water quality. The proposed rule goes way beyond allowing these beneficial discharges, and trades short-term economic gains for long-term costs that we, our children, and the environment can ill afford to pay. When the true value of the environment is considered, the costs of development frequently exceed the benefits, even in the short-term. If development is to occur in these basins, it should be environmentally friendly, and should fully maintain the pristine qualities that make these basins attractive places to live and play.

3) **Pollution Impacts Unknown.** Not enough is known about existing discharges and the potential impacts of new discharges to warrant putting water quality at risk. There are already adverse trends in the basins which the Department can't explain. The degradation will be costly to repair; prevention would have been cheaper and more effective than remediation.

The Department should allow no further discharges until existing water quality has been fully monitored and the impacts of potential future discharges have been modelled. DEQ's mission is to protect the environment, not allow risky activities such as mines.

4) **Inadequate DEQ Resources.** The proposed rule amendments require too much oversight and too many "best professional judgements" by the Department. The Department is understaffed and will not be able to gather adequate data to make good decisions. This is particularly true for the offsets and monitoring provisions (Sections 7 and 13, respectively) which require substantial DEQ involvement. Additionally, enforcement activities will not be swift enough to assure that any problems caused by discharges allowed under Sections 8 and 9 are quickly resolved; degradation will not be addressed until it has already become a serious problem, the public will face unacceptable risks to its drinking water supplies, and fish runs will be further compromised.

5) **Biased Decision-Making.** The proposed rule is complex, vague, full of loopholes, and leaves too much to the discretion of DEQ. The Department is subject to political pressures in applying the rule, and will make decisions that favor polluters over the environment or public safety. By contrast, the existing rule is simple and easy to follow.

A significant number of commenters espoused one or more of the following views:

6) **Flexibility Is Needed.** The existing rule needs to be revised to allow for some growth and development beyond just those discharges needed for public safety and environmental gains. By allowing for some development, the proposed rule amendments increase both equity among communities and continuity with local land use plans. The burden of protecting clean water must be shared fairly, not fall entirely on the backs of upstream communities.

7) **Toxics and Cumulative Effects.** The proposed rule amendments do not account for: toxics that might seep through sand filters, cumulative impacts of small discharges, and chemicals that bioaccumulate or adsorb to sediment surfaces. No additional pollutants with these characteristics should be permitted in the basins. Sections 8 and 9 of the proposed rule amendments should therefore be deleted, biological monitoring should be mandated, and requirements for stormwater discharges should be tightened.

8) **Polluter Responsibility.** Dischargers should not be trusted to monitor their own effluent, but they should pay for all monitoring and cleanup costs associated with their discharges, including cumulative effects which are felt years later. Society does not owe private companies the right to pollute and should not have to pay the cleanup costs.

9) **Public Testimony before EQC.** Written summaries do not fully convey the strength of emotion or depth of thought that are communicated through direct testimony. The public comment period should be extended, and the public should be invited to testify before the Commission prior to any decision on the rule.

A few members of the public stated the following opinions:

10) **Efficiency and Uncertainty.** The offsets requirements (Section 7) of the proposed rule amendments require too much effort from dischargers in exchange for very little environmental benefit. Likewise, the monitoring required of dischargers is too onerous. Sources shouldn't be required to monitor for water quality parameters that they don't discharge, and additional monitoring should not be mandated for stormwater since the regulatory program is new, and the data would be of questionable utility.

11) **Flawed Process.** The rule review is a sham. DEQ made a decision long ago to change the rule to allow the proposed copper mine and to justify the illegal permits that were written since 1977. The public has been excluded from participating in the process at every opportunity, and rulemaking documentation has been woefully inadequate and misleading. The fiscal/economic statement in the rulemaking packet is inadequate and invalid.

Part II: RESPONSE TO TESTIMONY: The issues above are repeated below in italics, with the staff response following each one. Staff responses are reflected in new proposed rule language, and the changes are described in more detail in Attachment F.

ISSUE 1: ***Stringent Protection Still Needed.*** *The need to protect drinking water and recreation hasn't changed since the rule was initially adopted; more people now draw their drinking water from these rivers than ever before. High quality water should also be maintained to protect aquatic life, since the basins are home to a number of sensitive species, including wild salmonid runs. These basins are unusual and should be appropriately valued;*

population growth will only increase the demand for safe drinking water and nearby recreational opportunities. Keep the existing rule and designate the basins as Outstanding Resource Waters.

RESPONSE: **Department Response.** Staff agree with members of the Advisory Committee and the public who have consistently emphasized the importance of providing special protection for these basins, based on use of the rivers as sources of drinking water, habitat, and recreation. Staff also recognize that the value of the rivers to society will increase as the population grows.

Intent. The intent of the original rule continues to be the intent of the Department. Records from the 1977 rule adoption indicate that the Department intended to prohibit waste effluent discharges, which include sewage and industrial process wastewater, but not stormwater and some other types of discharges that have minimal water quality impacts.

The rule proposal sent out for public comment (referred to as the "Comment Rule" in this staff report) was intended to maintain water quality at levels that were not measurably different from present levels. Public testimony suggests that protecting water quality at nearly present levels does not provide an acceptable level of certainty. The staff-recommended rule therefore allows fewer types of discharges than the comment rule in an effort to reduce total degradation from permitted sources, and to reduce the variety of compounds discharged. However, some minimal degradation would still be allowed under the staff-recommended rule proposal. The reasons for this are given in the response to Issues 2, 3 and 7 below.

Staff believes that the staff-recommended rule proposal is consistent with the intent of the original rule to strictly protect water quality in these basins. The recommended rule prohibits surface water discharges of sewage and industrial process wastewater, and will result in fewer additional discharges than would have been allowed under the Department's historic implementation of the original rule.

Nomination as ORWs. The request to designate the basins as Outstanding Resource Waters (ORW) cannot be fully answered through this rulemaking process. The Department is currently developing a nomination and designation procedure for ORWs, which should be established by late this year (1995). The Clackamas, North Santiam, and

McKenzie basins will be eligible for nomination at that time by interested citizens or agencies. Public input to the development of the ORW process will be sought during the hearings for the Triennial Water Quality Standards Review.

ISSUE 2 ***Necessary Discharges Only.*** *Some discharges are necessary to protect public health and safety, or to improve water quality. The proposed rule goes way beyond allowing these beneficial discharges, and trades short-term economic gains for long-term costs that we, our children, and the environment can ill afford to pay. When the true value of the environment is considered, the costs of development frequently exceed the benefits, even in the short-term. If development is to occur in these basins, it should be environmentally friendly, and should fully maintain the pristine qualities that make these basins attractive places to live and play.*

RESPONSE **Department Response.** The Department agrees that discharges necessary to protect public health and safety (such as those created during some bridge repairs), as well as discharges that result in net gains for the environment, should be allowed. In addition, staff believe that some specific types of discharges needed to allow flexibility for growth can be accommodated without affecting beneficial uses. (See the response to Issues 3 and 7 for greater detail on which discharges may be allowed.)

Costs and Benefits of Development. Staff agree that it is very difficult to accurately calculate the cost/benefit ratio for discharges because the environmental costs are often unknown and nonquantifiable. From a more academic perspective, social scientists argue in both directions regarding whether or not growth and development result in net benefits. This is a philosophical debate which the Department is unlikely to be able to resolve.

DEQ works within the State land-use laws implemented by the Department of Land Conservation and Development and carried out locally by Metro, counties, cities, councils of governments, and other local jurisdictions.

If no new discharges are allowed in the three basins, decisions made by local planning agencies such as Metro would be affected. Metro has just completed a four-year regional growth management planning study which culminated in the adoption of the Region 2040 Growth Concept in December, 1994. This decision established

approximately 22,000 acres of urban reserve study area, of which 7,611 acres are in the Clackamas basin. These areas are now being considered for possible inclusion into the urban growth boundary.

Metro's plan took into account diverse consequences of growth, such as impacts on water quality, water supply and stormwater, in addition to implications for transportation, housing, and employment. If growth were not allowed in the Clackamas basin (and without stormwater discharges, very few activities could be allowed), the growth might be directed onto exclusive farm use lands or into the Tualatin basin--which is already water-quality limited.

The Department prefers to leave local land-use planners some flexibility in decision-making, and therefore believes that Oregonians will be best served if some carefully selected discharges are allowed in the three basins to accommodate some additional homes, employment, and infrastructure.

ISSUE 3 ***Pollution Impacts Unknown.*** *Not enough is known about existing discharges and the potential impacts of new discharges to warrant putting water quality at risk. There are already adverse trends in the basins which the Department can't explain. The degradation will be costly to repair; prevention would have been cheaper and more effective than remediation. The Department should allow no further discharges until existing water quality has been fully monitored and the impacts of potential future discharges have been modelled. DEQ's mission is to protect the environment, not allow risky activities such as mines.*

RESPONSE **Department Response.** The lack of available water quality data from sites located throughout the basins and the difficulty with which trends may be explained once they are found suggests that the public is right in urging that pollution be prevented, rather than cleaned up. Consistent with this view, the agency is developing incentives to promote pollution prevention in all media (water, air, and land). To protect water quality in the Three Basins from degradation, the intent of the staff-recommended rule proposal is to allow only those discharges the Department believes will have no long-term environmental impact.

Existing Water Quality. Preliminary analysis of water quality in the three basins using DEQ monitoring data suggested that there were significant, adverse trends for some water quality parameters in all three basins. Further analysis of the data indicates that several of the trends may be due to a change in monitoring practices that occurred in 1987, rather than to actual changes within the basins themselves. However, statistically significant, adverse trends for dissolved oxygen concentrations do appear to exist in the lower Clackamas and McKenzie basins. (DEQ's monitoring sites in both basins are within the first few river miles. In the McKenzie Basin, this puts the monitoring site outside the area covered by OAR 340-41-470 (1)) The reason for the trends has not yet been determined. Further assessments of other water quality parameters in the basins are also ongoing.

Uncertainty and Potential Future Problems. Ideally, the short and long-term impacts of pollutants would be known, and discharges would be limited to those that result in no harmful impacts--whether immediate or cumulative. However, scientists' understanding of ecological and biological processes, monitoring limitations, and scarce agency resources all reduce the Department's ability to regulate discharges in a way that provides the level of certainty that many members of the public have requested for the Three Basins.

To increase certainty, the Department has committed to increasing the number of monitoring sites in the three basins, and to issuing a report on the status of water quality in the basins every two years. Additionally, the discharges that were most troubling to those who provided testimony would not be allowed under the staff-recommended rule. The rule proposal would limit surface water discharges to the following:

- Existing permitted discharges
- Short-term discharges necessary to protect public health and safety
- Discharges needed to reduce existing pollution, which will result in net environmental benefits
- A few discharges that require general permits and have minimal water quality impacts
- Stormwater runoff

DEQ's Mission. The Agency's stated mission is to be "an active force to restore, enhance and maintain the quality of Oregon's air, water and land." Taken to an extreme, this would mean that the Department should allow no

discharges of any kind to air, water, or land. To do this would require that most of the state's population move elsewhere. Oregon Statutes, which give the EQC and DEQ authority to regulate water quality, state the following:

> ORS 468B.015: "Policy. Whereas pollution of the waters of the state constitutes a menace to public health and welfare, creates public nuisances, is harmful to wildlife, fish and aquatic life and impairs domestic, agricultural, industrial, recreational and other legitimate beneficial uses of water, and whereas the problem of water pollution in this state is closely related to the problem of water pollution in adjoining states, it is hereby declared to be the public policy of the state:
> (1) To conserve the waters of the state;
> (2) To protect, maintain and improve the quality of the waters of the state for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, municipal, recreational and other legitimate beneficial uses;
> (3) **To provide that no waste be discharged into any waters of this state without first receiving the necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters;**
> (4) To provide for ..." [emphasis added]

By inference from section (3) the Department is expected to allow some discharges, provided they are appropriately treated to protect beneficial uses. In compliance with the federal Clean Water Act and EPA regulations, the EQC has adopted beneficial uses for protection in each of the state's river basins. The beneficial uses adopted in the Three Basins include drinking water, recreation, and aquatic life, among others. In addition to the protection afforded by the Three Basin Rule, beneficial uses are protected through two sets of rules; those that set standards for in-stream water quality, and those that set standards for effluent (wastewater) quality.

In-stream standards are typically set for relevant chemical and physical parameters at a level that "fully protects" the most sensitive of the beneficial uses. Full protection generally means that no impacts to the use have been measured at levels better than the standard. However, changes from pristine conditions may introduce some unknown, nonquantifiable risks, and there may be interactions between parameters that are not accounted for by the standards. This is the tradeoff that DEQ makes in order to allow for some discharge activities.

The water quality in the Three Basins is significantly better than that required by the in-stream standards for most parameters. This means that some changes could occur in water quality without quantifiable effects to beneficial uses. Rivers are also able to rid themselves of some pollutants through natural processes. The Department's intent with the staff-recommended rule proposal is to make use of this natural cleansing process, but not add pollutants in concentrations that will cause cumulative impacts to water quality. (Because of the high quality of these waters, this protection should be greater than that afforded by the in-stream standards that apply to the Willamette Basin.)

ISSUE 4 ***Inadequate DEQ Resources.*** *The proposed rule amendments require too much oversight and too many "best professional judgements" by the Department. The Department is understaffed and will not be able to gather adequate data to make good decisions. This is particularly true for the offsets and monitoring provisions (Sections 7 and 13, respectively) which require substantial DEQ involvement. Additionally, enforcement activities will not be swift enough to assure that any problems caused by discharges allowed under sections 8 and 9 are quickly resolved; degradation will not be addressed until it has already become a serious problem, the public will face unacceptable risks to its drinking water supplies, and fish runs will be further compromised.*

RESPONSE **Department Response.** The Department has committed to increasing the level of attention given to the three basins in the future.

The comment rule would have allowed any type of discharge, provided the pollutants were offset, or strict water quality criteria were met. In tandem with adequate monitoring and enforcement, the rule would have encouraged environmentally friendly development. However, as suggested by a number of those who commented, adequate monitoring and enforcement requires significant resources. In order for the Department to provide those resources, other water quality protection efforts would suffer.

The staff recommendation is therefore to drop the most resource-intensive and uncertainty-inducing sections of the comment rule. Many of the definitions and procedures questioned by the public were associated with Sections 7, 8, and 9. The Department has therefore deleted these sections, and they do not appear in the staff-recommended option.

Offsets. The offsets provision (Section 7), while consistent with the intent of the rule to allow no increased degradation overall in each basin, would require large amounts of data and the exercise of considerable professional judgement.

It is clear that to be workable, an offsets program would have to allow the search for offsets among a number of potential sources, over some large geographical area. However, the further away the source of offsets is from the new discharge point, the less environmental sense it makes. Restricting the potential sources of offsets to the immediate vicinity of the proposed discharge, while making better environmental sense, is not workable because of the lack of potential, similar offsetting sources. Based on these weaknesses of an offsets approach (when implemented in high quality waters), the significant staff resources required, and the uncertainty for the public and permit applicants, the Department is recommending that offsets be dropped from the rule.

Sections 8 and 9. Sections 8 and 9 created much of the discomfort regarding the comment rule's potential effects on water quality and have been left out of the recommended rule proposal due to the difficulty of predicting and tracking cumulative impacts. Section 8 would also require more staff time for public involvement and for preparation of materials to enable the EQC to make individual permitting decisions.

Monitoring. DEQ oversight of monitoring reports required of dischargers by the comment rule (Sections 7 and 9), as well as in-stream monitoring required of the Department (Section 13) would require extensive staff time commitment, and therefore have been left out of the staff-recommended option.

The Department intends to add a site higher up in each basin to its ambient monitoring network, and laboratory staff will coordinate with drinking water suppliers to further increase data suitable for biennial trends analyses. However, Section 13 has been left out of the staff-recommended rule proposal for three reasons.

- Since the recommended option doesn't allow many types of surface water discharges, there is less need for extensive monitoring.
- The Department does not want to give the impression that it will do more than is actually possible given current budgetary constraints and priorities.
- The comment rule includes much more detail than normally appears in a rule. This level of detail seemed necessary to alleviate public and Advisory Committee concerns about how the rule would be implemented. The recommended rule involves less uncertainty and risk, so the Department believes that less-detailed rule language is appropriate.

ISSUE 5 ***Biased Decision-Making.*** *The proposed rule is complex, vague, full of loopholes, and leaves too much to the discretion of DEQ. The Department is subject to political pressures in applying the rule, and will make decisions that favor polluters over the environment or public safety. By contrast, the existing rule is simple and easy to follow, requiring little interpretation.*

RESPONSE **Department Response.** Staff agree that the comment rule was complex and that implementation of certain portions would have required considerable use of judgement by DEQ employees. In response to public comment, the staff-recommended option is less complex and requires less professional judgements than the comment rule.

Complexity and Department Discretion. Because the comment rule proposed innovative, new programs such as the offsets requirement, and included attention to newly regulated discharges such as stormwater, much discretion would be left to those who would implement the rule. To balance that discretion, the rule language contains a high level of detail. The recommended rule is less complex and will require less Department discretion than the comment rule since it allows less types of discharges and does not rely on complex new requirements.

Political Decision-Making. As a State agency, DEQ is charged to make decisions in the public interest. State law mandates specific procedures the agency must follow to assure that the interests of citizens holding diverse viewpoints are represented in the decision-making process. The Department has carefully followed these rules during the Three Basin Rule Review process which began on January 28, 1994, and in many cases has gone far beyond what is required by rule to solicit public input. (Specific examples of Department efforts are given in the response to Issue 11.)

Simplicity of the Original Rule. Twenty years ago, rules were written much more simply than they are now. The Three Basin Rule did not anticipate the complex new permits that have been developed in the ensuing years. The original Three Basin Rule is impossible to implement because it is too general.

The original rule prohibits "any further waste discharges"--without specifying whether the prohibition applies only to surface discharges and whether it affects only those discharges that require permits. This means that groundwater seepages that contain minerals in greater concentrations than the rivers they feed may be illegal, as might stormwater runoff from undisturbed land that contains higher levels of sediment than naturally occurs in the river. In order for the rule to be legally implementable and require less DEQ discretion, the existing language needs to be made more specific.

ISSUE 6 ***Flexibility Is Needed.*** *The existing rule needs to be revised to allow for some growth and development beyond just those discharges needed for public safety and environmental gains. By allowing for some development, the proposed rule amendments increase both equity among communities and continuity with local land use plans. The burden of protecting clean water must be shared fairly, not fall entirely on the backs of upstream communities.*

RESPONSE **Department Response.** As stated in the response to Issue 2 above, the Department agrees that the existing rule should be revised to accommodate some growth and development in the Three Basins.

Discussion of the need to provide flexibility for local land-use planners is provided under Issue 2, using Metro's Region 2040 plan for illustration. The Department cites a further example of the need for some flexibility, drawn from a letter submitted by Mr. Greg Sumners, Superintendent of Mari-Linn School District 29J, located in the North Santiam Canyon.

Mr. Sumners explains that the School District is a one-school district serving Lyons and the surrounding area. He says that due to a 43 percent increase in population over the last ten years, the school does not have adequate facilities to accommodate its student-body. Water quality and septic restrictions prevent the school from adding to current facilities without a costly upgrade to the entire system serving the existing school building. Local residents voted against a construction

bond last spring because the price was too high. A community system serving the City of Lyons would enable the school to undergo the expansion that is needed at a more reasonable cost.

Under a strict interpretation of the existing rule, no additional discharge is allowed, and there is no solution to Mr. Sumner's dilemma except to send the students elsewhere, or to overload the existing septic system. The staff-recommended rule would provide Mr. Sumners with a possible solution, provided the hoped-for sewer system could qualify for a subsurface discharge permit. Such a permit would only be granted if the discharge would not result in impacts to surface water.

The recommended rule would allow some surface water discharges that require general permits, and would therefore accommodate some growth in both housing and employment in the Three Basins. Removal of Sections 7, 8, and 9 from the comment rule should not significantly reduce economic opportunity; during the past year the Department has known of only one company (Kinross) interested in obtaining an individual industrial permit within the basins. As presently designed, the proposed mining operation would not be allowed under the staff recommended alternative.

Additionally, Section 10 of the comment rule has been modified to allow industrial discharges to land, provided groundwater rules are met and there are no impacts on surface waters. At least two major employers have stated that they located in the North Santiam basin because of the pure water supply.

The recommended rule is very protective of water quality, and allows a small amount of flexibility to accommodate growth. It is more equitable between upstream and downstream water users than the existing rule, but less equitable than the comment rule. Communities located higher in the upper reaches of the Three Basins will find that water quality considerations impede their growth more than that of their downstream neighbors.

ISSUE 7 ***Toxics and Cumulative Effects.*** *The proposed rule amendments do not account for: toxics that might seep through sand filters, cumulative impacts of small discharges, and chemicals that bioaccumulate or adsorb to sediment surfaces. No additional pollutants with these characteristics should be permitted in the basins.*

Sections 8 and 9 of the proposed rule amendments should therefore be deleted, biological monitoring should be mandated, and requirements for stormwater discharges should be tightened.

RESPONSE **Department Response.** The Department agrees that many of these observations are accurate, and would be of concern if monitoring were not substantially increased as outlined in Section 13 of the comment rule. The strict water quality criteria in the comment rule, combined with improved monitoring, were intended to minimize risks due to cumulative impacts. However, to maintain high quality water and reduce risk to the environment, staff recommends that new discharges to surface waters addressed in Sections 7, 8, and 9 be prohibited. The remaining surface water discharge permits that would be allowed under the recommended rule would not result in detectable cumulative impacts and shouldn't require biological monitoring. (Individual stormwater permits are a possible exception to this.)

Urban stormwater runoff may contain high levels of certain heavy metals. However, because the highest concentrations of such pollutants often coincide with the first major storm of the season, adequate monitoring is difficult to accomplish, and dilution ratios are hard to establish. The stormwater regulatory program is new, and municipalities are still scrambling to describe the problem and identify possible management strategies. Both the comment rule and the recommended rule explicitly state the Department's intent that when adequate information is available to do so, stormwater will be strictly and sensibly regulated in these basins.

General Permits. Little public comment was received on the provisions of the comment rule that allowed general permits. Staff proposes to prohibit issuance of a number of general permits that could have been allowed under the comment rule. The Department recommends allowing only the following general permits for discharges to surface waters:

- Stormwater construction (General Permits 1200C and 1200CA)
- Underground storage tank cleanups using best available treatment technology (General Permit 1500)
- Non-contact cooling water (General Permit 100)
- Filter backwash (General Permit 200)
- Boiler blowdown water (General Permit 500)

- Suction dredging (General Permit 700) only in portions of the basins that are not designated as Scenic Waterways
- Federal Clean Water Act Section 401 water quality certifications

Explanation. The Department issues general permits for categories of minor wastewater discharges that are believed to have minimal impacts on water quality and do not need the additional oversight of individual permits. Currently, the Department has issued general permits for seventeen categories of wastewater discharges. The permit categories listed above have been selected because they are needed for public safety, would result in net environmental benefits, or cause minimal water quality impacts.

Among the permits which cause less degradation, non-contact cooling water and boiler blowdown discharges from industrial facilities are likely to have more impact than filter backwash from water treatment plants. Stormwater construction activities, if unmanaged, may result in undesirable sediment loads. However, the Department believes that non-contact cooling water, boiler blowdown, and stormwater construction discharges, if they strictly comply with the terms of the general permits, can be safely allowed in the Three Basins.

- Non-contact cooling water - This category of discharges includes water that is used to cool equipment, but does not come in contact with any process wastewater or other contaminants. The principal pollutant of concern is heat. The use of any biocides, water treatment chemicals, or corrosion inhibitors in the cooling water is prohibited under the terms of the permit. Chlorine, if used, must be minimized. The permit requires that substantial dilution be available in the receiving stream, and the hotter the discharge the more dilution is required.

- Boiler blowdown - The water contained in boilers loses some pure water through steam, which means that the trace amounts of other minerals such as magnesium and calcium included in the water become somewhat more concentrated over time. In order to prevent the inside of the boiler being coated with "scale" from the minerals, a portion of the water in the boiler is periodically removed (typically a few times per day). This water is referred to as boiler blowdown. As with non-contact cooling

water, the principal pollutant of concern is heat. The use of biocides and water treatment chemicals which include any toxics are prohibited under the terms of the permit. The boiler blowdown permit includes the same dilution requirement for heat as does the non-contact cooling water permit.

- Stormwater construction - Regulation of stormwater from construction activities is new. Although construction activities can contribute quantities of sediment to streams, the permitting system will become increasingly more effective as management practices are improved and awareness of regulatory requirements spreads.

The Department recommends that these types of discharges be allowed for two reasons:

- If permit requirements are met, the water quality impacts are still minimal, although greater than for some other categories of general permits.
- If these permits were not allowed, a large number of otherwise "clean" industries, commercial facilities, and construction activities would not be possible.

ISSUE 8 ***Polluter Responsibility.*** *Dischargers should not be trusted to monitor their own effluent, but they should pay for all monitoring and cleanup costs associated with their discharges, including cumulative effects which are felt years later. Society does not owe private companies the right to pollute and should not have to pay the cleanup costs.*

RESPONSE **Department Response.** The Department is unable to make the recommended changes in monitoring requirements, or require that dischargers provide performance bonds for cleanup. The Department does not have staff available to train and certify third-party agents who would monitor permittee's discharges. The Department also lacks statutory authority to require cleanup bonds or insurance from most dischargers, including the mine proposed for the North Santiam. Finally, permit fees currently cover about 60 percent of the administrative costs associated with each permit application. Unlike the Clean Air Act, which stipulates that certain permittees must cover the full administrative costs of their permits, the Clean Water Act provides no such direction.

ISSUE 9 ***Public Testimony before EQC.*** *Written summaries do not fully convey the strength of emotion or depth of thought that are communicated through direct testimony. The public comment period should be extended, and the public should be invited to testify before the Commission prior to any decision on the rule.*

RESPONSE **Department Response.** Written summaries may not convey all the emotion expressed at the public hearings. However, ideas may be well communicated through summaries. EQC members are asked to address a wide array of issues each year and are unable to attend all the public hearings associated with these issues.

DEQ staff work hard to provide the best summaries possible to the Commission. In this case, the summaries have been submitted to the professional non-DEQ hearings officers who presided at the public hearings for approval. The Eugene hearings were transcribed, and tape recordings from the public hearings in Salem and Oregon City were mailed to Commissioners. Additionally, copies of all written testimony are included in the staff report received by Commissioners. Finally, 18 persons have been asked to speak before the EQC at their February 16 meeting. Many of the panelists were selected for their articulate oral or written testimony. The roster of panelists is provided as part of Attachment I.

The process followed for the Three Basin Rule Review is the same process that is followed for every rulemaking. The process was designed to gather information from interested persons to assist the EQC in making the difficult decisions that they frequently face.

ISSUE 10 ***Efficiency and Uncertainty.*** *The offsets requirements (Section 7) of the proposed rule amendments require too much effort from dischargers in exchange for very little environmental benefit. Likewise, the monitoring required of dischargers is too onerous. Sources shouldn't be required to monitor for water quality parameters that they don't discharge, and additional monitoring should not be mandated for stormwater since the regulatory program is new, and the data would be of questionable utility.*

RESPONSE **Department Response.** As stated in Issue 4 above, the Department agrees that an offsets requirement is not practical in the Three Basins, given the amount of information and staff time that would be required to create an effective program. Also, as initially

conceived, the offsets requirement would result in too much uncertainty for prospective permittees. The concept has been dropped from the recommended version of the rule.

With respect to monitoring, the Department has broad authority to require dischargers to take whatever steps are necessary to protect water quality. However, the Department has no interest in establishing frivolous requirements that result in little environmental benefit. Monitoring requirements for stormwater permits in the Three Basins have yet to be established, and will likely evolve with the stormwater program.

ISSUE 11 ***Flawed Process.*** *The rule review is a sham. DEQ made a decision long ago to change the rule to allow the proposed copper mine and to justify the illegal permits that were written since 1977. The public has been excluded from participating in the process at every opportunity, and rulemaking documentation has been woefully inadequate and misleading. The fiscal/economic statement in the rulemaking packet is inadequate and invalid.*

RESPONSE **Department Response.** No decision has yet been made on either the rule or the mining permit application. These decisions will be made by the EQC, at the appropriate time, and as necessary. Under the staff-recommended rule proposal, individual industrial permits for discharges to surface waters, such as the proposed copper mine requires, would not be allowed. Permits issued since 1977 are considered valid, since no one challenged the permits within 60 days of the time of their issuance.

Public Participation. In January, 1994, the EQC directed the Department to follow normal rulemaking procedures for possible amendments to the Three Basin Rule. Normal procedures include establishment of a Citizen Advisory Committee, followed by a public comment period that includes a public hearing. Public input is evaluated after the close of public comment and a response is given in the form of a staff report, which normally includes a recommendation to the EQC.

Department staff followed all rules concerning public involvement during the rulemaking process. In addition to meeting the minimum legal requirements, Department staff and Advisory Committee members took the initiative to further encourage public input in the following ways:

- A public comment period was held during each Advisory Committee meeting.
- Public comment from meetings was summarized and communicated to EQC members.
- Advisory Committee members' addresses and/or phone numbers were sent to the mailing list, and citizens were invited to write or call with their views. The independent citizen on the Committee summarized the phone calls she received at each Committee meeting. Letters were summarized for the EQC.
- Notes from Advisory Committee meetings were written with the public in mind and sent to the entire mailing list. Occasional explanatory letters and memos were sent to reduce confusion over the process.
- A special mailing list was established so that interested citizens could receive all information sent to Advisory Committee members.
- Some Advisory Committee meetings and all public hearings were held in the evening in order to allow citizens to participate without taking off from their day jobs.
- At least one Advisory Committee meeting and one public hearing were held near each basin so members of the public wouldn't need to drive far to participate.
- An "Easy Comment Form" was created for distribution at the public hearings in order to facilitate written comment.

DETAILED CHANGES TO ORIGINAL RULEMAKING PROPOSAL MADE IN RESPONSE TO PUBLIC COMMENT

This attachment follows up on the more general evaluation and response to public comment provided in Attachment E. The statements below explain in more specific detail how the staff recommendation differs from the rule sent out for public comment.

1. **Intent.** No change is made to Section (1), as the intent to stringently protect water quality and beneficial uses has not changed from the proposal sent out for comment.

2. **Definitions.** The following recommendations are made with respect to Section (2):

(2)(a): Language is added to this subsection to clarify that individual on-site sewage disposal systems such as required by single-family dwellings are not subject to the requirements of the rule. These systems must still comply with all state laws, which have been amended in recent years to include very strict siting and construction provisions.

(a) "Waste discharges" are defined to mean any discharge that requires an NPDES permit, WPCF permit, or 401 Certification. **Individual on-site sewage disposal systems subject to issuance of a construction-installation permit are excluded from this definition.**

(2)(b),(c),(d): No change is made in these sections. The Department does not see a need to add a definition for "construction" in subsection (c) as suggested in public testimony. Few facilities will qualify under this subsection, and the additional complexity the definition would bring to the rule is not merited.

(2)(e),(f): These subsections are deleted from the recommended rule since they provide definitions useful only to Section (8), which has also been deleted.

~~*[(e) "Best Achievable Technology" as defined in OAR 340-47-010 (3) means the technology that provides the greatest degree of protection, taking into consideration processes that are developed, or could feasibly be developed given overall reasonable expenditures on research and development, and processes that are currently in use. In determining what is best achievable*~~

~~*technology, the Director shall consider the effectiveness, engineering feasibility, and commercial availability of the technology.*~~

~~*(f) For the purpose of making the findings required prior to issuance of a permit as required in Subsection (3)(c) of this rule, a "measurable water quality impact" shall be deemed to occur if:*~~

~~*(A) A projected increase or decrease in in stream water quality for a given parameter is greater than the precision or accuracy of the analytical procedure in common use for that parameter at the time of original permit issuance. The appropriate analytical procedure and its precision or accuracy will be determined by the Department and specified in the issued permit; or*~~

~~*(B) The Department determines that the projected increase or decrease in a given water quality parameter would likely result in adverse impacts to beneficial uses.]*~~

3. **Emergencies & Public Health.** Section (3) is unchanged. The Department declines to provide definitions of "emergencies" or "short term," as it is difficult to foresee all such situations ahead of time for inclusion in a definition. Department discretion will be needed to cope with these situations.

4. **Existing Discharges.** The phrase, "permitted mass load limitations" is substituted for "currently permitted mass load limitations." This is because existing permittees may be given mass load limitations for more parameters in the future than now appear in their permits. The new language would allow the Department to add those limitations.

   It should be noted that both the original and the new language allow increases in flow, as long as there are no increases in the parameters for which load limitations are specified in the permit.

   The sentence structure of section (4) is also changed to clarify that only NPDES permits are subject to the load limitation provision. (WPCF permits don't include load limitations.)

The language is changed as follows:

> (4) The Director or a designee may renew or transfer NPDES and WPCF permits for existing facilities. Existing facilities with NPDES permits may not be granted ~~[provided there are no]~~ increases in their ~~[currently]~~ permitted mass load limitations.

Subsection (10)(b) has been moved to Section (4) in recognition of the fact that Section (4) covers existing sources, as did (10)(b). The new position is more logical, and the wording is slightly different to reflect the new context. The wording is also different to reflect an expansion of the rule to allow for non-surface discharges of industrial and confined animal feeding operation wastes. Section (4)(c) now reads:

> (4)(c) ~~[(10)(b) The Department may issue NPDES permits to owners of domestic sewage treatment facilities currently under permit provided that currently permitted mass load limitations are not increased.]~~ Additional industrial, confined animal feeding operation, or domestic waste loads that are irrigated on land at agronomic rates or that otherwise meet the conditions of Section (7) of this rule shall not be considered an increase under this subsection.

5. **New General Permits not Designated for Special Review.** Section (5) is modified to either include or exclude some general-permitted discharges, based on the following rationale:

- Additions are made because Section (6), which allowed for most new general permits, is being deleted.
- Justification for allowing all stormwater construction, non-contact cooling water, and boiler blowdown permits is provided under the response to Issue 7 in Attachment E.
- The allowance for suction dredging in (5)(e) is clarified to exclude wild and scenic waterways. (This merely reflects the Attorney's General interpretation of existing law.) The Department will review all general permits, including the 700-J permit in the near future. Public testimony both supported and opposed allowing suction dredging in the Three Basins. Evidence available to the Department at this point regarding the impacts of this activity is equivocal; further research is needed.

- Subsection (5)(f), which allowed for issuance of washwater permits, is deleted because of the potential for water quality impacts, combined with a lack of demonstrated need to allow such discharges in the Three Basins.

Changes in the rule language are as follows:

(5) The Director or a designee may issue the following General Permits or Certifications subject to the conditions of the Permit or Certification:

(a) Storm water construction activities (General Permits 1200C and 1200CA);

(b) Underground storage tank cleanups using best available treatment technology (General Permit 1500);

(c) Non-contact cooling water ~~[from building air conditioning]~~ (Certain permits under General Permit 100);

(d) Filter backwash (General Permit 200);

(e) Boiler blowdown water (General Permit 500);

(f)~~[(e)]~~ Suction dredging (General Permit 700) **only in portions of the basins that are not designated as Scenic Water ways under ORS 390.805 to 390.925**;

~~*[(f) Wash water (General Permit 1700);]*~~

(g) Federal Clean Water Act Section 401 water quality certifications.

6. **New General Permits Designated for Special Review.** Section (6) is deleted because of concern regarding risks from potential cumulative impacts.

~~*[(6) The Director or a designee may allow new NPDES and WPCF general permits in addition to those listed in Section (5), provided the following conditions are met:*~~

~~*(a) Sources granted new general permits shall be inspected prior to permit issuance and renewal. If a source is found not to qualify for a general permit, the applicant shall be required to apply for an individual permit;*~~

~~(b) New fish hatcheries (General Permit 300) and log ponds (General Permit 400) shall be required to apply for an individual permit;~~

~~(c) New permits for discharges that include domestic waste must comply with the requirements of section (10).]~~

7. **Offsets Required from Individual Industrial Permittees.** Section (7) is deleted due to strong public concern over the practicality and effectiveness of an offsets program in the Three Basins. (More justification is provided in the response to Issue 4 in Attachment E.) However, non-surface water discharges from industrial activities may be allowed if they can qualify for a WPCF permit, as described below under the discussion on Section (10).

~~[(7) The Director or a designee may allow new, individual NPDES permits for discharges other than those listed in sections (10) and (11) provided the following conditions are met:~~

~~(a) The permit applicant shall demonstrate to the Department that the applicant will offset the proposed pollutant load with an equivalent discharge reduction elsewhere in the subbasin in significant pollutant parameters to be specified by the Department. The following requirements apply, except as noted in sections (7) through (9):~~

~~(b) An "equivalent discharge reduction" shall be defined to have the following characteristics:~~

~~(A) New discharges must result in in-stream pollutant concentrations that comply with mixing zone rules, and;~~

~~(B) The permitted load limit for each significant parameter in a new discharge may not exceed the load reduction in the discharge from which the offset is taken, and;~~

~~(C) The source of the offset and the new discharge should be located so that they achieve the greatest practicable benefit to beneficial uses.~~

~~(c) The offset may be achieved from point or nonpoint sources;~~

~~*(d) The offset shall only be allowed by permit or other enforceable instrument, obtained for both the new source and the offset source;*~~

~~*(e) The amount of the offset shall be calculated to include only the decreased load that results from practices or technologies adopted in addition to those already required by rule or statute;*~~

~~*(f) The offset for a given parameter must be realized coincident with the new discharge load, and must continue as long as the new discharge continues. Permits for both the new or increased discharge and the source from which the offset is obtained may be reopened if monitoring data shows that actual loads are higher than those used to calculate permit limits;*~~

~~*(g) The offset must not adversely affect downstream drinking water intakes;*~~

~~*(h) Permits allowed under this section shall require the permittee to maintain a monitoring and water quality evaluation program to ensure that the offset requirements are consistently met. Permittees shall be held accountable for monitoring of effluent, and upstream and downstream ambient water quality with respect to both the permitted outfall(s) and the site(s) from which the offset is obtained;]*~~

8. **Alternative to Offsets for Individual Industrial Permittees.** Section (8) is deleted due to concern over both short and long-term accidental discharges and possible cumulative effects on drinking water and aquatic life. (Further justification for this recommendation appears in the response to Issue 7 in Attachment E.)

~~*[(8) If an applicant for a new NPDES permit demonstrates that no practicable, equivalent discharge reduction exists within the subbasin to provide the offset required in section (7) for a specific parameter, as determined by the Department, the permit may be allowed despite the lack of offset for that parameter if the Environmental Quality Commission finds that:*~~

~~(a) The discharge will not significantly, adversely affect municipal drinking water intakes; and~~

~~(b) The Best Achievable Technology will be attained; and~~

~~(c) The discharge will have no measurable water quality impacts beyond 500 feet downstream from the outfall; and~~

~~(d) The action is necessary and justifiable for economic or social development benefits which outweigh both the environmental costs and the potential risk of accidental discharge which would adversely impact water quality; and~~

~~(e) No other reasonable alternatives exist except to lower water quality.]~~

9. **Monitoring Required of Individual Industrial Dischargers.** Because Sections (7) and (8), which allowed individual industrial permittees to discharge to surface waters, have been deleted, the monitoring requirement is no longer needed. Section (9) is therefore deleted.

~~[(9) Permits allowed under section (8) shall require the permittee to maintain a monitoring and water quality evaluation program to ensure that the requirements are consistently met. Permittees shall be required to monitor effluent, and upstream and downstream ambient water quality.]~~

10. **Domestic Waste (Sewage).** Although little comment was received on Section 10, some upstream municipalities in both the Clackamas and North Santiam basins stated that they will find these requirements difficult and expensive to meet. Additionally, one commenter questioned whether it is good environmental policy to substitute groundwater contamination for surface water pollution. The Department does not find this to be an issue, because the groundwater rules are very strict. Subsurface discharges are not allowed if pollutants at higher than background levels are likely to leak to groundwater. The provisions in Section (10) guard against impacts from any variances that might be granted.

The recommended rule makes several changes in this section:

- Industrial and confined animal feeding operation waste non-surface water discharges are allowed under most of the same strict limitations mandated for sewage.

- Consistent with changes to Section (4), "currently permitted mass load limitations" in (10)(b) is changed to "permitted mass load limitations." This subsection has been moved to Section (4).
- Under subsection (c)(A), "the nearest surface water" is changed to "any surface water" to provide broader protection.
- The term "variance" is changed in (10)(c)(A) to the official phrase, "concentration limit variance."
- The phrase "all appropriate groundwater quality protection requirements and compliance monitoring are met" is added to (10)(c)(A) assure correct interpretation of which rules must be met.
- The section number is changed from (10) to (7).

The following specific changes are made:

(7) ~~(10)~~ Industrial waste discharge sources, confined animal feeding operations, and ~~d~~omestic sewage treatment facilities shall meet the following conditions:

(a) No NPDES Permits for new industrial or new confined animal feeding operation waste discharges, or new domestic sewage treatment facilities shall be issued, ~~.~~ except as allowed under Sections (3), (4), (5), and (6) of this rule.

~~[(b) The Department may issue NPDES permits to owners of domestic sewage treatment facilities currently under permit provided that currently permitted mass load limitations are not increased. Additional waste loads that are irrigated on land at agronomic rates shall not be considered an increase under this subsection.]~~

(b) The Department may issue WPCF permits for new industrial or confined animal feeding operation waste discharges, provided:

(A) There is no waste discharge to surface water; and

(B) All groundwater quality protection requirements of OAR 340-40-030 are met. Neither the Department nor the Commission shall grant a concentration limit variance as provided in OAR 340-40-030, unless the Commission finds that all

appropriate groundwater quality protection requirements and compliance monitoring are met and there will be no measurable change in the water quality of the closest surface water that would be potentially affected by the proposed facility. For any variance request, a public hearing shall be held prior to Commission action on the request.

(c) The Department may issue WPCF permits for new domestic sewage treatment facilities ~~plants,~~ provided there is no waste discharge to surface water and provided:

(A) All groundwater quality protection requirements of OAR 340-40-030 are met. Neither the Department nor the Commission shall grant a concentration limit variance as provided in OAR 340-40-030, unless the Commission finds that all appropriate groundwater quality protection requirements and compliance monitoring are met and there will be no measurable change in the water quality of the closest surface water that would be potentially affected by the proposed facility. For any variance request, a public hearing shall be held and the permit application will be evaluated according to (B) and (C).

(B) The Commission finds that the proposed, new domestic sewage treatment facility provides a preferable means of sewage collection, treatment and disposal as compared to individual on-site sewage disposal systems. To be preferable, the Commission shall find that one of the following criteria applies:

(i) The new sewage treatment facility will eliminate a significant number of failing individual on-site sewage disposal systems that cannot be otherwise reliably and cost-effectively repaired, or

(ii) The new sewage treatment facility will treat domestic sewage that would otherwise be treated by individual on-site sewage disposal systems, from which the cumulative impact to groundwater is projected to be greater than that from the new facility, or

(iii) If an individual on-site sewage disposal system, or several such systems, would not normally be utilized, a new sewage treatment facility may be allowed if the Department finds that the social and economic benefits of the discharge outweigh the possible environmental impacts.

(C) All applicants for domestic wastewater WPCF permits must meet the following requirements:

(i) Application must be for an individual permit; and

(ii) The proposed discharge must not include wastes that incapacitate the treatment system; and

(iii) The facility must be operated or supervised by a certified wastewater treatment plant operator as required in OAR 340-49-015, except as prohibited by ORS 448.430; and

(iv) Annual written certification of proper treatment and disposal system operation shall be obtained from a qualified Registered Sanitarian, Professional Engineer, or certified wastewater treatment system operator.

11) **Long-term General and Individual Stormwater Permits.** Due to the deletion of other sections, Section (11) becomes Section (6) in the recommended rule. One small change is made in subsection (a): "useful" is exchanged for "effective."

(6) ~~[(11)]~~ Long-term general and individual stormwater permits may be allowed as required by State and/or Federal law. The following requirements apply:

(a) New stormwater discharge permittees shall maintain a monitoring and water quality evaluation program which is **effective** ~~[useful]~~ for evaluation of the in-stream water quality impacts of the discharge; and

12) **Nonpoint Source Regulation.** Section (12) specifies that forestry and agricultural practices must be improved if adverse trends are detected in any of the Three Basins. Implementation of this provision would require staff resources not only from DEQ, but from the Departments of Forestry and Agriculture. Because the recommended rule allows less discharges than the rule sent out for public comment, resulting in lower risk to water quality, the Department believes that this section should be deleted.

~~[(12) Discharges from nonpoint sources, including forestry and agricultural activities, shall be minimized through adherence to best management practices as required by Oregon statute and rules. If the Department has reason to believe that agricultural discharges have made a significant contribution toward the adverse trend, the Department shall hold a consultation with the Department of Agriculture. If water quality impacts are likely from agricultural sources in addition to confined animal feeding operations, and the Department determines that a management plan is necessary, the Department shall ask the Commission to adopt a rule requiring an agricultural water quality plan. The Department shall then ask the Department of Agriculture to prepare and implement such a plan pursuant to ORS 568.900 to 568.933. If the Department of Agriculture declines to prepare and implement the requested plan, the Department shall do so.]~~

13) **Basin-wide Water Quality Monitoring.** Section (13) is deleted from the rule, for the reasons articulated in the response to Issue 4 in Attachment E.

~~(13) The Department shall develop and maintain a long-term water quality monitoring program for the mainstem Clackamas, North Santiam, and McKenzie Rivers covered by this rule.~~

~~(a) As part of the biennial, statewide water quality assessment required by Section 305(b) of the federal Clean Water Act, the Department shall conduct a water quality trends analysis for appropriate water quality parameters.~~

~~(b) If a trend analysis shows a statistically significant, adverse water quality trend for any water quality parameter in any of the three subbasins, the Department shall issue no new permits for discharges that include concentrations of that parameter in excess of background levels in the relevant basin until the adverse trend has been reversed. The following four exceptions apply:~~

~~(A) A discharge may be allowed in an emergency or to otherwise avoid imminent serious danger to public health or welfare; or~~

~~(B) New NPDES or WPCF permits may be issued to dischargers who are replacing an existing treatment system with another system that results in reduced water quality impacts, provided there will be no measurable, adverse impact to municipal drinking water intakes; or~~

~~(C) New discharges may be allowed if they are offset such that impacts to beneficial uses are reduced; or~~

~~(D) When the Department has determined the cause of the adverse trend and established a management plan to reverse the trend, new discharges of the affected parameter in concentrations above background levels may be allowed, if they will not interfere with the reversal of the trend or prolong the period during which the adverse trend continues.]~~

Attachment G

THREE BASIN RULE ADVISORY COMMITTEE
LIST OF MEMBERS

Committee Chairman

1. Joe Richards, Attorney and former Environmental Quality Commission chairman

A. Commercial Interests

2. Associated Oregon Industries - Jim Whitty
3. North Santiam Chamber of Commerce - John Hall
4. Eugene - Springfield Metro Partnership - John Lively
5. Oregon Forest Industries Council - Ward Armstrong
6. Homebuilder's Association of Portland - Drake Butsch
7. Kinross and Other Mining Interests - Chuck Bennett

B. Counties and other Organizations

8. Marion County - Mary Pearmine
9. Lane County - Roy Burns
10. Clackamas County - Dan Helmick
11. Association of Clean Water Agencies - Cathryn Collis
12. League of Oregon Cities - Joni Low

C. Water Suppliers/Cities

13. Salem - Frank Mauldin
14. Eugene Water and Electric Board - Laurie Power
15. South Fork Water Board - Larry Sparling
16. Springfield Utility Board - Ken Cerotsky
17. Stayton - Craig Johns
18. Estacada - Bill Strawn

D. Environmental Organizations

19. Sierra Club - Elizabeth Frenkel
20. Northwest Environmental Defense Center - Bart Brush
21. Oregon Trout - David Moskowitz
22. Pacific Rivers Council - Megan Smith
23. Northwest Environmental Advocates - Nina Bell

E. Independent Citizen

24. Martha Schrader

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Revisions to OAR 340-41-470 (1), the "Three Basin Rule"

Rule Implementation Plan

Summary of the Proposed Rule

The proposed amendment to the Three Basin Rule would allow a few select types of surface discharges necessary for public safety, environmental cleanup, and to allow flexibility for some growth and development. Other types of discharges, including process waste water from industry and sewage would be restricted to land application or subsurface disposal.

These requirements are intended to protect water quality at very high levels and minimize risks of cumulative impacts. The rule would allow more activities than the existing rule; opportunities for growth will depend on the characteristics of the local soils and hydrology.

Proposed Effective Date of the Rule

The rule would become effective upon filing with the Secretary of State.

Proposal for Notification of Affected Persons

Permitted sources in the basins have received copies of the Chance to Comment and this staff report. Most existing sources would not be affected by the rule revisions; those who would be affected would be advised of the changes at the time their permit comes up for renewal.

Proposed Implementing Actions

The staff-recommended rule would not require special implementation, with the following exceptions:

- Permit writers would need to be informed that certain permits are not allowed in the three basins, and that some of the allowable permits require that more-stringent-than normal conditions be met prior to permit issuance.
- Existing log ponds and fish hatcheries would need to apply for individual permits at the time that their permit comes up for renewal.
- DEQ's regional offices could choose to increase the monitoring and management requirements for stormwater permits in the basins as the regulation of these sources evolves.
- DEQ's Laboratory Division would need to locate an appropriate monitoring site in the upper reaches of the three mainstem rivers, and coordinate with drinking water suppliers to gather data that is compatible for comparison purposes.

Proposed Training/Assistance Actions

Training will not be necessary to implement the proposed rule.

Attachment I

Panel Presentations to the Environmental Quality Commission
3 Basin Rule Hearing

February 16, 1995

Panel	Panelists	Representing
Industrial/ Business	Drake Butsch	Home Builders Association of Metropolitan Portland
	Terry Drever-Gee or Mel Schmidt	Oregon Independent Miners Willamette Valley Miners
	Rob Freres	Freres Lumber Company
	Brad Nanke	Siltec Siltronics
	Valerie Root	Sabroso Company
	Jim Whitty	Associated Oregon Industries
Local Government	Loren Collins	Salem City Council
	Marvin Gloege	Linn County
	Helene Lichtman	Clackamas County
	Joni Low	League of Oregon Cities
	Laurie Power	Eugene Water & Electric Board
	Bill Strawn	City of Estacada
Environmental	Nina Bell	Northwest Environmental Advocates
	Mike Sheets	3 Basin Alliance
	Dr. Louisa Silva	North Santiam Watershed Council
	Charles Tebbutt	Western Environmental Law Center
	Larry Tuttle	Center for Environmental Equity
	Tom Wolf	Oregon State Council of Trout Unlimited

FOR PUBLIC HEARING MATERIALS

AND PUBLIC HEARING COMMENTS,

PLEASE SEE THE THREE BASIN RULE FILE

IN THE WATER QUALITY DIVISION

RATIONALE FOR POSSIBLE CHANGES
IDENTIFIED FOR THE STAFF RECOMMENDED RULE PROPOSAL

Based on further review of the rule recommended by staff for adoption in the staff report, some possible changes have been identified. These changes are suggested to provide greater clarity in the rule language, or to allow the Department greater flexibility in directing staff resources to where they will do the most good. The suggested changes to the rule language appear on the following pages. The rationale for the proposed changes is given below.

Section (2)

The definition of "waste discharges" in subsection (2)(a) could be modified to exclude certain discharges that require WPCF permits. As the staff-recommended rule is currently written, any WPCF discharge permit application that needs a variance would require a public hearing and EQC action prior to permit issuance, in addition to meeting strict water quality criteria. Discharges of domestic waste (sewage) would also require an individual permit, supervision by a certified operator, and an annual written certification.

Staff believe that, given limited staff resources, certain discharges do not merit the level of oversight required in the proposed rule. Domestic sewage facilities that discharge less than 5,000 gallons per day could be exempted from the requirements, since potential impacts to water quality would be minimal. Such facilities would still have to comply with all the applicable groundwater rules in other Divisions. Land application of domestic wastewater and biosolids at rates that would be used up by vegetation is preferable to other forms of disposal because nutrients are actually harvested and used. Staff believe that such recycling of nutrients should be encouraged rather than subjected to extensive administrative requirements.

Section (7)

Two modifications are proposed for Section (7). Both are strictly editorial and would not change the meaning of the rule.

Subsection (7)(c)(C) could be changed to be more consistent with language in (7)(c)(A) which says that only WPCF permits that need a variance must meet the requirements in (B) and (C). By deleting the word "All" in (C) an apparent contradiction is removed.

Subsection (7)(c)(C)(iii) could be modified to be more consistent with the rule language which it cites. "Exempted" would be a more accurate reference than "prohibited."

POSSIBLE CHANGES IDENTIFIED FOR THE STAFF RECOMMENDED RULE PROPOSAL

(2) Except as otherwise provided for in this rule, this rule becomes effective and applies to all permits pending or applied for after the date of filing with the Secretary of State. For the purposes of sections (1) through (7), the following definitions apply:

(a) "Waste discharges" are defined to mean any discharge that requires an NPDES permit, WPCF permit, or 401 Certification. Individual on-site sewage disposal systems subject to issuance of a construction-installation permit; **domestic sewage facilities that discharge less than 5,000 gallons per day under a WPCF permit; biosolids land applied within agronomic loading rates pursuant to OAR 340, Division 50; and reclaimed domestic wastewater land applied at agronomic rates pursuant to OAR 340 Division 55 are excluded from this definition**.

(b) "Existing discharges" are defined as those discharges from point sources which existed prior to January 28, 1994.

(c) "Existing facilities" are defined as those for which construction started prior to January 28, 1994. Where existing facilities are exempted from requirements placed on new facilities, the exemption applies only to the specific permit(s) addressed in the subsection which allows the exemption.

(d) "New" NPDES and WPCF permits are defined to include permits for potential or existing discharges which did not previously have a permit, and existing discharges which have a permit, but request an increased load limitation.

(e) "Agronomic loading rate" means the application of biosolids or reclaimed effluent to the land at a rate which is designed to: (1) provide the quantity of plant nutrients, usually nitrogen, needed by a food crop, feed crop, fiber crop, cover, crop or other vegetation grown on the land and (2) to minimize the quantity of nitrogen or other nutrients from the land applied materials that passes below the root zone of the crop or vegetation grown on the land to groundwater.

(f) "Biosolids" means solids derived from primary, secondary, or advanced treatment of domestic wastewater which have been treated through one or

more controlled processes that significantly reduce pathogens and reduce volatile solids or chemical stabilize solids to the extent that they do not attract vectors. This term refers to domestic wastewater treatment facility solids that have undergone adequate treatment to permit their land application.

(q) "Reclaimed wastewater" means treated effluent from a domestic wastewater treatment system which, as a result of treatment, is suitable for a direct beneficial purpose or a controlled use that could not otherwise occur.

(7)(c) (C) ~~[All a]~~Applicants for domestic wastewater WPCF permits must meet the following requirements:

(i) Application must be for an individual permit; and

(ii) The proposed discharge must not include wastes that incapacitate the treatment system; and

(iii) The facility must be operated or supervised by a certified wastewater treatment plant operator as required in OAR 340-49-015, except as ~~[prohibited]~~ **exempted** by ORS 448.430; and

(iv) Annual written certification of proper treatment and disposal system operation shall be obtained from a qualified Registered Sanitarian, Professional Engineer, or certified wastewater treatment system operator.

State of Oregon
Department of Environmental Quality

Memorandum

Date: February 14, 1995

To: Mike Downs

From: Stephen A. Schnurbusch and Bob Baumgartner

Subject: Trending Analysis for the Clackamas, North Santiam, and McKenzie Rivers.

Summary:

Several trends were observed in the ambient monitoring data. However, most of the trends appear related to discharge conditions, the time of day samples were collected, or in some cases, changes in sampling procedure. Increased trends in BOD, nitrogen, and solids appear to be related to changes in flow and appear to have remained consistent since 1987. Apparent trends in pH appear to be artifacts of changing sampling procedures. Changes in the time of day for sampling influences both pH and dissolved oxygen trending analysis. Dissolved ortho phosphorus concentrations appear to be decreasing in the basins since 1987. The dissolved oxygen trends since 1987 in Clackamas River is uncertain due to changes in the time of day for sample collection but may be decreasing.

Limited information on the diurnal variation is available for these basins. The available data suggest that water quality conditions in the lower Clackamas and McKenzie rivers would be sensitive to conditions that would increase diurnal variation for oxygen, pH, and temperature. Increased diurnal variation could lead to decreased aquatic habitat conditions and diurnal exceedance of the pH criteria.

Toxics data is limited for these basins. The fish tissue data from the McKenzie and the ambient toxic data demonstrate that some identified toxics are present in these basins. Ambient values exceeding criterion were rare.

Trending:

Trending analyses is done determine whether water quality is

Improving
deteriorating, or
staying about the same.

Trending analysis does not provide direct information on cause and effect. However, several inferences may be developed from the results of trending. Results can be used to evaluate how effective pollution control strategies have been, how conditions are changing, and if conditions remain the same, how long will it take to begin observing standards violations.

Two types of trends provide different inferences. A *monotonic* trend is a gradual change over time. A gradual change implies water quality is continuing to change with time. Increased development resulting in increased nonpoint source loads provides an example of conditions resulting in monotonic decrease in water quality. A *step trend* is a sudden change in water quality. A step trend should be evaluated in relationship to activities that may have caused a sudden shift in water quality, or change in reported water quality conditions. A new major source of pollution could lead to a sudden change in water quality. A change in analytical procedure could lead to a sudden change in the reported water quality without a change in actual instream conditions.

Hypothesis:

The principle test can be stated as a null hypothesis that no trend exists in the data. By inference, if we reject the null hypothesis then the hypothesis, that a trend exists, must be true. The tests applied provide a measure of the probability of deciding a trend exists where the apparent trend is an artifact of random conditions in the sampling data.

H_o No trend exists H_a A change in water quality is measurable

1 Hypothesis Tested

A significance level, or confidence level, is used to describe the probability of making an error when concluding a trend exists. There is no universally agreed upon significance level for determining a trend exists. The decision to accept that a trend exists should be dependent upon the actions taken as a result of the trending analysis. If the economic consequences of the reaction to the trending analysis are minimal or the instream consequences of not reacting are severe, a conservative approach with a relatively low significance level (80%-90%) may be appropriate. If the economic consequences are significant when responding to a trending analysis or the ecological consequences of not responding are negligible, then a cautious significance level (95%-99%) may be appropriate.

Adjustments:

The data, and therefore the apparent trends, may be artifacts of changes that influence the data which are unrelated to long term changes in water quality. The variation in water quality that occurs throughout the day is often greater and more important than long term changes in water quality and need to be accounted for when reviewing trends. For example, we know that dissolved oxygen and pH are usually higher in the afternoon than in the early morning due to photosynthetic activity. A change in the time of day when sampling occurred could result in apparent trends in water quality that are an artifact of sampling strategy.

Adjustments for variables that may cause artificial trends occurs through a two step process. A regression is developed to explain the relationship between the variable, such as time of day, and the parameter of concern, such as dissolved oxygen. The residuals, the difference between the observed value and the expected relationship, is then tested using trending procedures. Since the variation with time of day has been accounted for this test should improve the ability to predict a trend.

Methods Used:

Trending was conducted on parameters routinely monitored in the Department's monthly ambient monitoring program. Three sites were selected, one each in the Clackamas, McKenzie, and North Santiam basins. All available data was initially used for trending. As appropriate, seasonal or selected sub-sets of the data record were further evaluated for trends.

Two tests were used, one to test whether a gradual trend existed, and where appropriate, another to determine whether a step trend occurred.

The Seasonal Kendall Test was used to evaluate gradual trends over time.

This test has become a recognized standard for water quality trending. The Seasonal Kendall Test compares data collected in the same season to determine trends. To be consistent with the monitoring data twelve (12) monthly seasons were used. Trends were also evaluated using data collected during the summer low flow (June - September) period. The summer low flow period is often the most critical time for water quality. Trends may be more apparent from summer low flow data as compared to annual data.

The Seasonal Wilcoxin-Mann-Whitney test was used to test the significance and magnitude of apparent step trends. If a step trend was apparent, the data following the apparent step trend was analyzed to determine whether a gradual trend exists following the apparent step.

Where apparent trends were observed for the parameters of dissolved oxygen, pH and temperature that typically vary throughout the day, then adjustments were made to data to account for diurnal variation. The adjusted data was then analyzed to determine if a trend actually existed or was an artifact of changing the time of day that sampling occurred.

Changes in streamflow can act to influence water quality through dilution or through changes in physical conditions of aeration or travel time. Because it may have a substantial effect on water quality, stream flow adjustments are often made as part of trending analysis. In each of the "three basins" streamflow is regulated by reservoirs. For several parameters the water quality behind the reservoirs may be different than the water providing base flow conditions. Changes in reservoir regulation could influence water quality as measured downstream.

Reporting Conditions:

Trends were reported for data indicating either a gradual long term or step trend with greater than or equal to a 90% chance ($p=0.10$) that the trend existed (Table 1). In situations where trending results were influenced by changes in the time of sample collection then trends are recorded generally when the time-of-day adjusted data indicates a that the probability of a trend equals or exceeds 90% ($p=0.10$) (Table 2). Trends were not reported where they could be associated with changes in monitoring strategy or laboratory techniques. Step trends associated with changes in analytical procedure include:

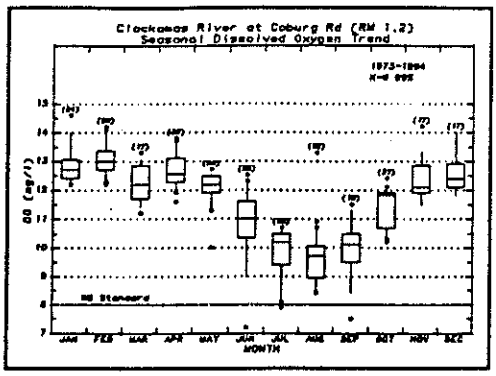
pH — For a period prior to March, 1982 through January, 1983 the Department used jell-filled pH probes. These probes were found to be less sensitive than glass pH probes, and take longer to respond. As the problems with jell-filled probes were evaluated the quality control procedures for pH were reviewed. The probes were often buffered at much higher ionic strength water than was sampled. The resulting errors indicate that prior to modification, pH was being under-recorded.

BOD_5 — There have been modifications to the BOD_5 methodology over time. However, the changes in procedure are not well documented. A step trend occurs in these 3 basins, as well as other basins, between 1987-88 implying a consistent change in procedures may influence the recorded BOD_5. However, no specific changes are documented for this period.

PO_4 — In the late 1970s the Department changed the laboratory method for phosphorus digestion from hot plate to autoclave resulting in

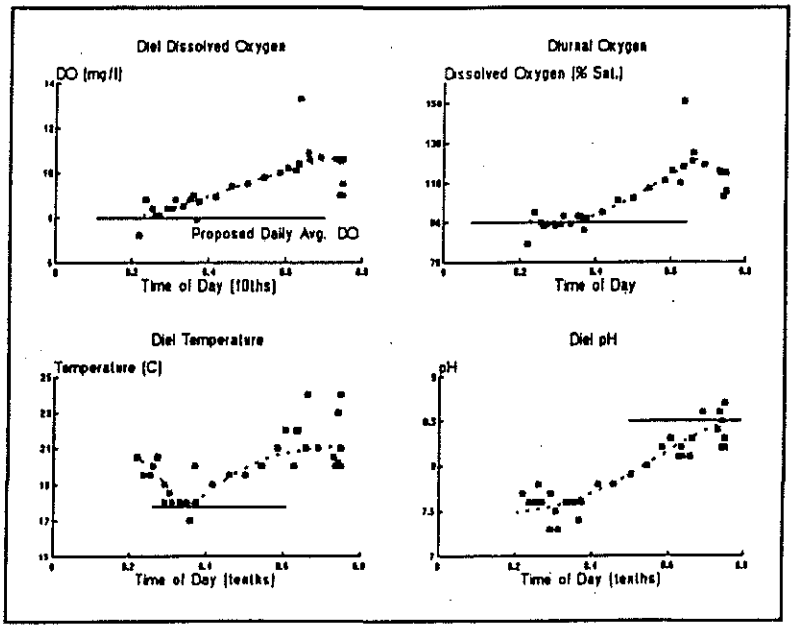
fewer reported high values for phosphorus.

Discussion:



The 1994 305(b) report identifies the Mckenzie River as being water quality limited due to violation of the 95% saturation dissolved oxygen standard during the fall, winter, and spring periods. The Clackamas River is identified as being water quality limited due to violations of the 90% saturation standard during the summer months.

The Department will be proposing modifications to the dissolved oxygen criteria. The proposed criteria will be based on concentration rather than saturation. Concentration criteria provides a more direct measure of the effect of dissolved oxygen on beneficial uses. The proposed criteria would provide a no measurable impairment level of protection. The basins would not be identified as being water quality limited under the proposed concentration criteria. Data for the Clackamas River illustrates that oxygen concentrations are well above the 8.0 mg/l criteria used to indicate no measurable impairment to salmonids.



The diurnal variation in water quality is not reflected in the trending analysis. Diurnal changes may be important when developing inferences on water quality conditions. Figure two illustrates the limited diurnal data for the Clackamas River (RM 1.2) collected during summer low flow. Reading clockwise this data illustrates that the minimum dissolved oxygen concentration approach a no measurable impact to aquatic life threshold in the early morning, and approach or fall below the current saturation standard early in the morning. Temperature levels exceed the proposed criteria threshold throughout much of the day and certainly exceed optimum conditions in the afternoons. The pH criteria is approached or exceeded during the later afternoon.

Cold water fish (salmonids) are sensitive to changes in water quality. For the diurnally active parameters, such as oxygen, temperature, and pH, any increase in the observed diurnal ranges will act to reduce the aquatic habitat quality for cold water fish, and in the case of pH violate the water quality standard. The trending exercises do not reflect the diurnal variation.

Trends are reported by basin in the attached tables. The attached graphs illustrate several of the observed trends, adjustment methods, and adjusted trends. The trending analysis demonstrate some changes to water quality in each of the basins over the recording period.

Table II, Coincident Step Trends

Step trends occurring between 1987/88 as measured during the summer low flow period			
Parameter	Clackamas.	Santiam	McKenzie
Flow	↓ 95%	↓ 99%	↓ 80%
BOD_5	↑ 99%	↑ 80%	↑ 99%
TSS	↑ 80%	↑ 95%	↑ 95%
TS	↑ 90%	↑ 95%	↑ 99%
DO Sat.	↑ 95%	↑ 99%	↑ 99%
NO2	↑ 90%	↑ 90%	↑ 95%

Table I, Diel Data

Maximum and Minimum Reported Values Collected during diel studies:				
Param.	N. Santiam		McKenzie ('87 '88)	
	Min	Max	Min	Max
DO	8.9	11	8.6	11.2
Sat.	90	113	84	120
pH	7.2	8.0	7.2	8.6
Temp.	15.5	22	15	20

Several parameters indicating a step trend occurred as measured for summer low flow data between the period 1986-1988. These step trends appear to occur coincidentally with a decreased step trend in stream flow during the summer low flow period in these basins.

During this period there were several modifications to reservoir regulation relating to fisheries issues at Corps of Engineers projects that would have influenced discharge in the Mckenzie and Santiam basins (Cassidy, R. 1995. Personal Communication). However, PGE is not aware of changes to operations at their Clackamas River projects that may have influenced discharge (Carter L. Personal Communication.) However, the coincident change in water quality during this period implies that the change in flow may have influenced water quality downstream. No gradual (monotonic) trends in water quality are observed in the available data for the parameters listed in table 2 since the observed step trend. Step trends are reported for conductivity in the McKenzie and Santiam basins, but not the Clackamas.

Gradual (monotonic) trends are reported for decreasing ortho-phosphorus (PO_4) in all three basins. A decreasing trend in phosphorus may indicate an increase in primary production. Nitrogen appears to be the nutrient in limiting proportions in these basins. If there was an increase in primary production due to an increase in nitrogen without an incremental increase in phosphorus, or other conditions, a decrease in phosphorus would be expected.

The observed trends in dissolved oxygen, both measured as concentration and saturation, are influenced by modifications in the time of day of sampling. Uncertain, but apparently decreasing trends are observed in dissolved oxygen in the Clackamas River. The trends may be an artifact of limited information on diurnal oxygen changes. It is possible that a more rigorous understanding of relationship between the time of day and oxygen saturation may explain this trend.

No temperature trends are reported. This result is different than previous trending studies which reported an increasing temperature trend for the Santiam river at Greens Bridge since 1982. Addition of more recent data

collected in 1994 reduces the significance level to 80%. Inclusion of data collected in 1980 reduces the significance level to below 80%. Based on these observations the temperature trend for the Santiam river is uncertain.

Toxics Data:

Only the Department data was analyzed. The available toxics data is limited and does not support a trending analysis. Fish tissue data has been collected by the Department in the McKenzie River (Table 5). Water column data has been collected in all three basins (Table 6).

The available fish tissue data provides an indication that potentially bio-accumulating compounds are present in the lower McKenzie River. The Department has no fish tissue standards. Available criteria, such as the USEPA Fish Tissue Evaluation Values and the FDA Action levels are often substantially different. The available fish tissue data in the McKenzie is potentially influenced by urban and major industrial runoff. No information is available to allow comparison with conditions in the McKenzie that are not potentially influenced by urban or industrial sources.

Based on the limited data the parameters of Arsenic, PCB, Alderin, DDT and its metabolites are occasionally observed in fish tissue above EPA evaluation values. No exceedance of the FDA action level were observed. The Health Division, who has the responsibility for fish health advisories, has not indicated a fish advisory is needed for the McKenzie River.

Water column toxics data are available in all three basins. Observed values are limited and do not allow a rigorous comparison to other locations. The toxics parameters with one or more observations exceeding detection limits are recorded in table 6. Arsenic, beryllium, lead, and silver do not appear in the table because they were either not detected, or detected but below measurable levels. A total of five sites reported detected toxics. Four of the five had toxic criteria violations, but these violations should be studied with caution.

The observed values are compared to standard criteria identified in OAR-340-41-Exhibits, Table 20. Where appropriate, criteria was adjusted for hardness. The recommendation of EPA and the Department is that dissolved metals, rather than total recoverable, should be compared to criteria for ambient data. The dissolved metal better reflects the proportion of the metal that may bio-accumulate.

The observed toxics data do not meet the department's requirements for adequate number of data, or frequency of criterion exceedance to be identified as being water quality limited. However, the observations indicate that some of the table 20 toxic parameters are present in each of these three basins.

In the North Santiam maximum levels of manganese exceed state criteria for protecting human health, however, most of the data (85%) is below detection limits, and the mean of data observations greater than detection is below criterion values. Maximum recorded levels of dissolved zinc exceed aquatic life criterion values, however 57% of the observations are below criterion, and the mean of those samples above detection limits is below criterion. One of two dissolved cadmium measurements were above detection and above criterion values in the Clackamas River at highway 213. In the McKenzie at Hayden Bridge 78% of the reported dissolved zinc values were below detection levels. Of the values greater than detection the mean approximated the criterion values for aquatic life as adjusted for hardness, and the maximum values

exceeded criterion values.

TABLE 2: THREE BASIN TRENDING SUMMARY - CLACKAMAS RIVER AT COBURG RD

PARAMETER	INTERVAL	TREND	STEP YR	S LEVEL	MONTHS	REPORTED	COMMENT
NO_2	'77-'94	↑ STEP	'87/'88	90%	JUN-SEP	True	No gradual trends found following step
PO_4	'87-'94	↓ GRADUAL	N/A	99%	JUN-SEP	True	No gradual trends found following step
DO	'87-'94	↓ STEP	'92	95%	JUN-SEP	Uncertain	Likely an artifact of sample time
DO %SAT	'77-'94	↑ STEP	'86/'87	95%	JUN-SEP	Uncertain	Likely an artifact of sample time and flow
DO %SAT	'87-'94	↓ STEP	'92	99%	JUN-SEP	Uncertain	Likely an artifact of sample time
BOD_5	'78-'94	↑ STEP	'86/'87	99%	JUN-SEP	Apparent	Trend may caused by change in lab procedure
BOD_5	'78-'94	↑ STEP	'86/'87	99%	OCT-MAY	Apparent	Trend may caused by change in lab procedure
BOD_5	'77-'87	↑ STEP	'80-'81	99%	OCT-MAY	True	
TS	'77-'94	↑ STEP	'87/'88	90%	JUN-SEP	True	No gradual trends found following step
TSS	'77-'94	↑ STEP	'87/'88	80%	JUN-SEP	True	No gradual trends found following step
TDS	'77-'94	↑ STEP	'87/'88	99%	JUN-SEP	True	No gradual trends found following step
pH	'77-'94	↑ STEP	'82/'83	99%	JUN-SEP	Apparent	Trend may be caused by change in lab procedure
FLOW	'80-'94	↓ STEP	'87/'88	95%	JUN-SEP	True	

TABLE 3: THREE BASIN TRENDING SUMMARY - NORTH SANTIAM RIVER AT GREEN'S BRIDGE

PARAMETER	INTERVAL	TREND	STEP YR	S LEVEL	MONTHS	REPORTED	COMMENT
NO_2	'80-'94	↑ STEP	'86/'88	90%	JUN-SEP	True	No gradual trends found following step
PO_4	'80-'94	↑ STEP	'86/'88	95%	JUN-SEP	True	No gradual trends found following step
PO_4	'87-'94	↓ Gradual	NA	90%	JUN-SEP	True	
DO	'80-'94	↑ STEP	'86/'88	99%	JUN-SEP	Apparent	Trend caused by change in sampling time
DO %SAT	'80-'94	↑ STEP	'86/'88	99%	JUN-SEP	Uncertain	Likely caused by an artifact of sample time and flow
BOD_5	'80-'94	↑ STEP	'86/'88	80%	JUN-SEP	Apparent	Trend may be caused by change in lab procedure
COND	'80-'94	↑ STEP	'86/'88	90%	JUN-SEP	True	No gradual trends found following step
TS	'80-'94	↑ STEP	'86/'88	95%	JUN-SEP	True	No gradual trends found following step
TSS	'80-'94	↑ STEP	'86/'88	95%	JUN-SEP	True	No gradual trends found following step
pH	'63-'94	↑ STEP	'82/'83	99%	JUN-SEP	Apparent	Trend may be caused by change in lab procedure
FLOW	'80-'94	↓ STEP	'87/'88	99%	JUN-SEP	True	

TABLE 4: THREE BASIN TRENDING SUMMARY - MCKENZIE RIVER AT OLD HWY 213

PARAMETER	INTERVAL	TREND	STEP YR	S LEVEL	MONTHS	REPORTED	COMMENT
NO_2	'80-'94	↑ STEP	'87/'88	95%	JUN-SEP	True	No gradual trends found following step
PO_4	'87-'94	↓ GRADUAL	N/A	95%	JUN-SEP	True	No gradual trends found following step
DO	'76-'94	↑ STEP	'87/'88	99%	JUN-SEP	Apparent	Trend caused by change in sampling time
DO	'87-'94	↓ GRADUAL	N/A	99%	ALL SEAS	Apparent	Trend caused by change in sampling time
DO %SAT	'75-'94	↑ STEP	'87/'88	99%	JUN-SEP	Apparent	Trend caused by change in sampling time
BOD_5	'75-'94	↑ STEP	'86/'87	99%	JUN-SEP	Apparent	Trend may be caused by change in lab procedure
COND	'80-'94	↑ STEP	'87/'88	95%	JUN-SEP	True	No gradual trends found following step
TS	'80-'94	↑ STEP	'87/'88	99%	JUN-SEP	True	No gradual trends found following step
TSS	'80-'94	↑ STEP	'87/'88	95%	JUN-SEP	True	No gradual trends found following step
pH	'80-'94	↑ STEP	'82/'83	99%	JUN-SEP	Apparent	Trend may be caused by change in lab procedure
pH	'84-'94	↑ GRADUAL	N/A	90%	JUN-SEP	Apparent	Trend less than 80% when adjusted for time
FLOW	'80-'94	↓ STEP	'87/'88	80%	JUN-SEP	True	

Table 5: Fish Tissue Data (mg/kg): McKenzie River at Coburg Road.

Parameter	Number below detection	Observed values				Criteria	
		N	Min	Max	Mean	EPA	FDA
ARSENIC	7(U)	4	0.03	0.22	0.155	0.00077	NA
NICKEL		1			0.50	4.7	NA
ANTIMONY		1			0.10	45.0	NA
PCB-1260	4(U)	6	0.047	0.240	0.121	0.0025	NA
ALDRIN	10(U)	3	0.001	0.003	0.0023	0.00037	NA
ALPHABHC	10(U)	3	0.001	0.002	0.00167	NYS 0.20	
P,P'DDT	7(U)	6	0.01	0.04	0.026	0.0013	5.0
O P DDT	9(U)	2	0.005	0.02		*0.0013	5.0
P,P'DDD	7(U)	6	0.009	0.02	0.0131	*0.0013	
P,P'DDE	3(U)	10	0.005	0.13	0.034	*0.0013	
O,P'DDE	6(U)	3	0.001	0.007	0.005	*0.0013	
DDT (SUM)	5(U)	2	0.02	0.13	0.075	*0.0013	5.0
PCBs	4(U)	5	0.06	1.26	0.376	0.0025	2.0
GBHC-TIS LINDANE	12(U)	1			0.002		0.1
MERCURY	1(U) 2(J)	10	0.02	0.61	0.5625	1.0	1.0
LEAD	9(U)	2			0.150	NF	
COPPER		11	0.20	13.7	1.83	NF	
ZINC		1			11.0	NF	
CR-FISH	3(U)	8	0.08	1.34	0.4475	"54928	
CADMIUM	11(U)	2	0.005	0.03		NF	

Codes:
(U) = Material was analyzed for but not detected
(J) = Estimated value, value recorded is not accurate
NYS = New York State, Wildlife Values
* = Criteria for 4,4-DDT (P,P'DDT)
" = Criteria for trivalent chromium
NF = No fish consumption criteria , USEPA, OAR 340-41-Exhibits, Table 20.

Parameters analyzed for but not detected:

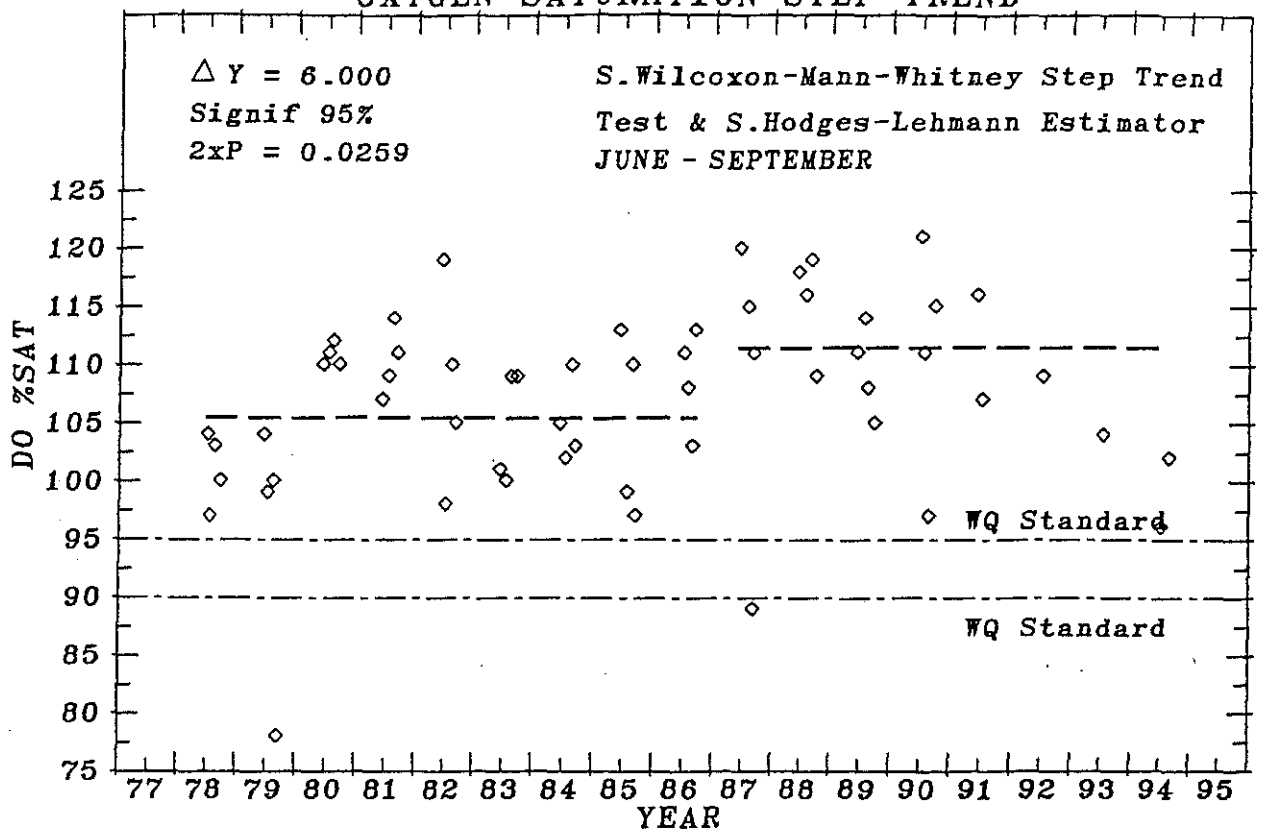
SELENIUM (U), DELTABHC (U), ENDSULSF (U), BEDOSUL (U), AENDOSUL (U) ENDRINAL (U) SILVER (U) PCB-121,1232,1248,1016,1242,1254, (U), CDANEWET (U), ENDRIN (U), HPCHLREP (U) HEPTCHLR (U), HCB (U), TOAXAPHENE (U), CHLORDAN C ISOMER (U), CHLORDAN T ISOMER (U), NONCHLOR T ISOMER (U), OPDDE (U), DIELDRIN (U), MTXCHLOR (U).

Toxic Data Summary (ug/l) - Parameters with values above detection levels - DEQ Sites Only

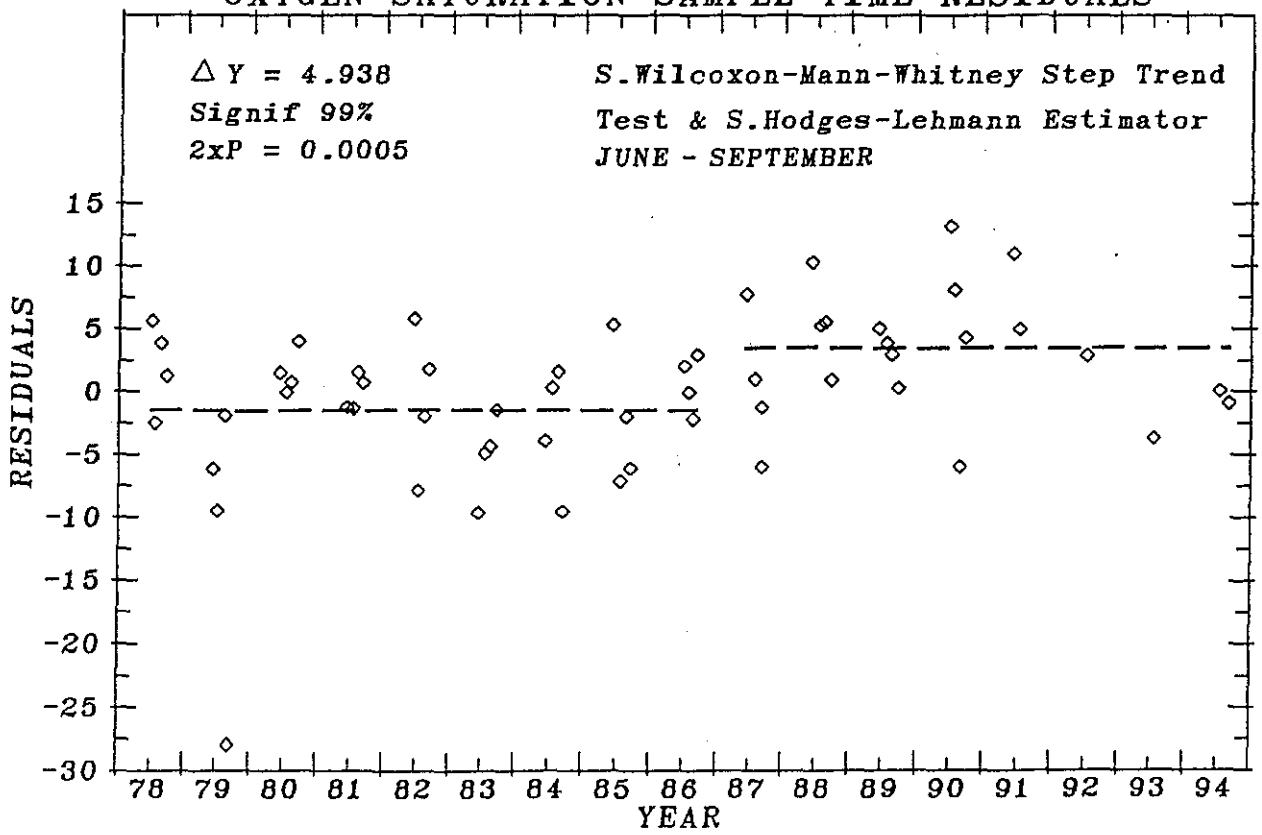
Site Location	Parameter	Number below reported value	Observed values				
			N	Min	Max	Mean	Criteria
N Santiam @ Green's Br.	Iron (Tot)	5 (K)	9	30	120	70	300 (HH)
	Iron (Dis)	15 (K)	12	30	100	55.8	300 (HH)
	Mang (Mn)	11 (K)	3	10	110	46.7	50 (HH)
	Mang (Dis)	23 (K)	4	10	120	45	50 (HH)
	Zinc (Dis)	4 (K)	3	10	30	16.7	24.2* (AL)
Clackamas R @ Carver	Copper (Tot)	0	1	1.5	1.5	1.5	2.67* (AL)
	Nickel (Tot)	0	1	6.8	6.8	6.8	13.4 (HH)
Clackamas R @ Old Hwy 213	Barium (Tot)	4 (K)	2	100	120	110	1000 (HH)
	Cadmium (Dis)	1 (K)	1	4	4	4	0.28* (AL)
	Cadmium (Tot)	7 (K)	1	7	7	7	0.28* (AL)
	Copper (Tot)	7 (K)	2	2	5	3.5	2.67* (AL)
	Iron (Tot)	2 (K)	17	40	3380	305.9	300 (HH)
	Iron (Dis)	13 (K)	10	40	180	85.8	300 (HH)
	Mang (Dis)	18 (K)	5	10	50	22	50 (HH)
	Zinc (Dis)	5 (K)	1	20	20	20	24.2* (AL)
	Zinc (Tot)	7 (K)	2	20	120	70	24.2* (AL)
Mckenzie @ Coburg	Cadmium (Tot)	7 (K)	1	6	6	6	0.28* (AL)
	Copper (Tot)	6 (K)	2	3	6	4.5	2.67* (AL)
	Iron (Tot)	2 (K)	16	50	2770	282.5	300 (HH)
	Iron (Dis)	9 (K)	12	40	139	69.75	300 (HH)
	Mang (Mn)	9 (K)	9	10	70	22.2	50 (HH)
	Mang (Dis)	12 (K)	9	.01	40	12.2	50 (HH)
	Zinc (Dis)	5 (K)	1	10	10	10	24.2* (AL)
	Zinc (Tot)	6 (K)	2	60	140	100	24.2* (AL)
Mckenzie R @ Hayden Br.	Iron (Tot)	3 (K)	4	40	100	60	300 (HH)
	Iron (Dis)	3 (K)	4	40	100	60	300 (HH)
	Zinc (Dis)	28 (K)	8	10	70	25	24.2* (AL)
	Zinc (Tot)	1 (K)	1	100	100	100	24.2* (AL)

Codes: (K) = Actual value is known to be less than reported value
(HH) = Protection of Human Health criteria
(AL) = Protection of Aquatic Life criteria
* = Corrected for hardness

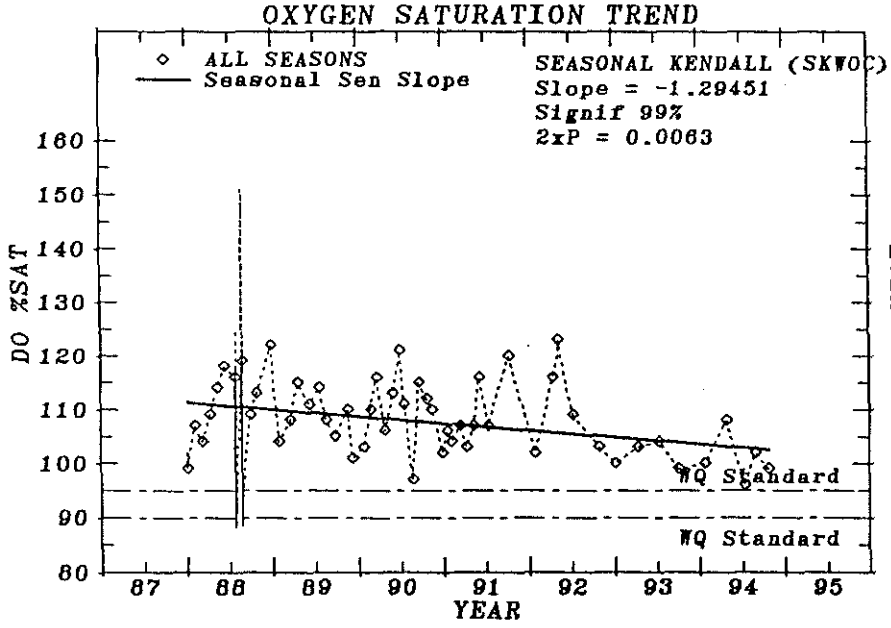
CLACKAMAS RIVER AT OLD HWY 213 (rm 1.2)
OXYGEN SATURATION STEP TREND

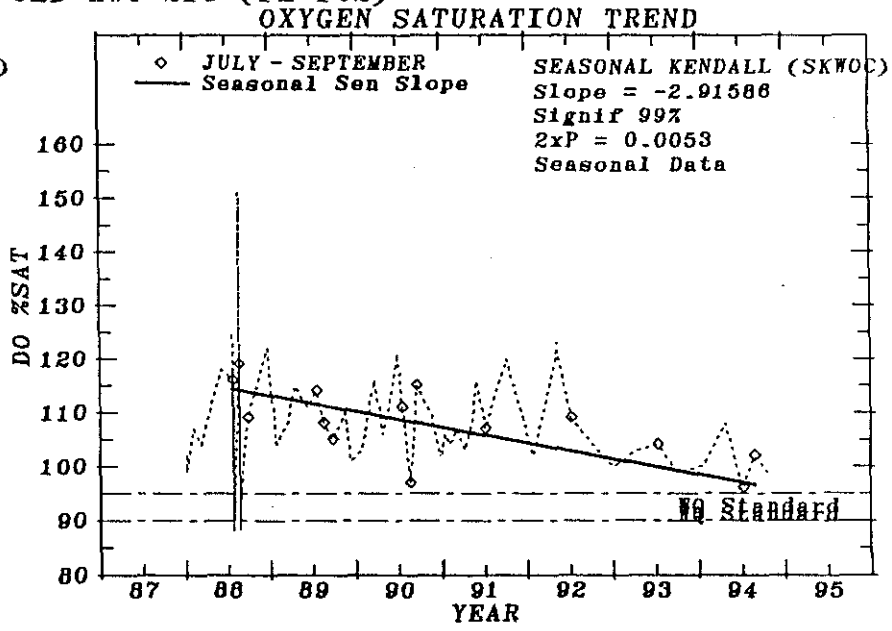


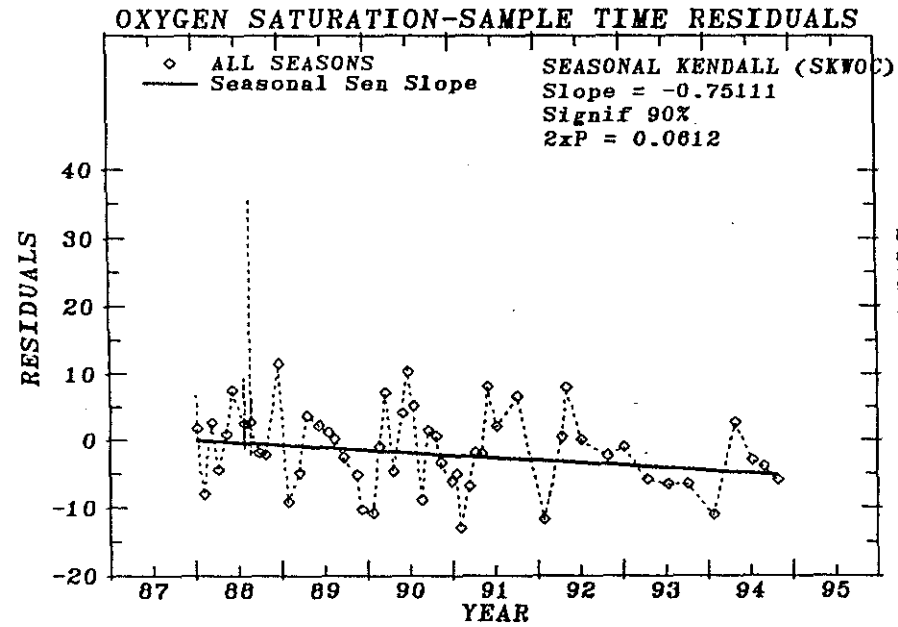
OXYGEN SATURATION-SAMPLE TIME RESIDUALS

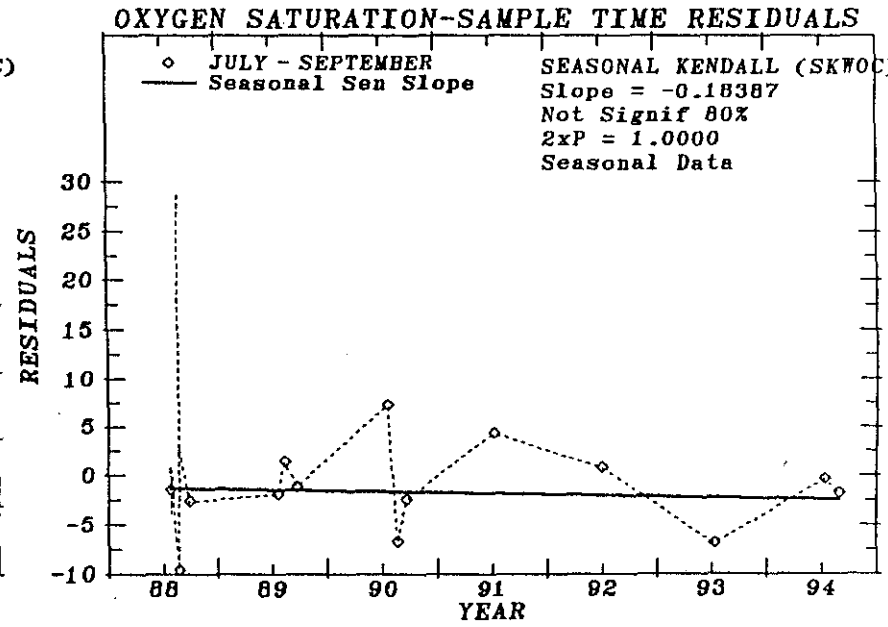


CLACKAMAS RIVER AT OLD HWY 213 (rm 1.2)

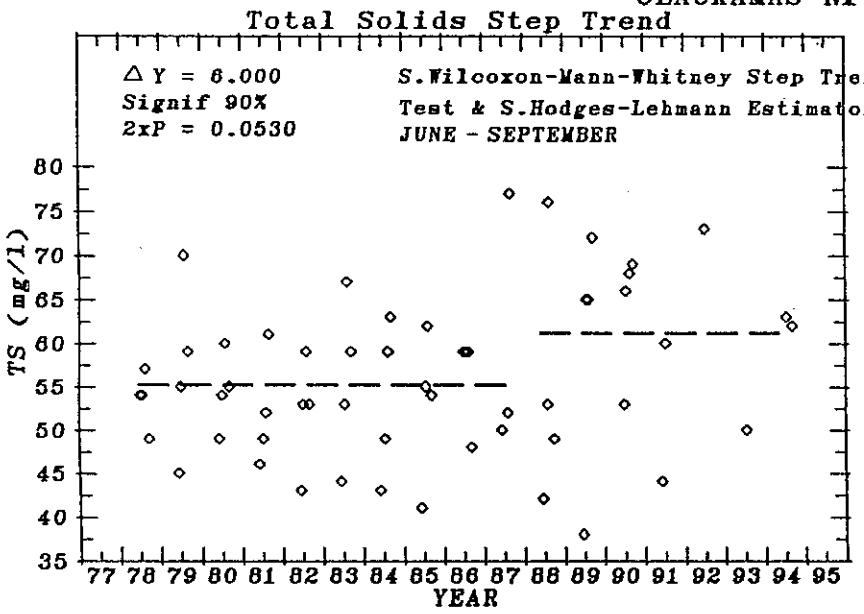


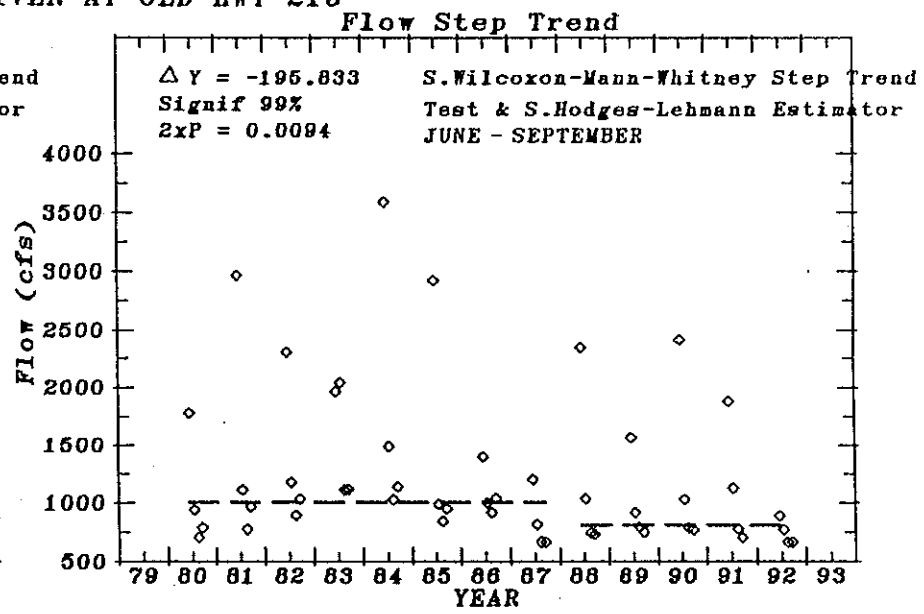


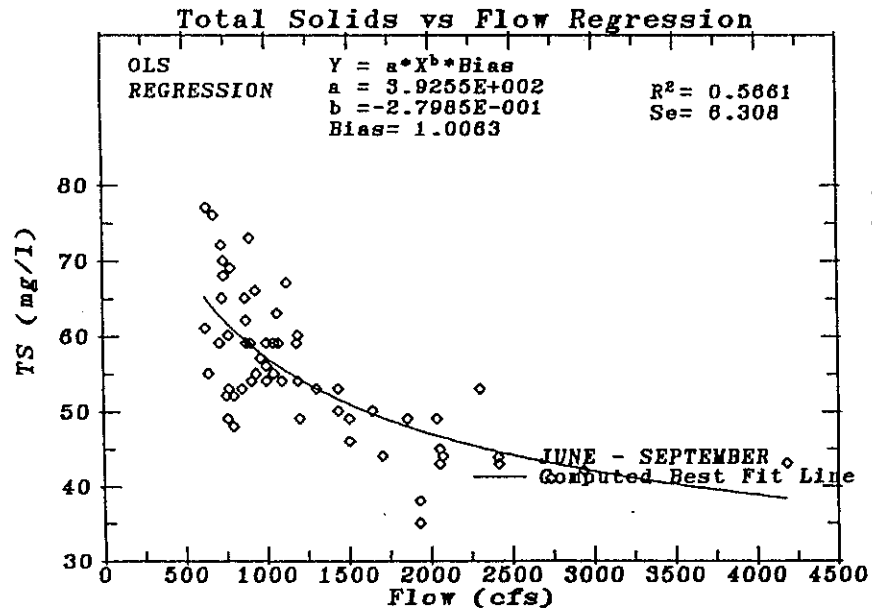


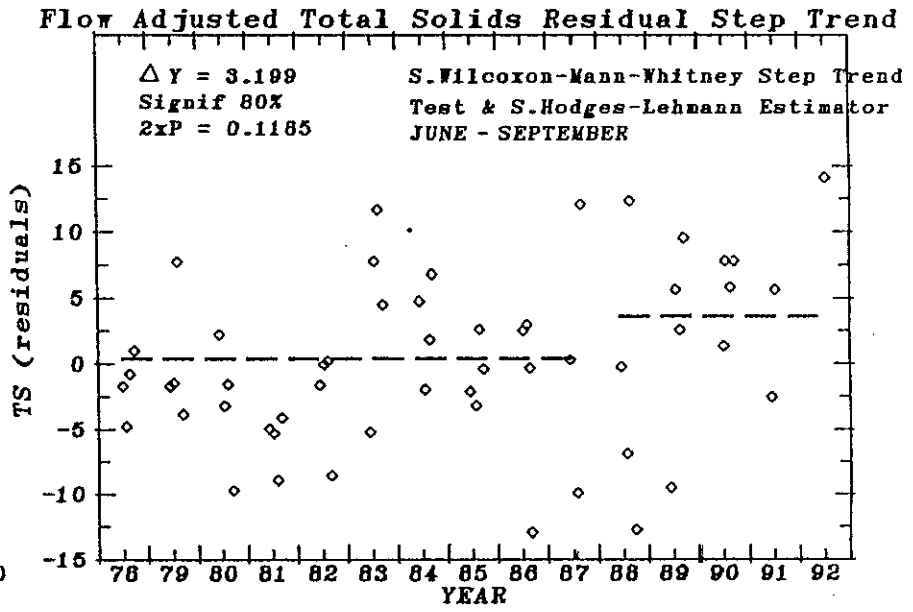


CLACKAMAS RIVER AT OLD HWY 213

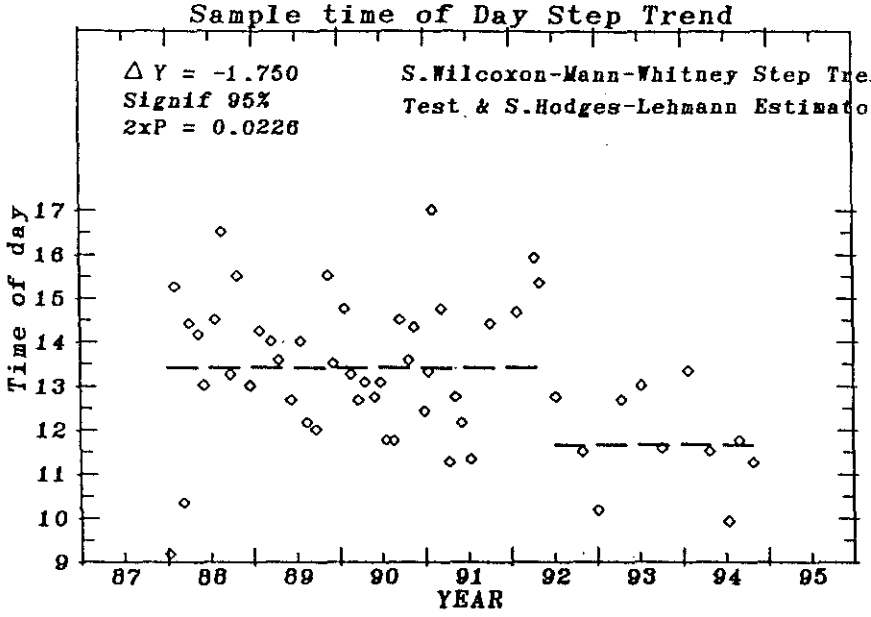


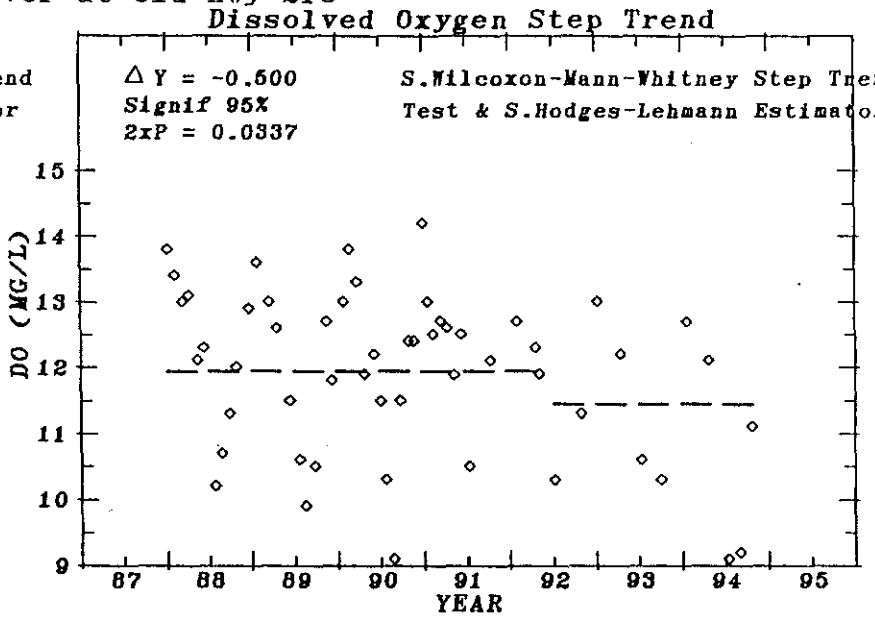


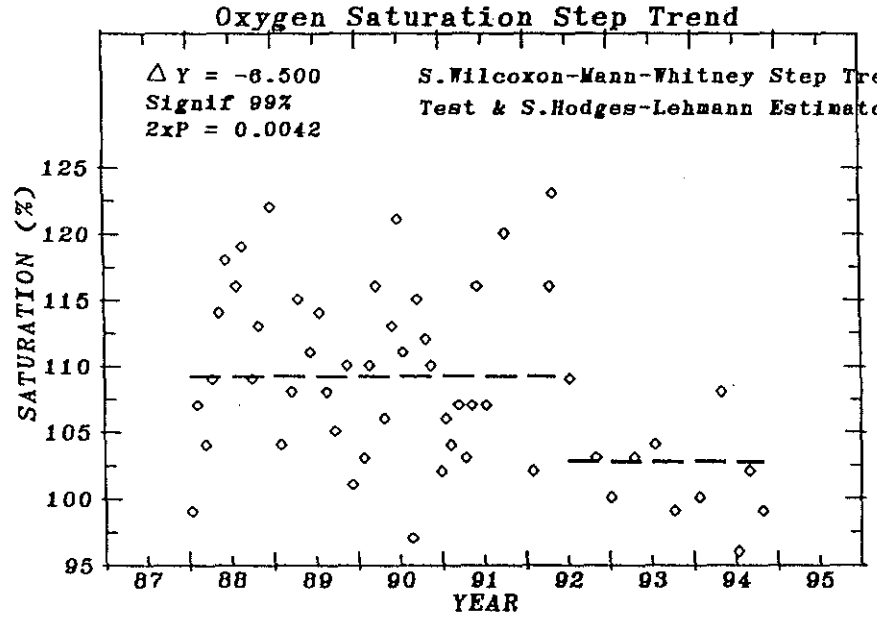


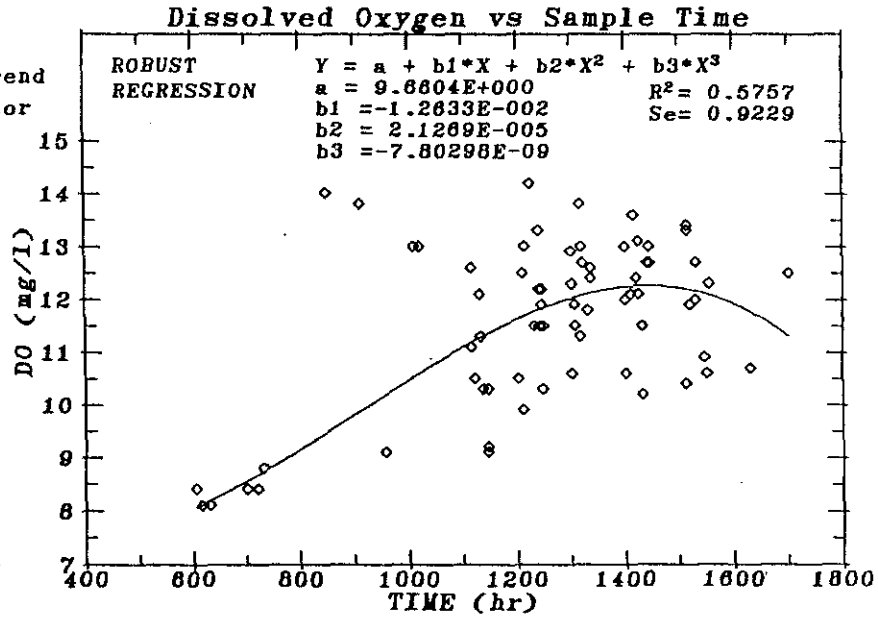


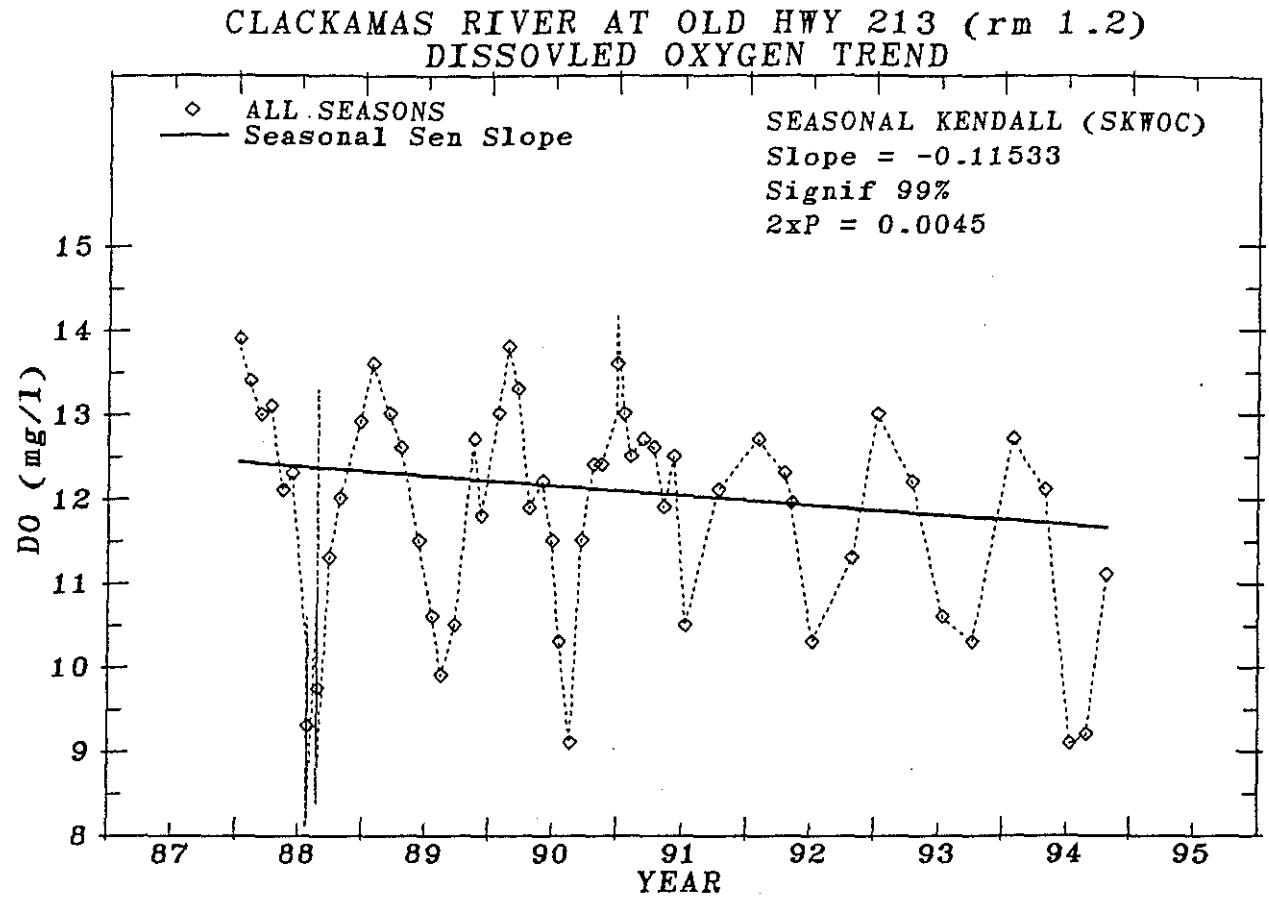
Clackamass River at old Hwy 213

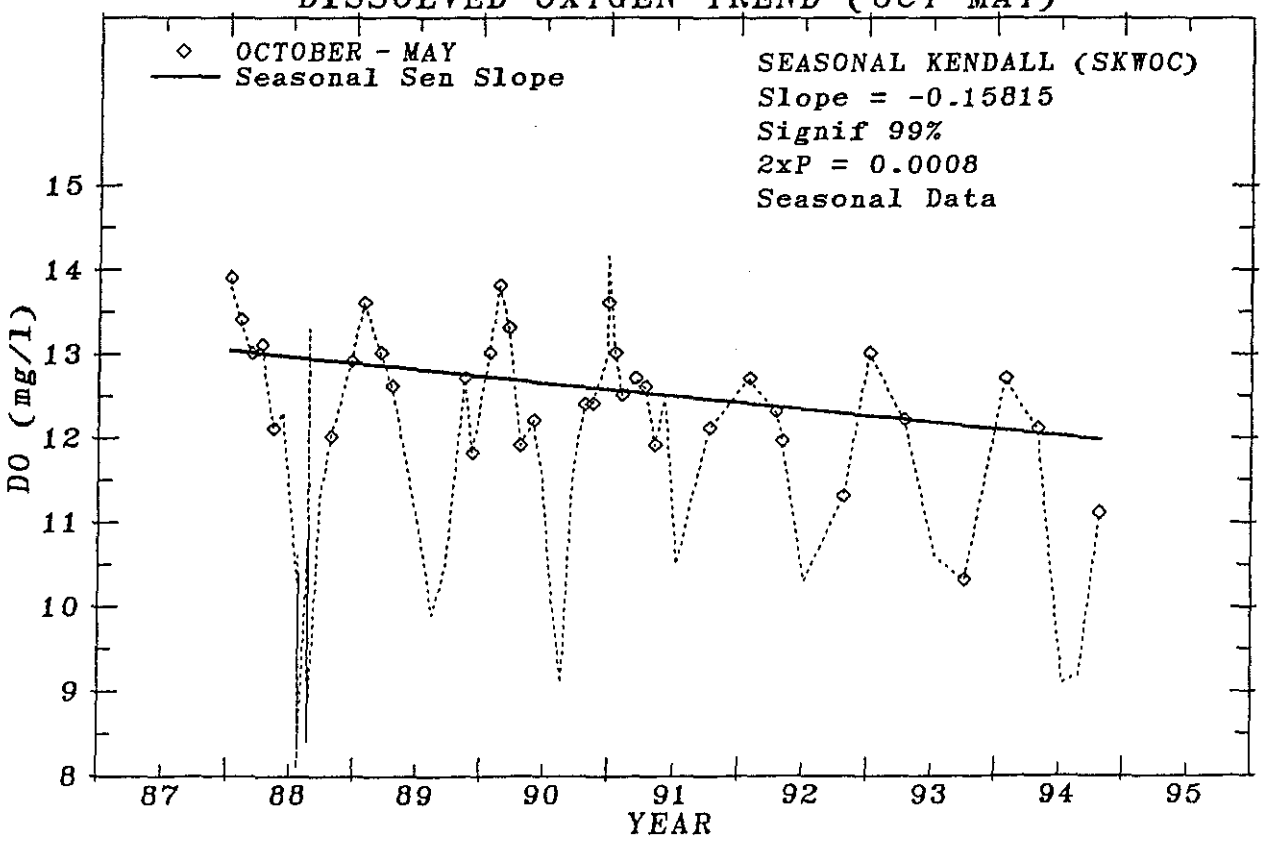


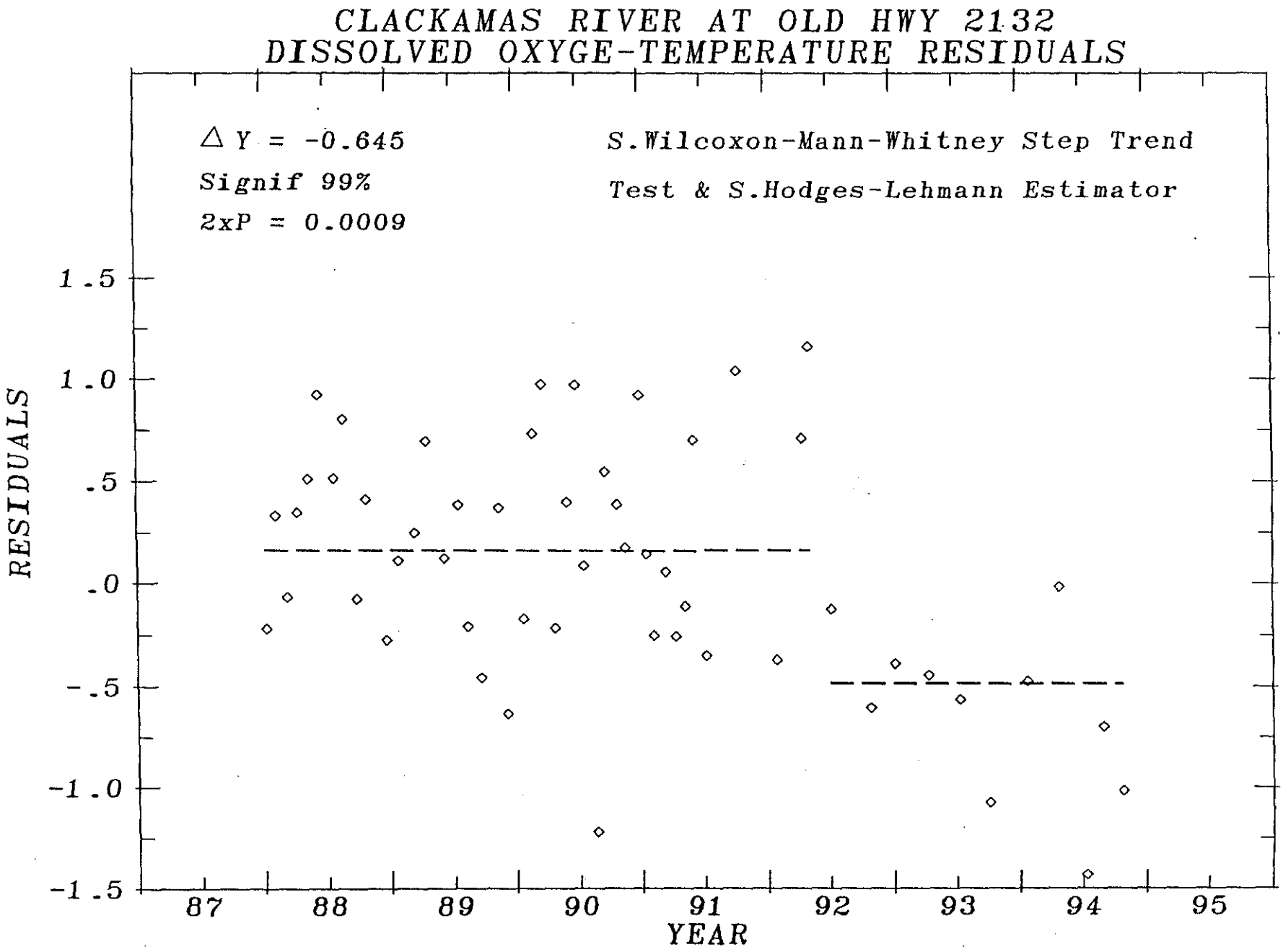




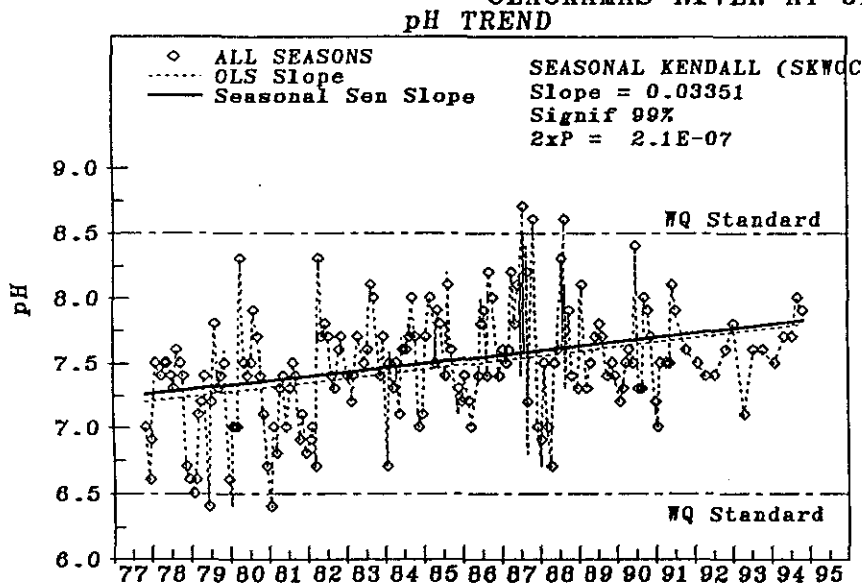


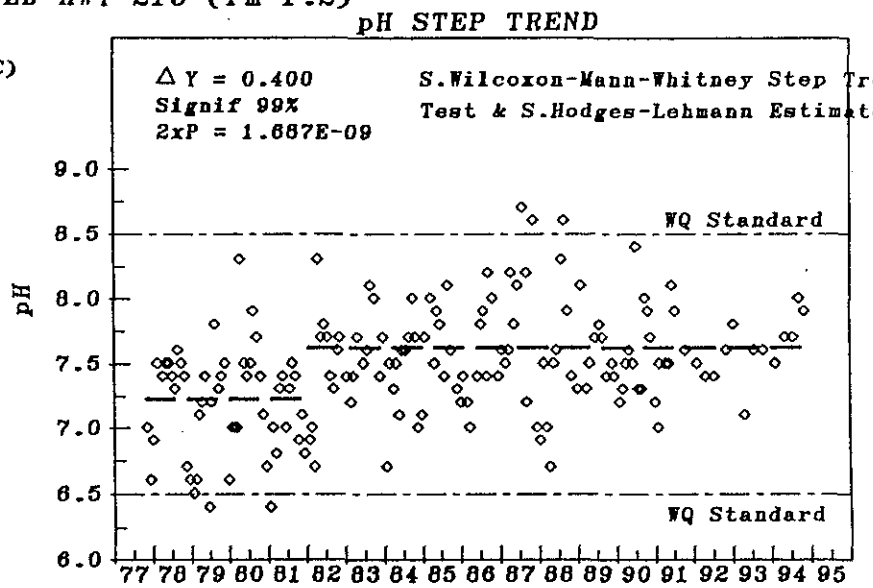

CLACKAMAS RIVER AT OLD HWY 213 (rm 1.2)
DISSOVLED OXYGEN TREND
ALL SEASONS
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = -0.11533
Signif 99%
2xP = 0.0045
DO (mg/l)
YEAR

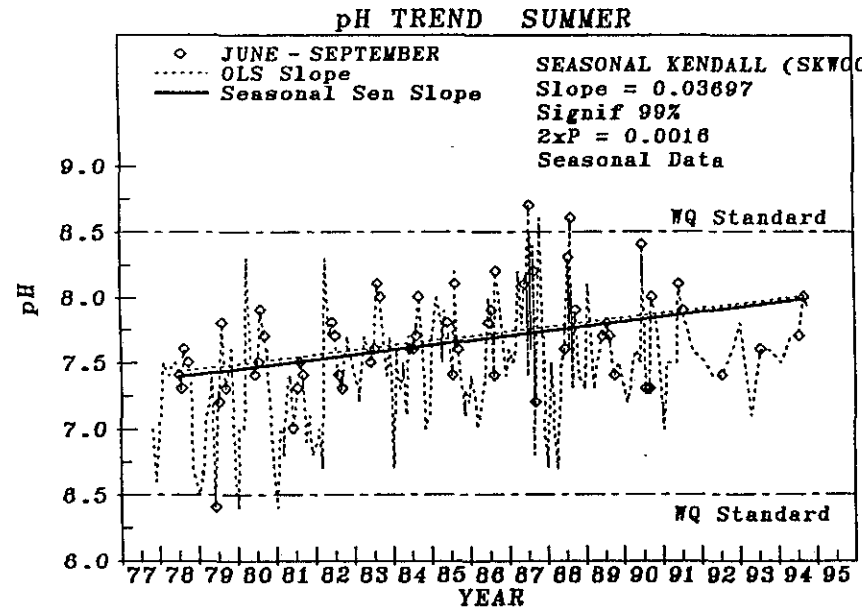

DISSOLVED OXYGEN TREND (OCT-MAY)
OCTOBER - MAY
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = -0.15815
Signif 99%
2xP = 0.0008
Seasonal Data
DO (mg/l)
YEAR

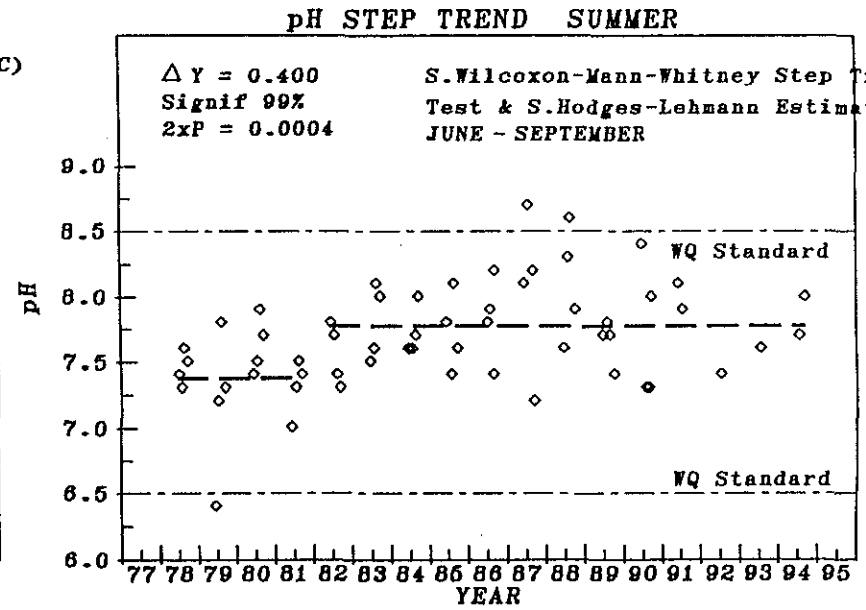

CLACKAMAS RIVER AT OLD HWY 2132
DISSOLVED OXYGE-TEMPERATURE RESIDUALS
△ Y = -0.645
Signif 99%
2xP = 0.0009
S.Wilcoxon-Mann-Whitney Step Trend
Test & S.Hodges-Lehmann Estimator
RESIDUALS
1.5
1.0
.5
.0
-.5
-1.0
-1.5
87
88
89
90
91
92
93
94
95
YEAR

CLACKAMAS RIVER AT OLD HWY 213 (rm 1.2)

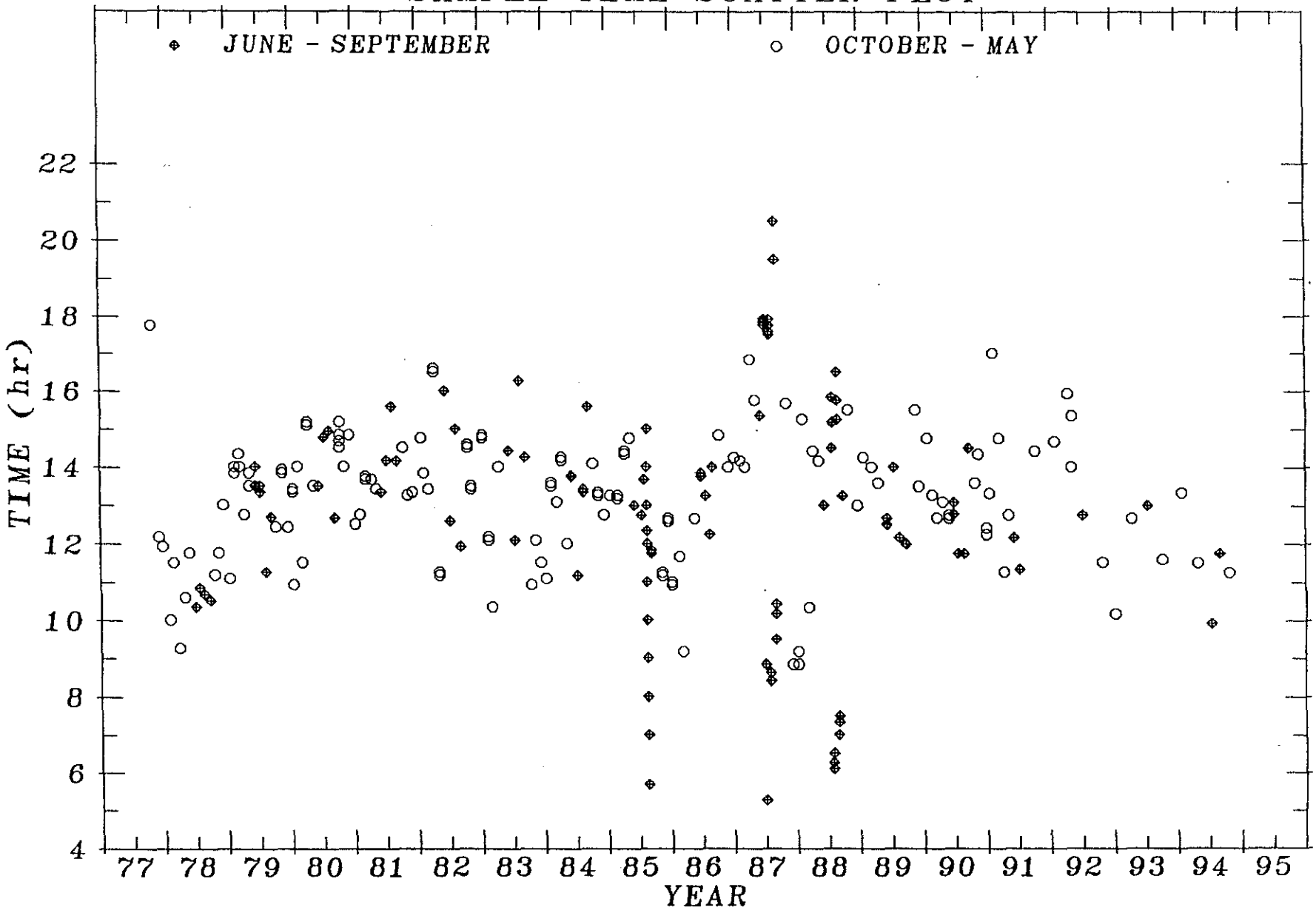




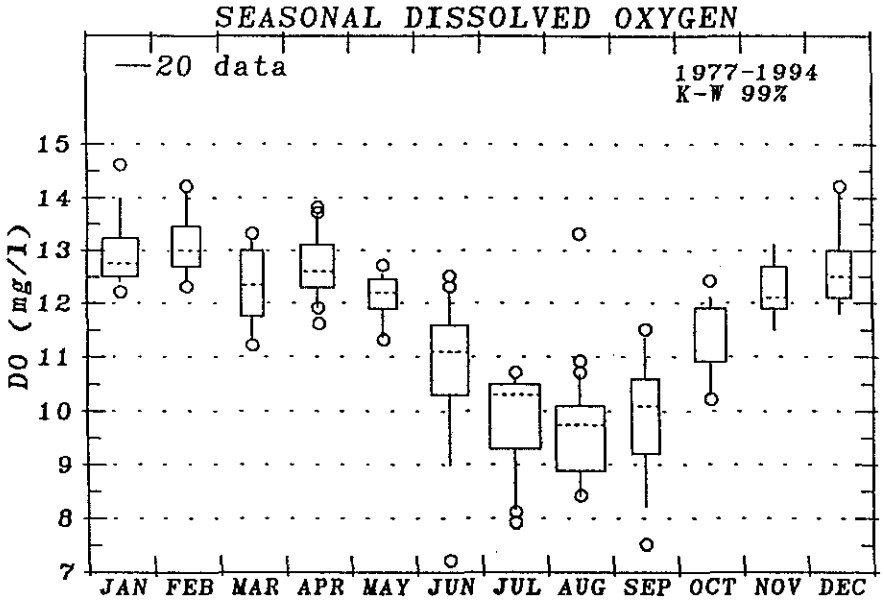


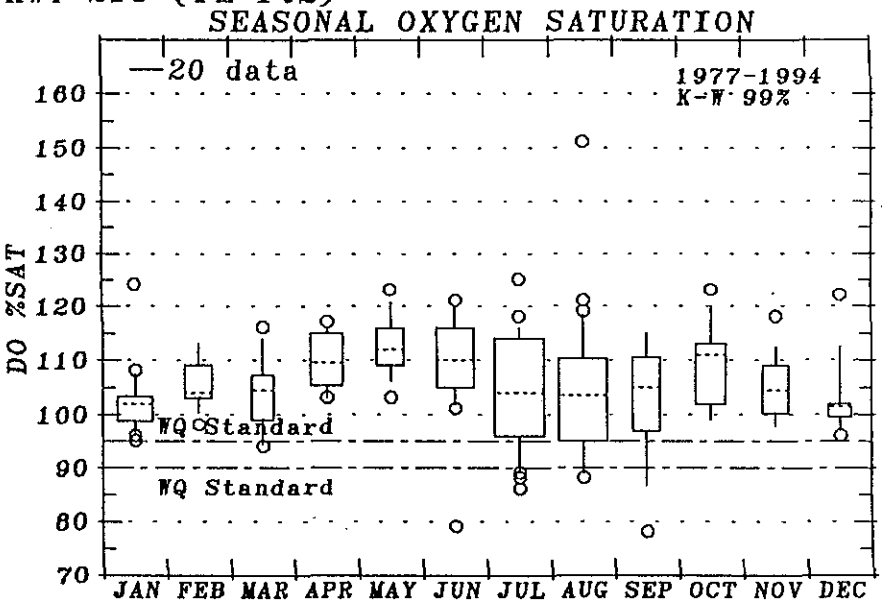


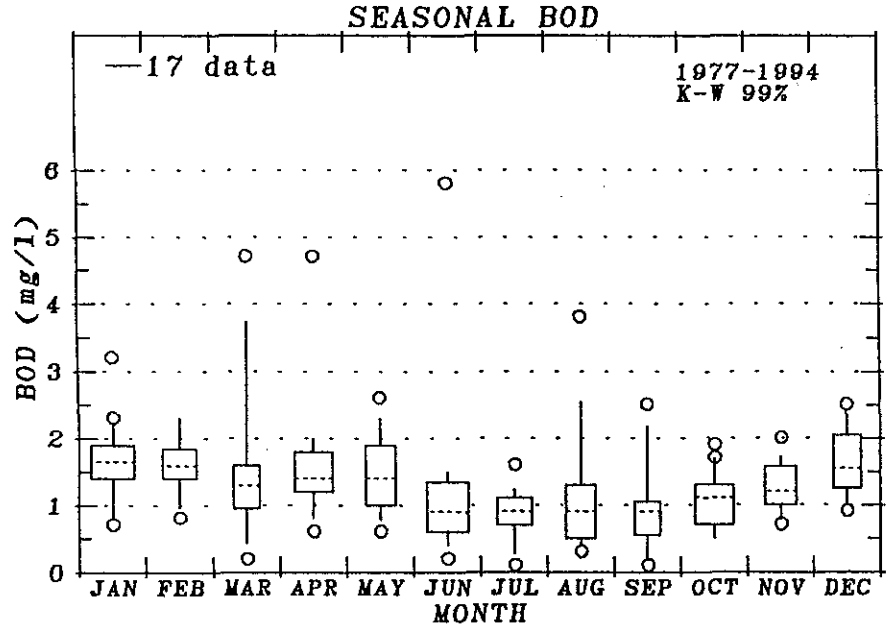
CLACKAMAS RIVER AT OLD HWY 213 (rm 1.2)
SAMPLE TIME SCATTER PLOT

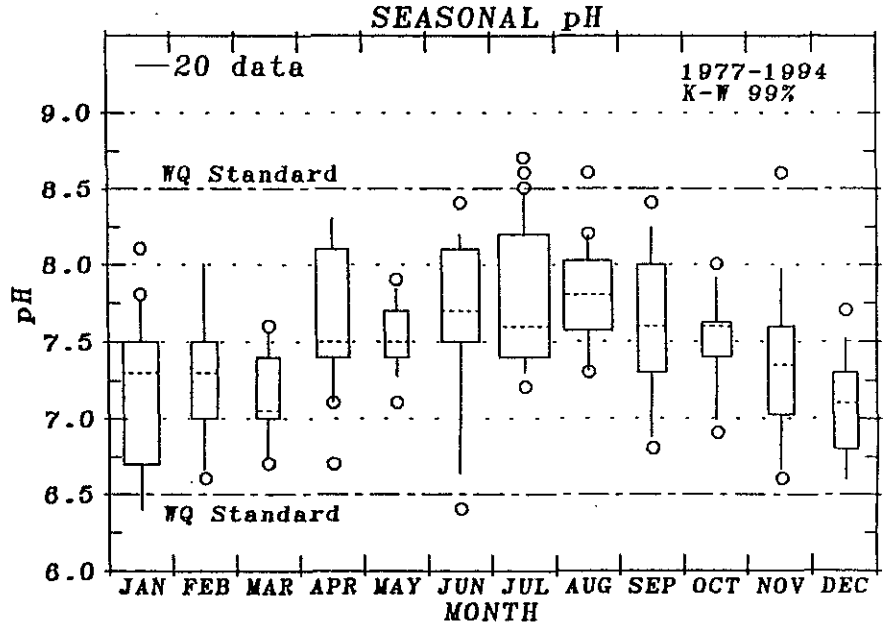


CLACKAMAS RIVER AT OLD HWY 213 (rm 1.2)



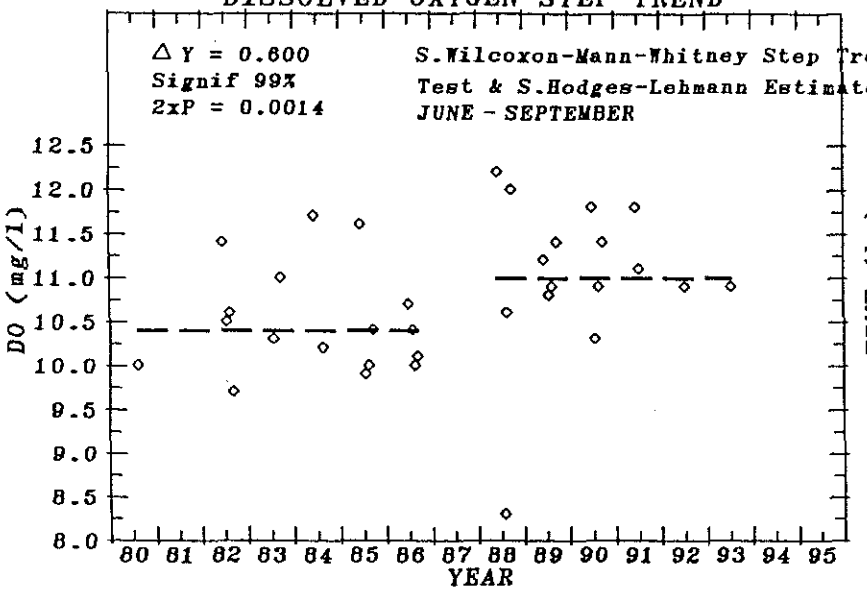




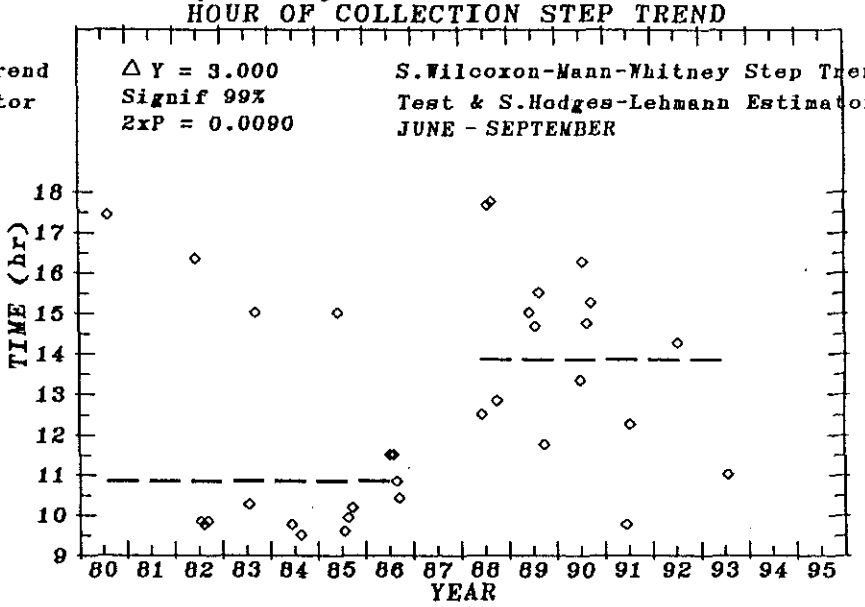


N. SANTIAM AT GREENS BR (rm 2.9)

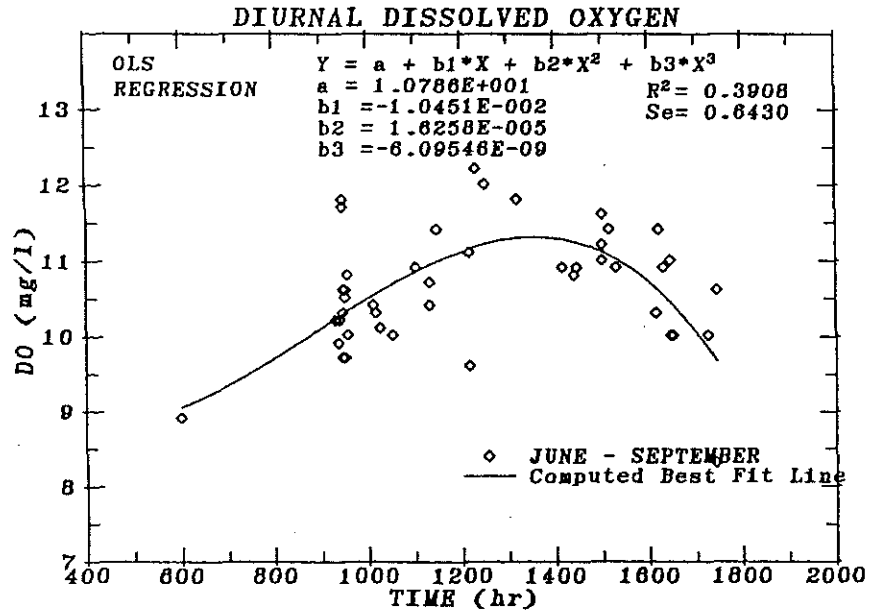
DISSOLVED OXYGEN STEP TREND



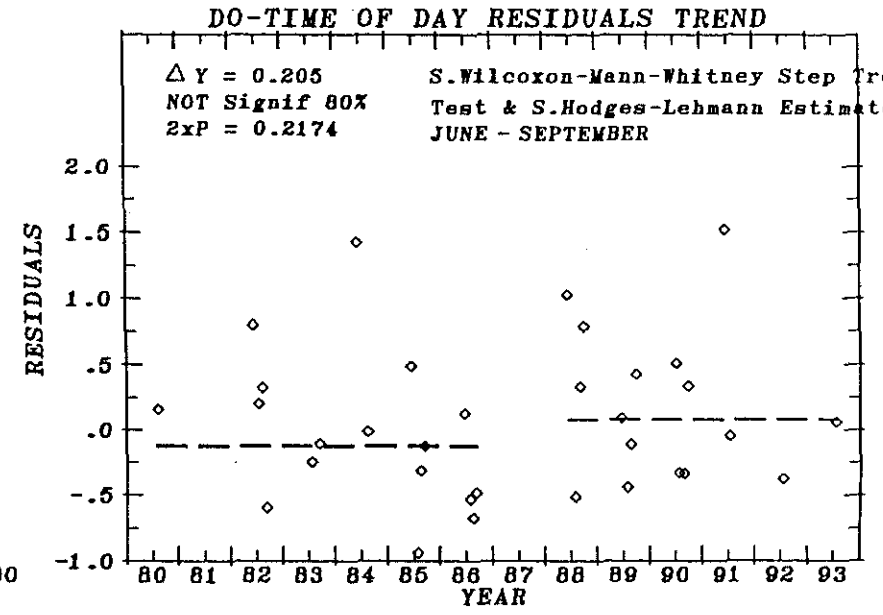
HOUR OF COLLECTION STEP TREND

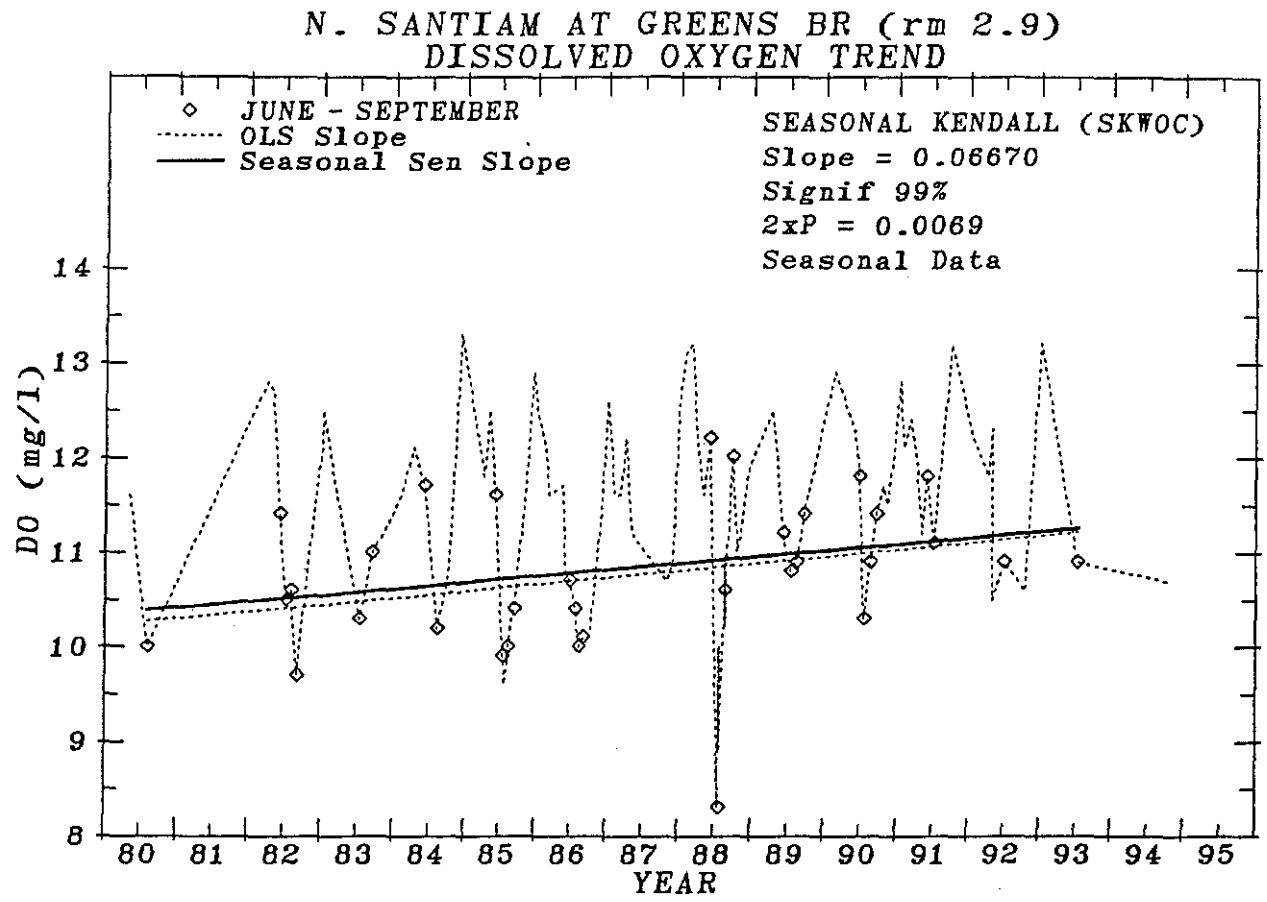


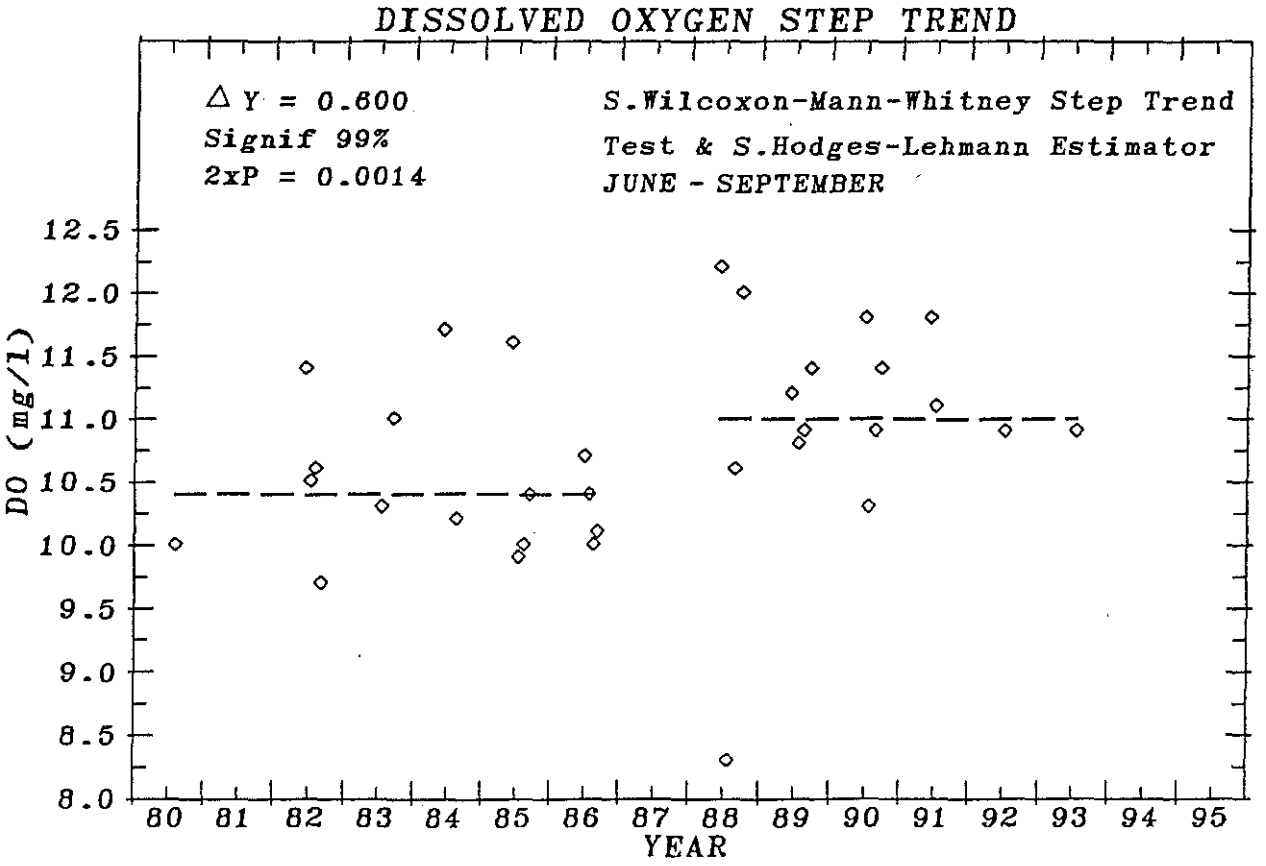
DIURNAL DISSOLVED OXYGEN



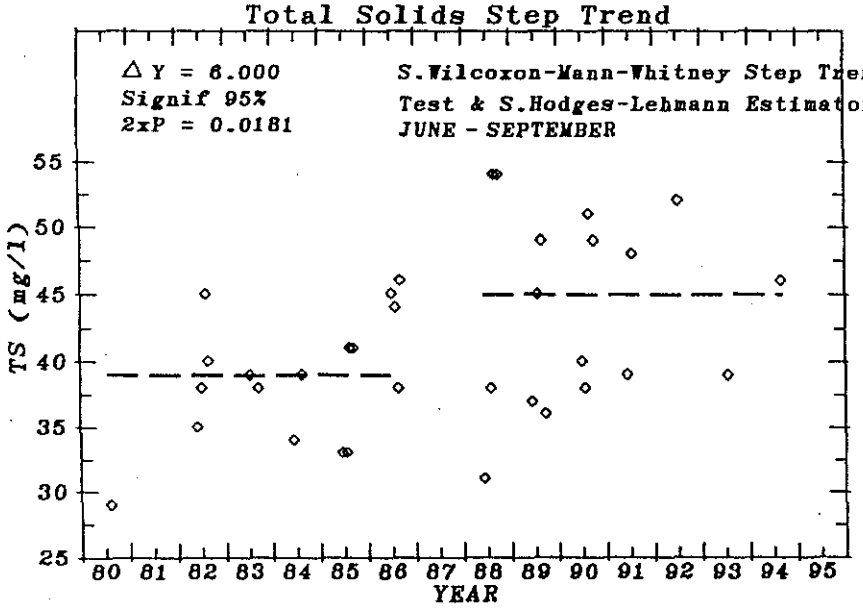
DO-TIME OF DAY RESIDUALS TREND

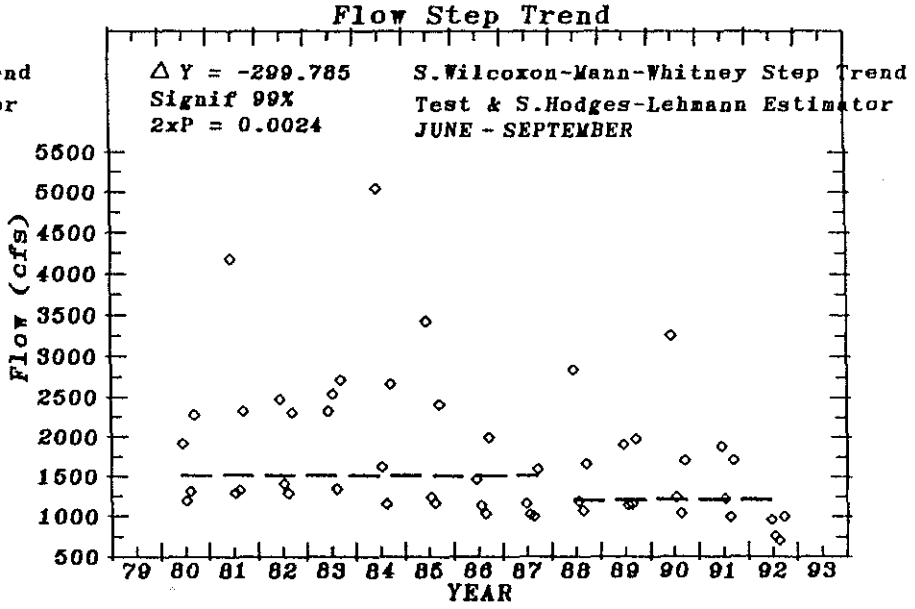



N. SANTIAM AT GREENS BR (rm 2.9)
DISSOLVED OXYGEN TREND
JUNE - SEPTEMBER
OLS Slope
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = 0.06670
Signif 99%
2xP = 0.0069
Seasonal Data
DO (mg/l)
YEAR

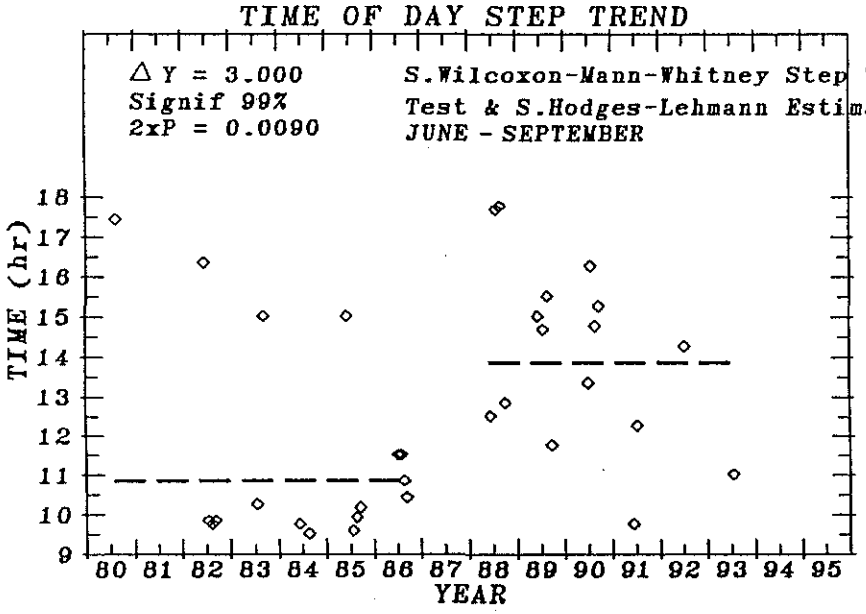

DISSOLVED OXYGEN STEP TREND
△ Y = 0.600
Signif 99%
2xP = 0.0014
S.Wilcoxon-Mann-Whitney Step Trend
Test & S.Hodges-Lehmann Estimator
JUNE - SEPTEMBER
DO (mg/l)
YEAR

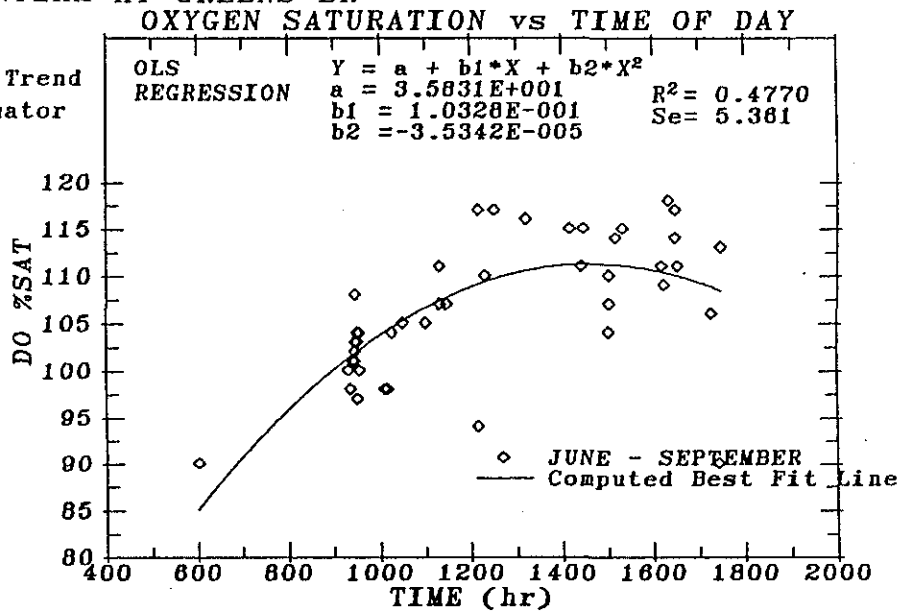
SANTIAM RIVER AT GREENS BRIDGE

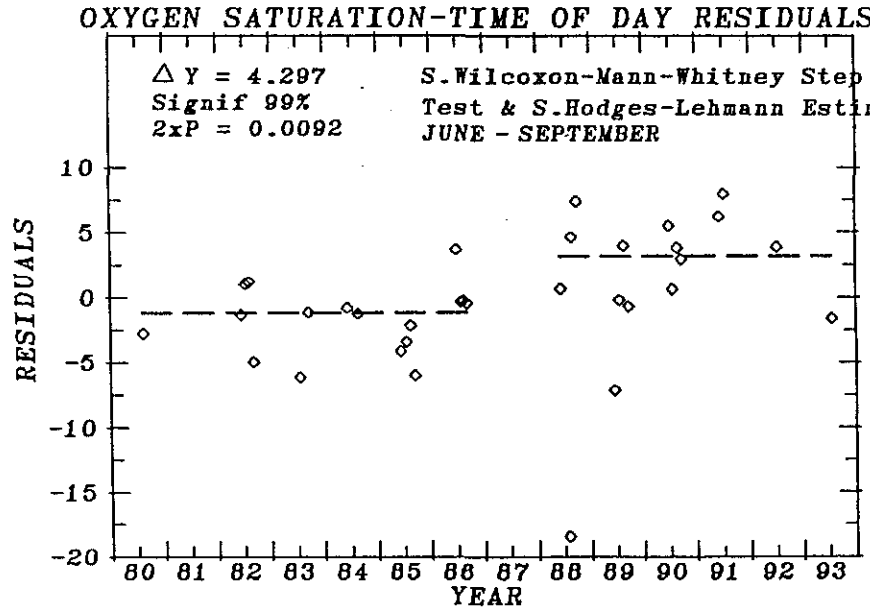


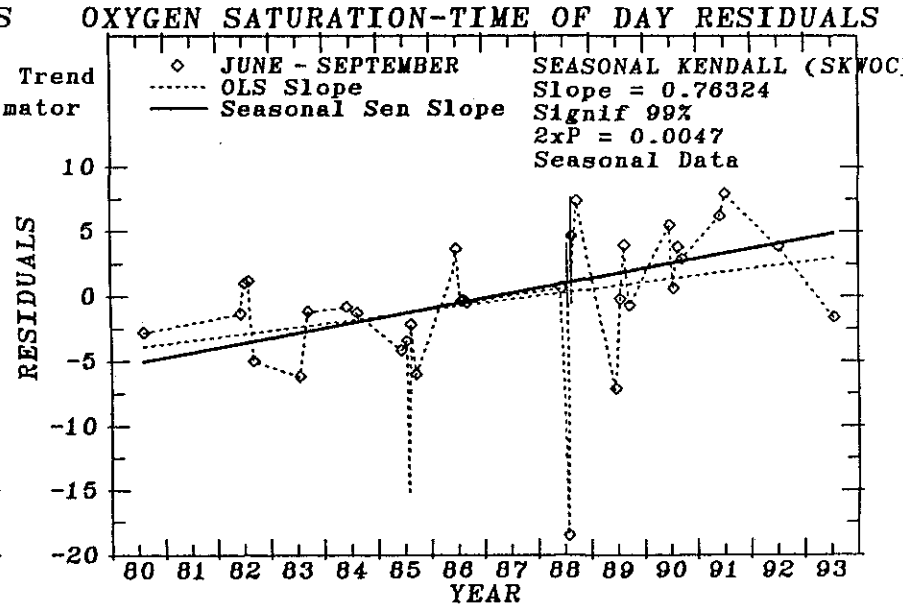


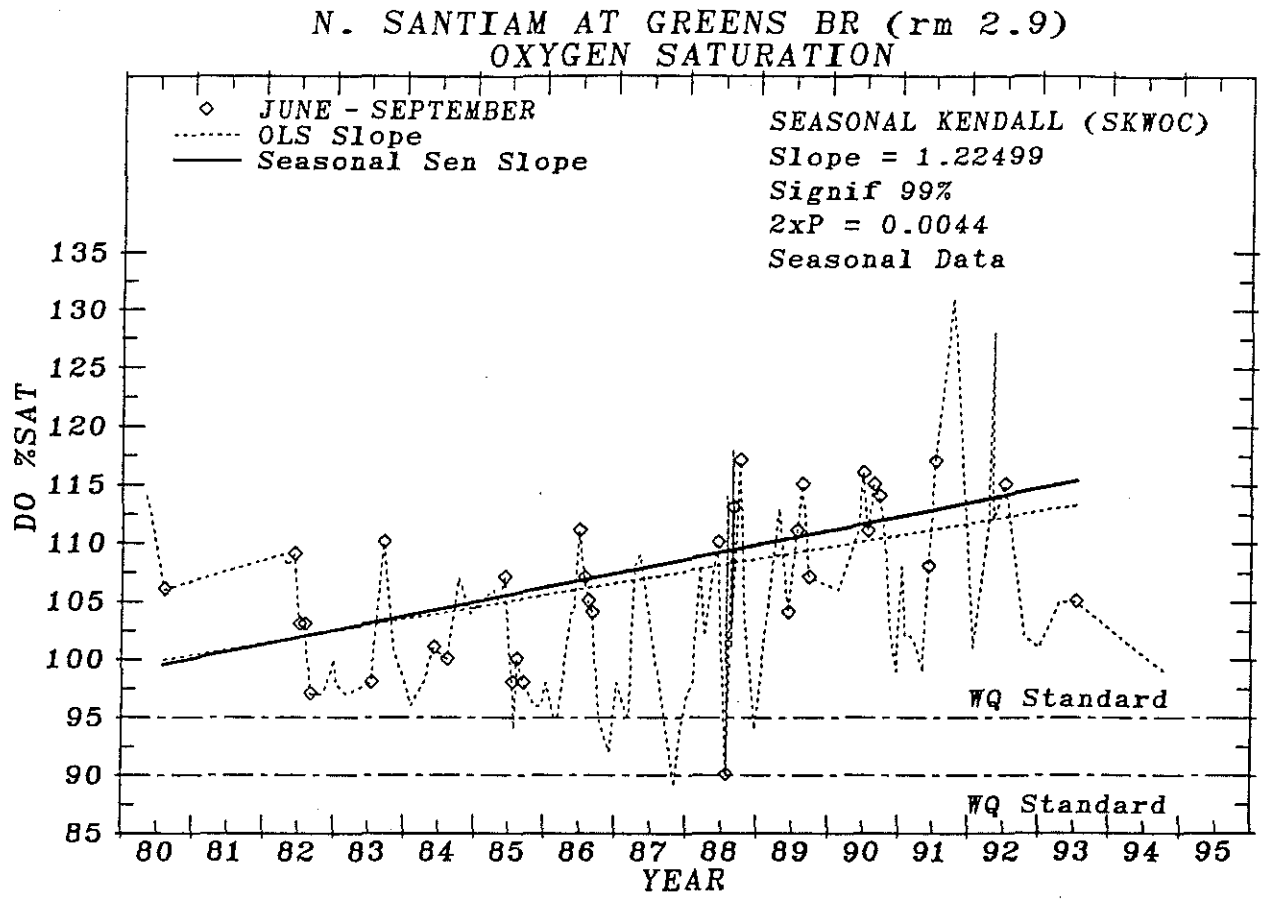
N. SANTIAM AT GREENS BR

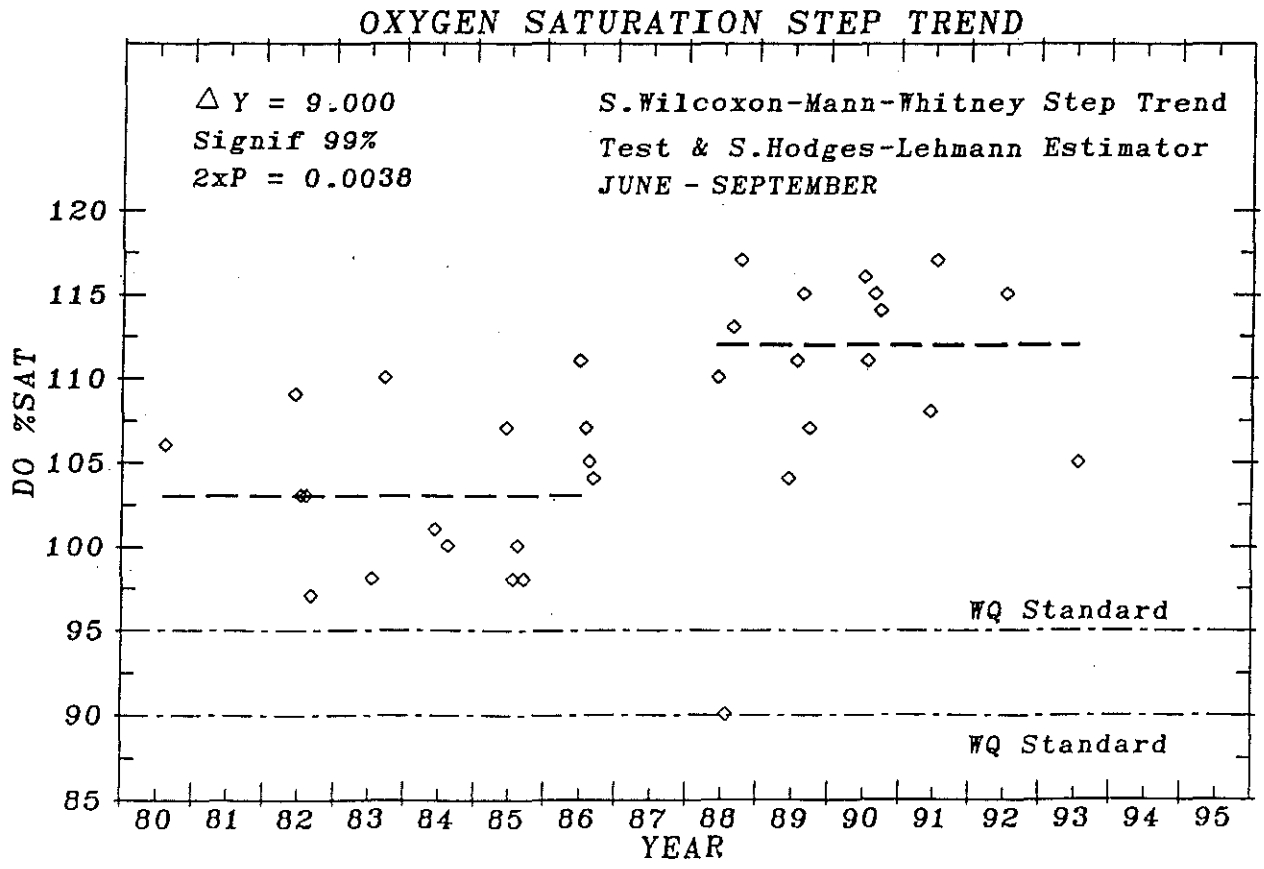


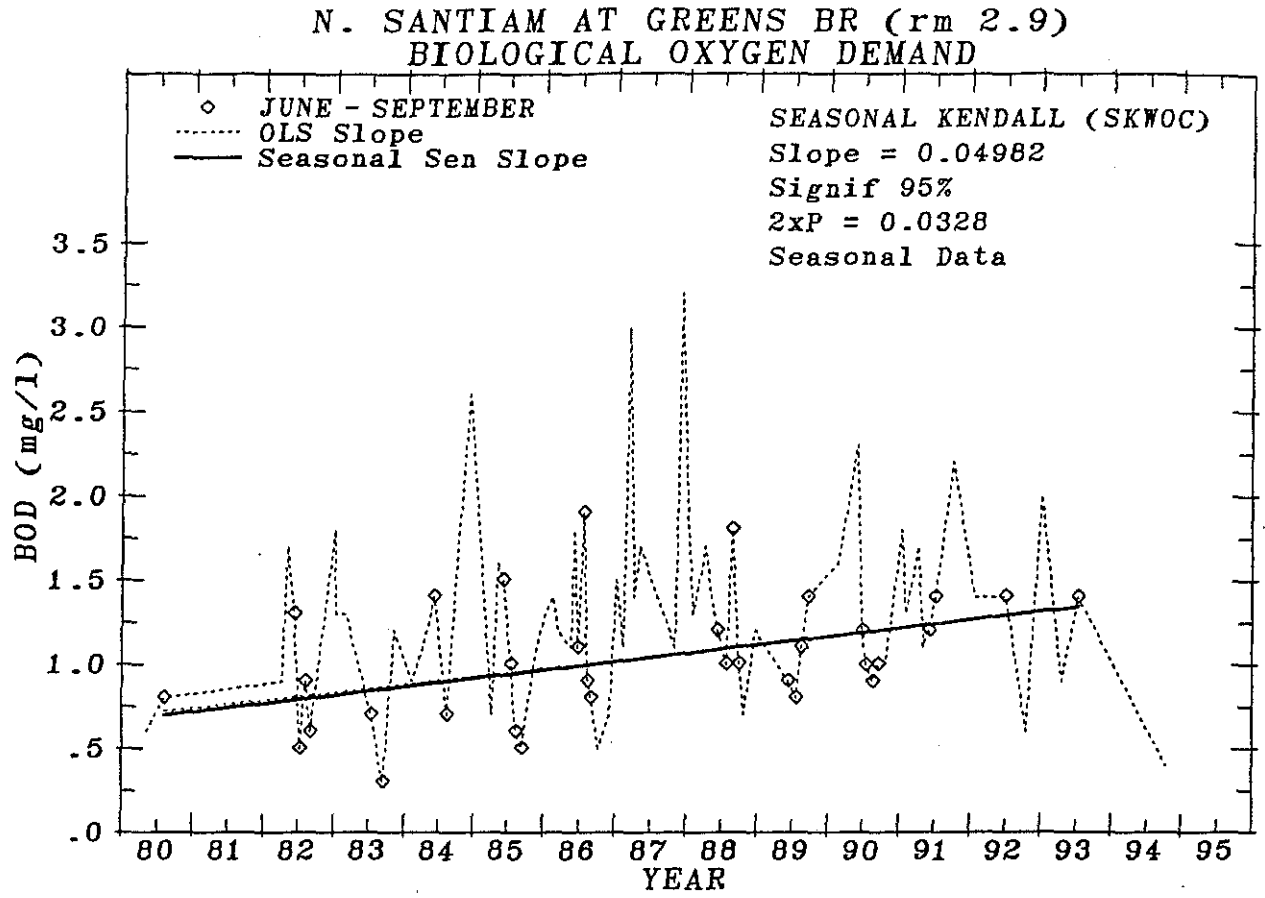


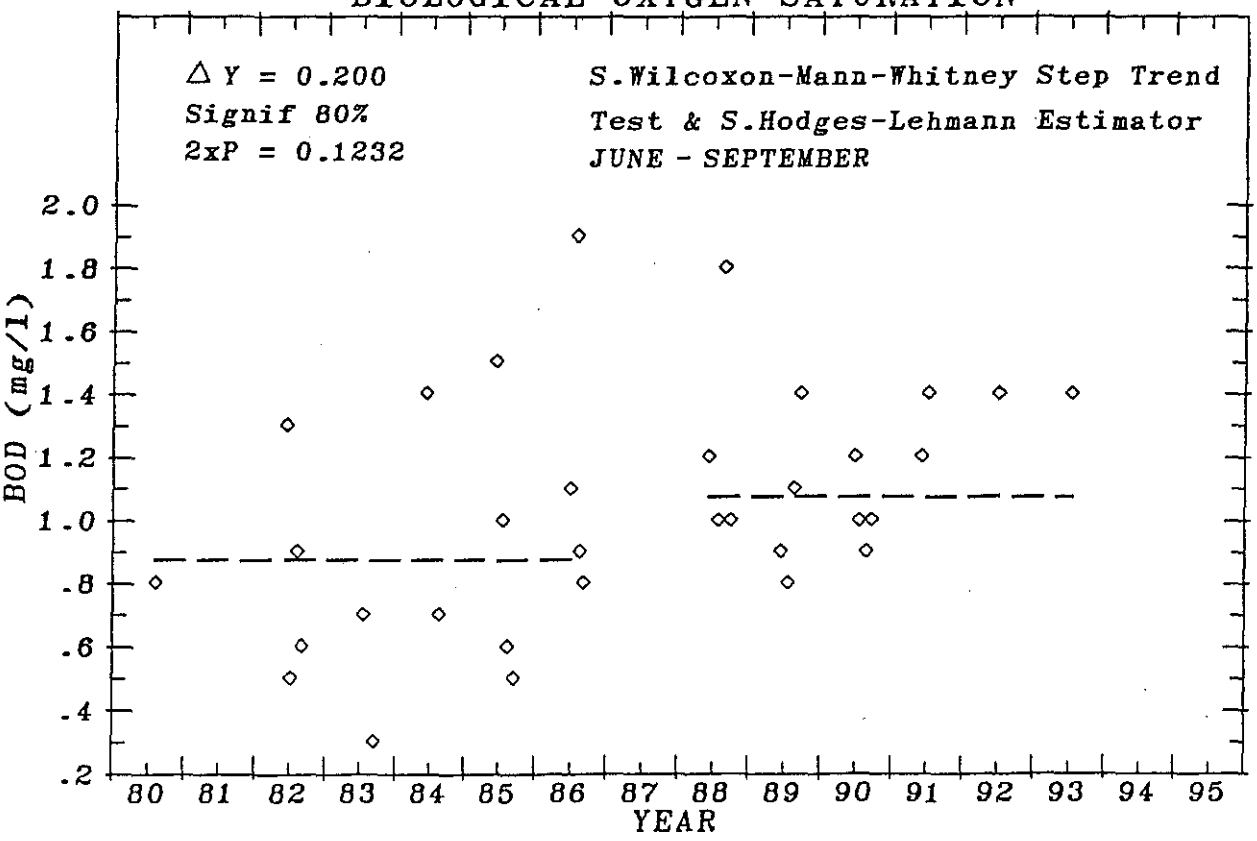


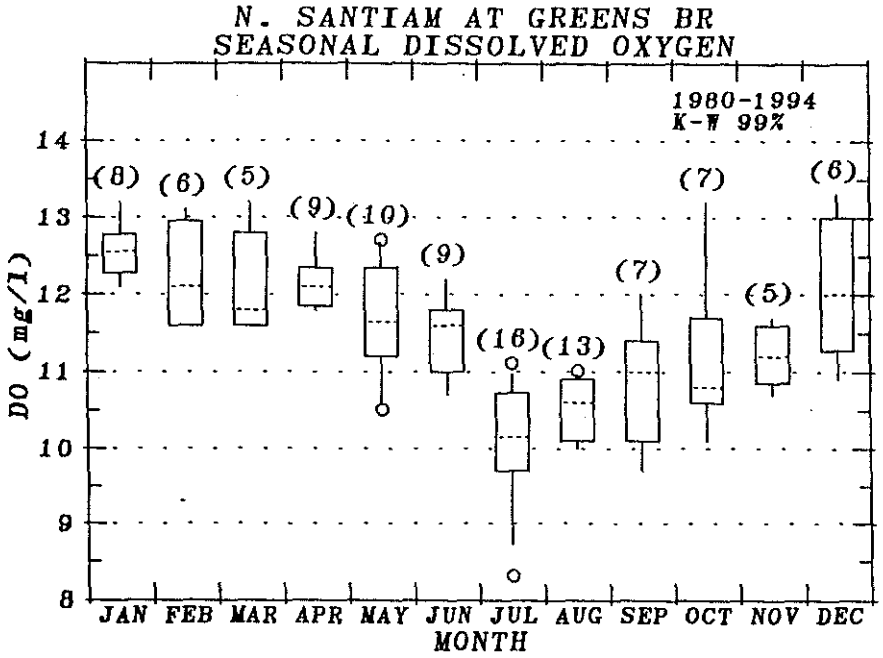


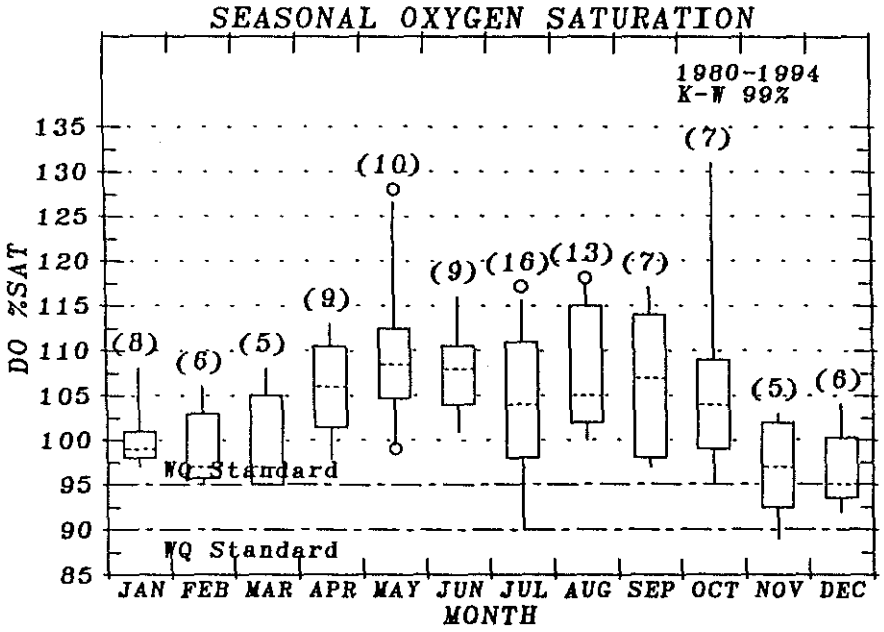

N. SANTIAM AT GREENS BR (rm 2.9)
OXYGEN SATURATION
JUNE - SEPTEMBER
OLS Slope
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = 1.22499
Signif 99%
2xP = 0.0044
Seasonal Data
WQ Standard
WQ Standard
DO %SAT
YEAR

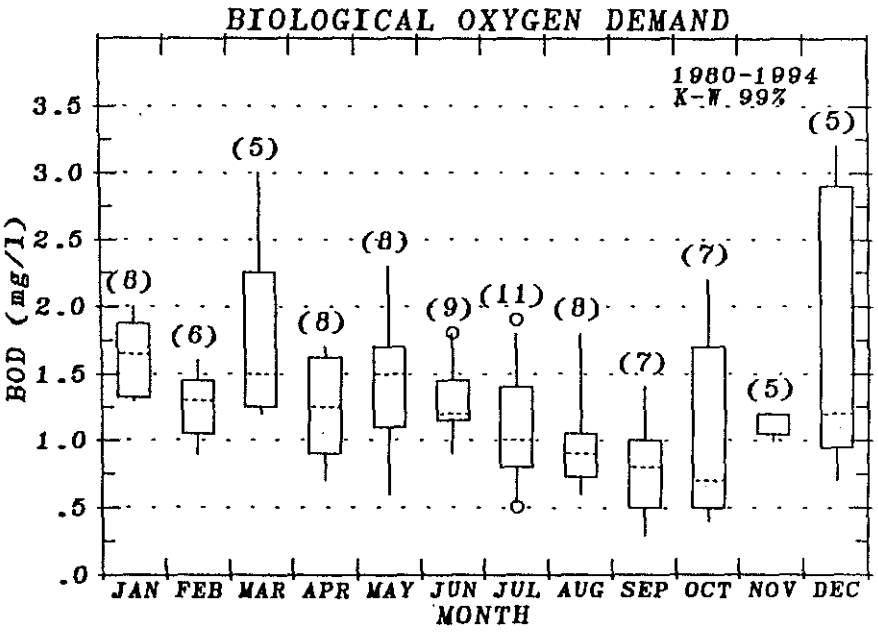

OXYGEN SATURATION STEP TREND
△ Y = 9.000
Signif 99%
2xP = 0.0038
S.Wilcoxon-Mann-Whitney Step Trend
Test & S.Hodges-Lehmann Estimator
JUNE - SEPTEMBER
WQ Standard
WQ Standard
DO %SAT
YEAR

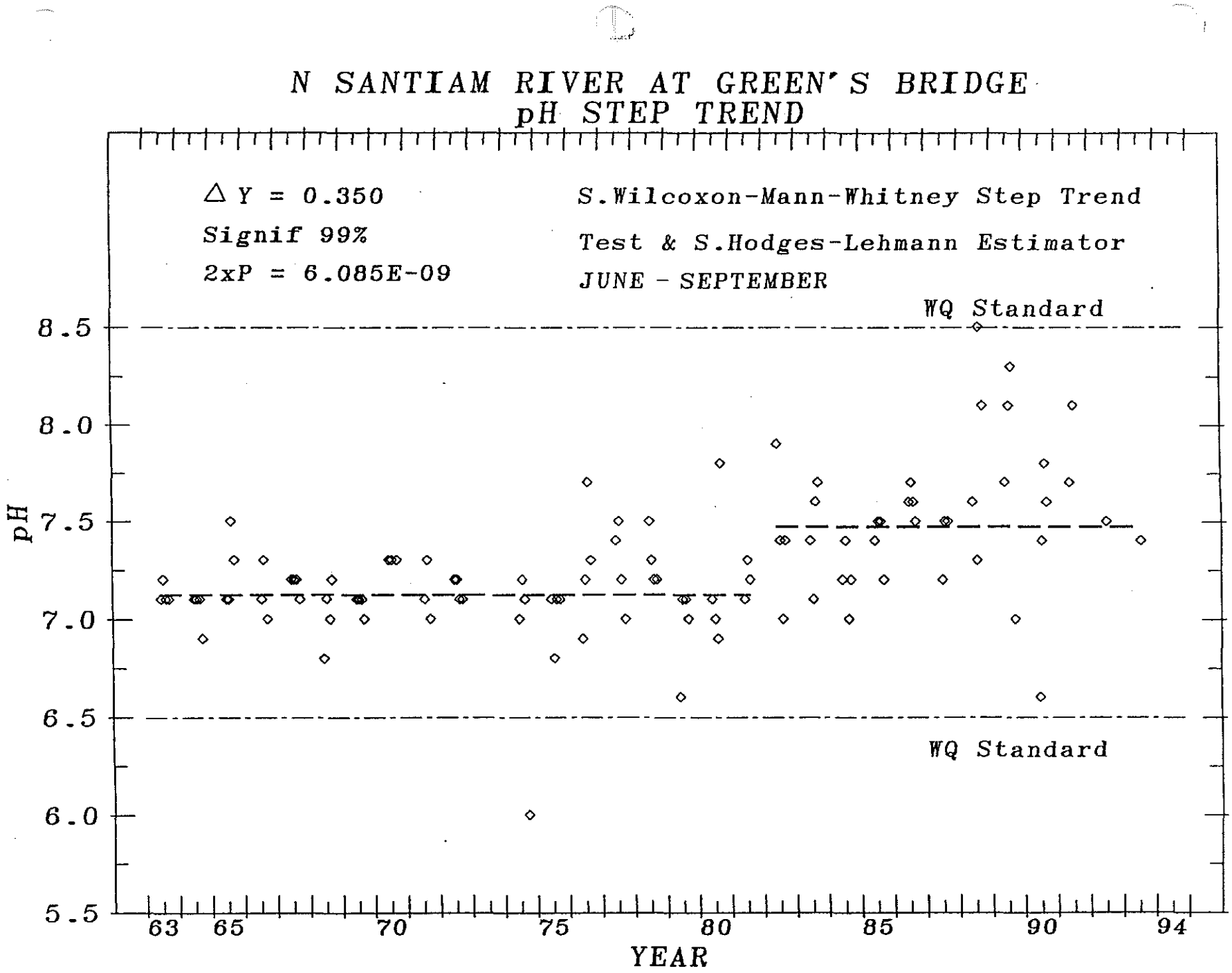

N. SANTIAM AT GREENS BR (rm 2.9)
BIOLOGICAL OXYGEN DEMAND
JUNE - SEPTEMBER
OLS Slope
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = 0.04982
Signif 95%
2xP = 0.0328
Seasonal Data
BOD (mg/l)
3.5
3.0
2.5
2.0
1.5
1.0
.5
.0
80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
YEAR


BIOLOGICAL OXYGEN SATURATION
△ Y = 0.200
Signif 80%
2xP = 0.1232
S.Wilcoxon-Mann-Whitney Step Trend
Test & S.Hodges-Lehmann Estimator
JUNE - SEPTEMBER
BOD (mg/l)
2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
YEAR

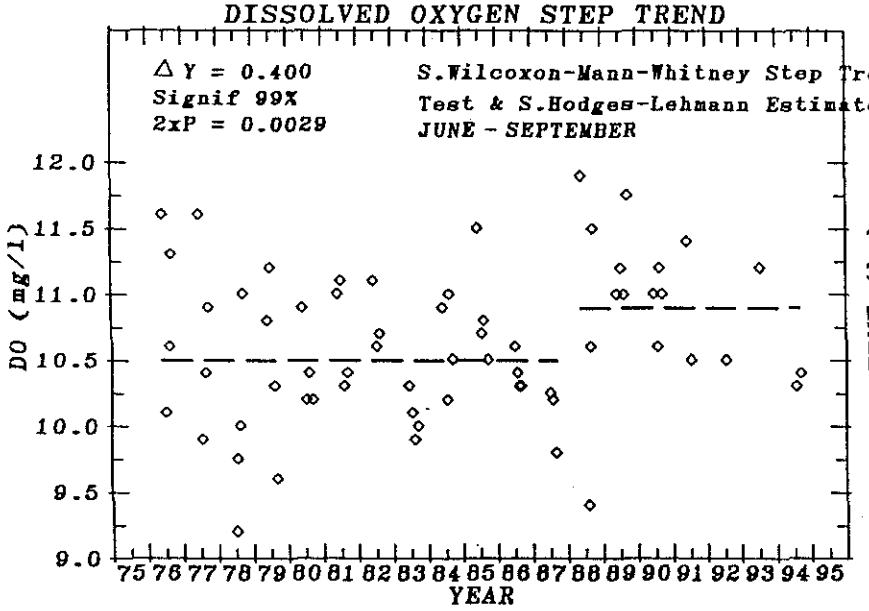

N. SANTIAM AT GREENS BR
SEASONAL DISSOLVED OXYGEN
1980-1994
K-W 99%
DO (mg/l)
14
13
12
11
10
9
8
(8) (6) (5) (9) (10) (9) (16) (13) (7) (5) (7) (6)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
MONTH

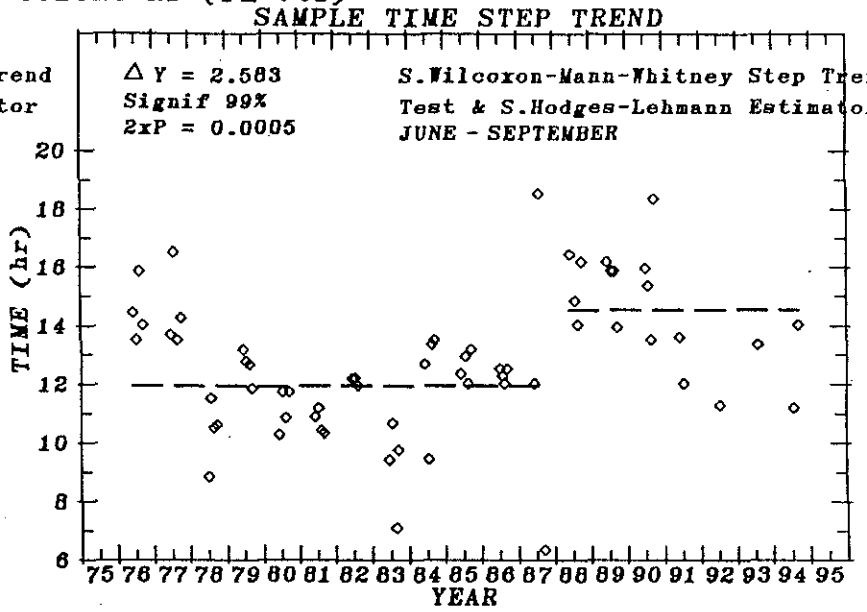

SEASONAL OXYGEN SATURATION
1980-1994
K-W 99%
DO %SAT
135
130
125
120
115
110
105
100
95
90
85
(8) (6) (5) (9) (10) (9) (16) (13) (7) (7) (5) (6)
WQ Standard
WQ Standard
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
MONTH

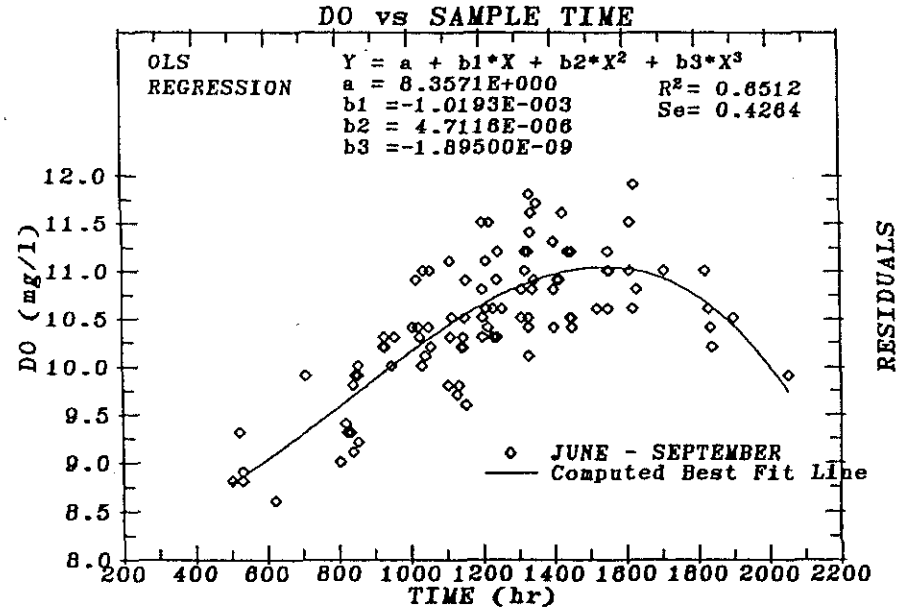

BIOLOGICAL OXYGEN DEMAND
1980-1994
K-W 99%
BOD (mg/l)
3.5
3.0
2.5
2.0
1.5
1.0
.5
.0
(8) (6) (5) (8) (8) (9) (11) (8) (7) (7) (5) (5)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
MONTH

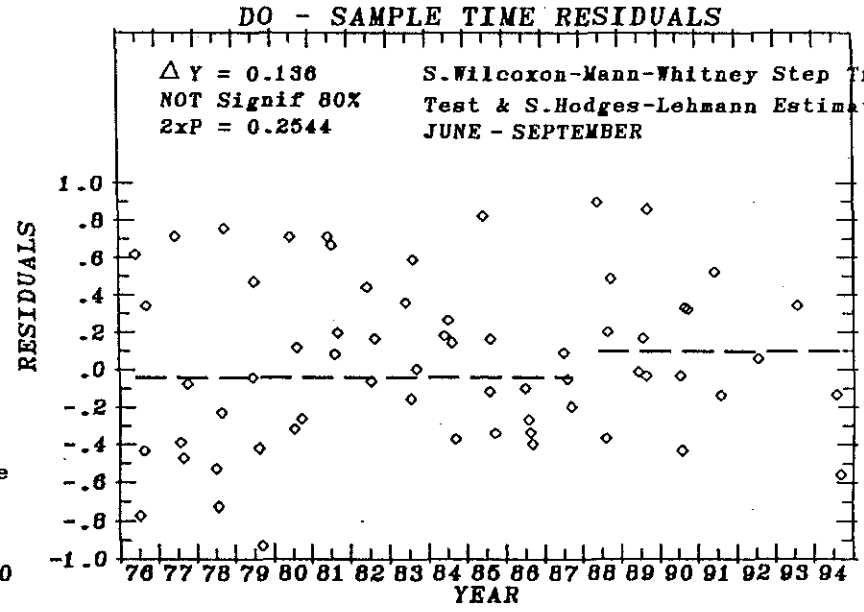

N SANTIAM RIVER AT GREEN'S BRIDGE
pH STEP TREND
△ Y = 0.350
Signif 99%
2xP = 6.085E-09
S.Wilcoxon-Mann-Whitney Step Trend
Test & S.Hodges-Lehmann Estimator
JUNE - SEPTEMBER
WQ Standard
WQ Standard
8.5
8.0
7.5
7.0
6.5
6.0
5.5
pH
63
65
70
75
80
85
90
94
YEAR

MCKENZIE RIVER AT COBURG RD (rm 7.1)

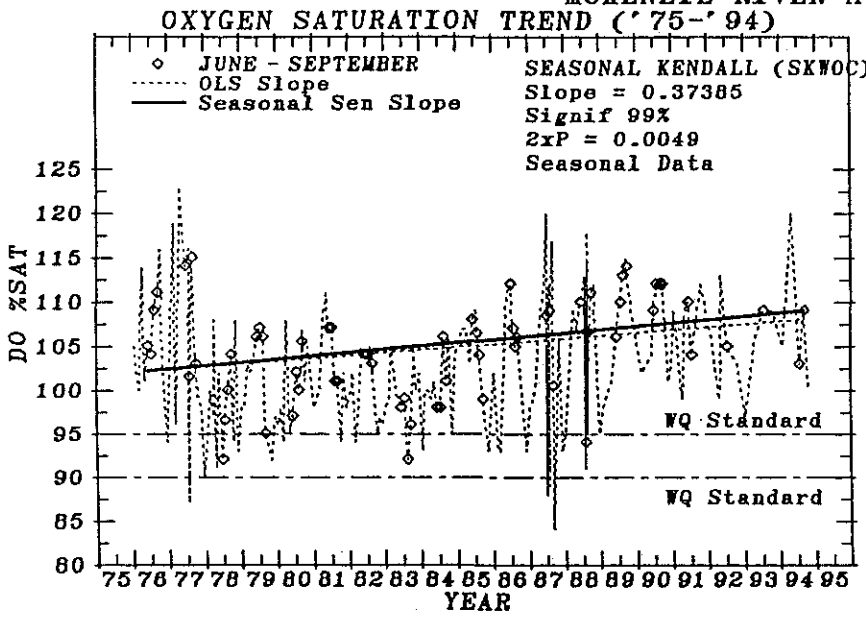


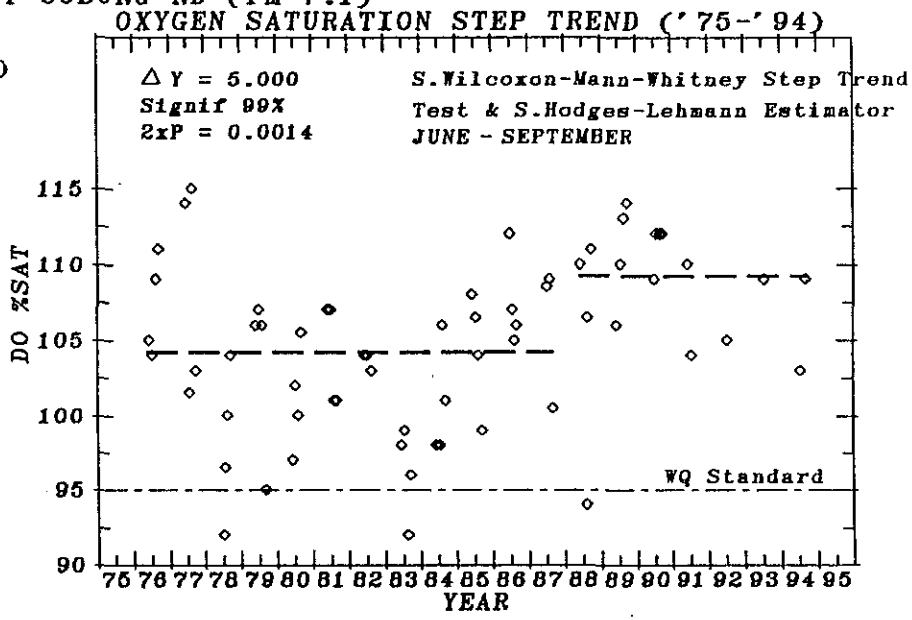


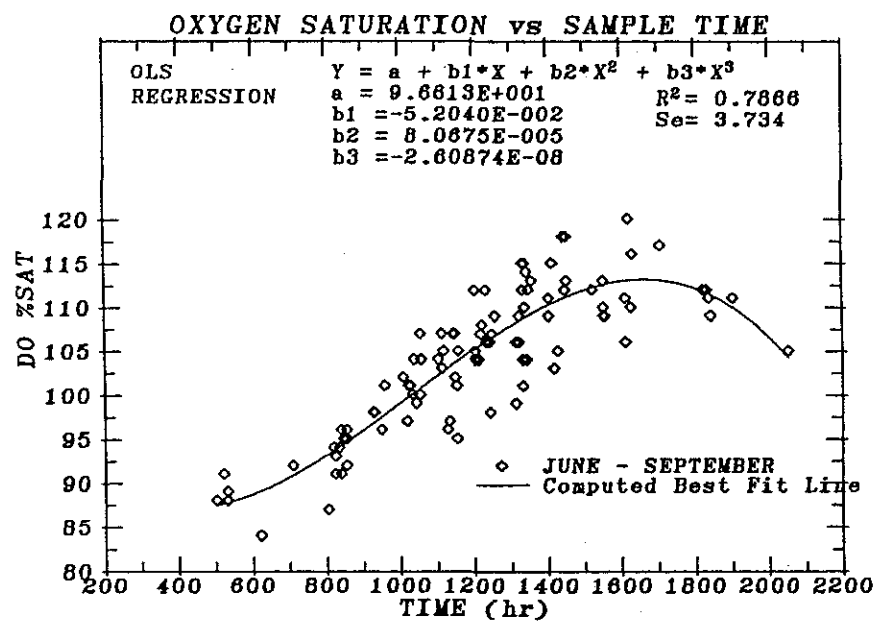


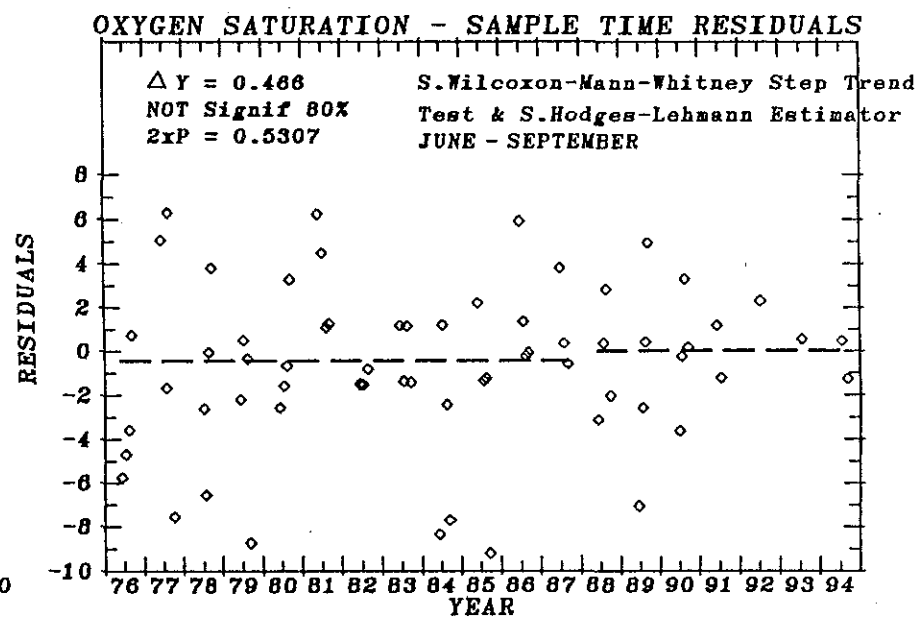


MCKENZIE RIVER AT COBURG RD (rm 7.1)



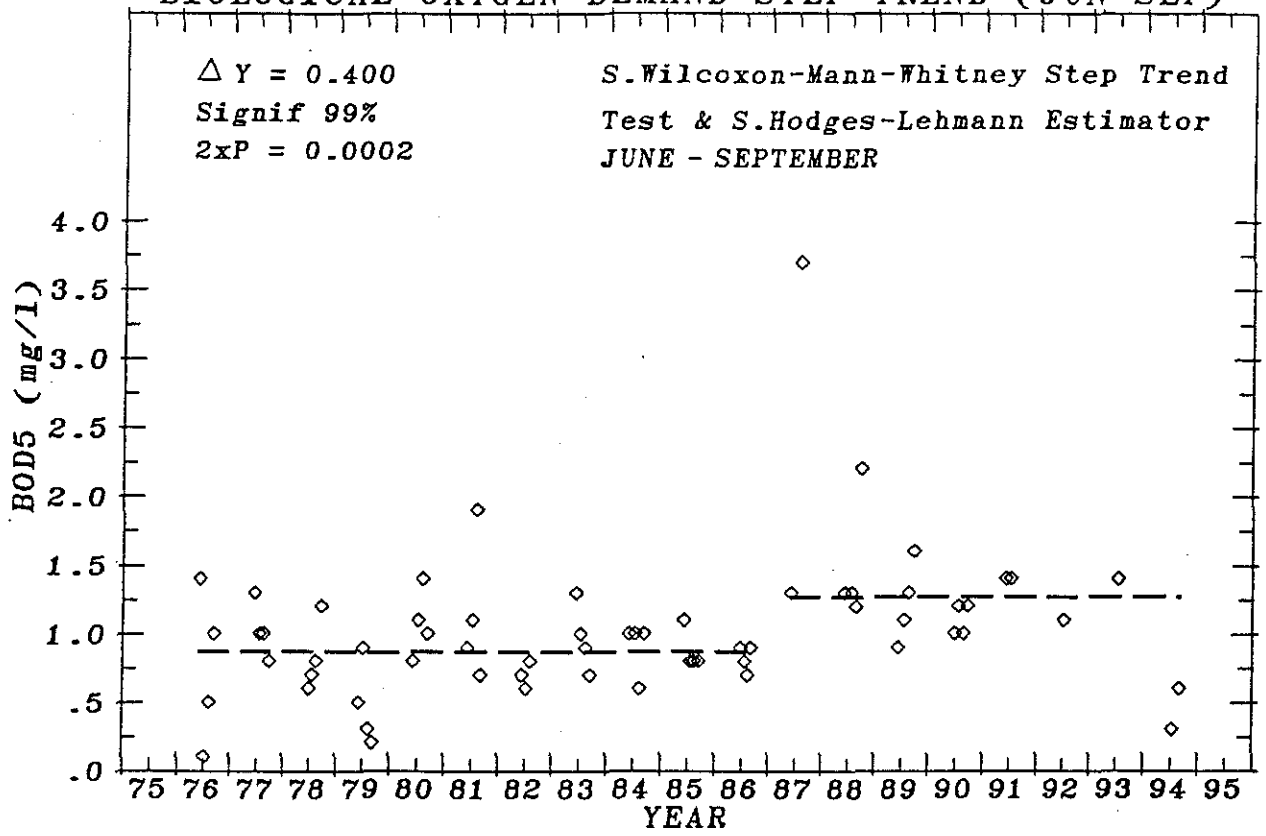




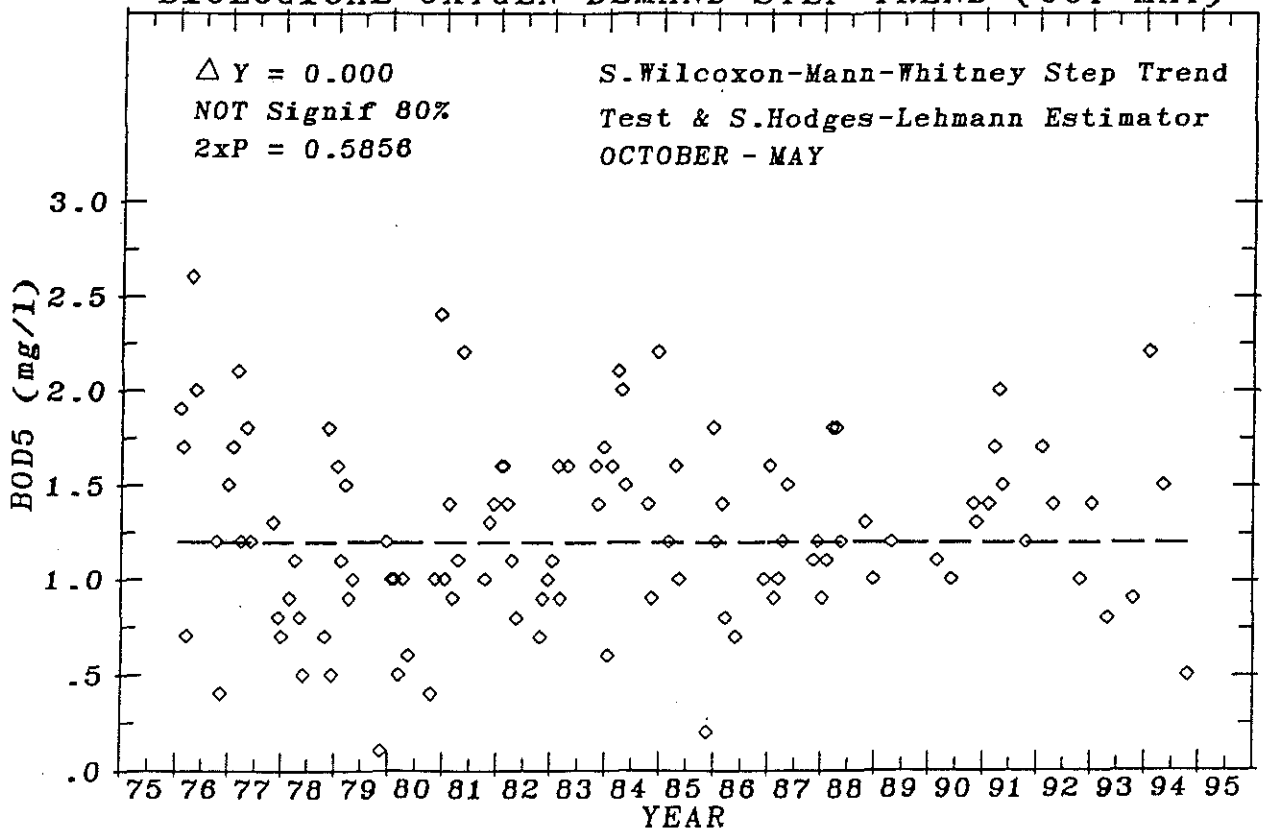


MCKENZIE RIVER AT COBURG RD

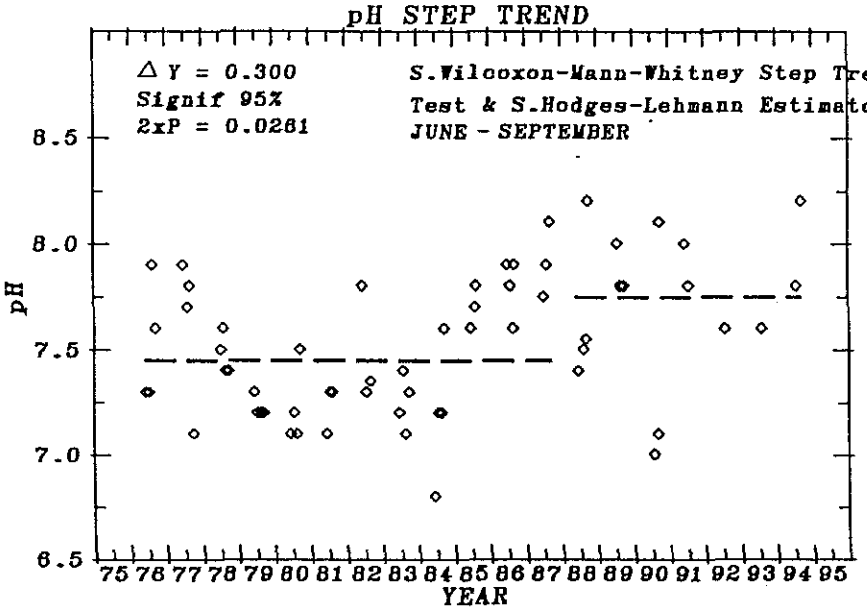
BIOLOGICAL OXYGEN DEMAND STEP TREND (JUN-SEP)

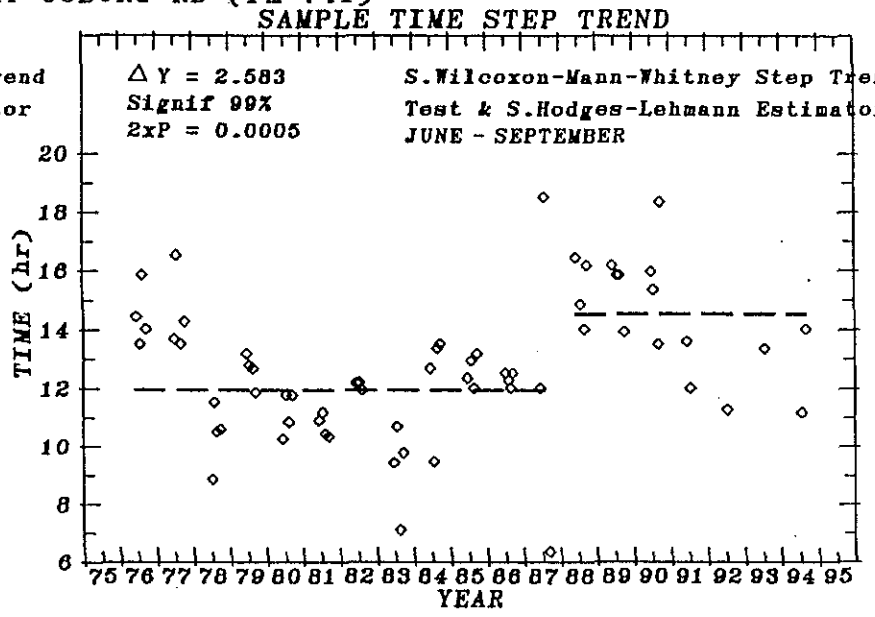


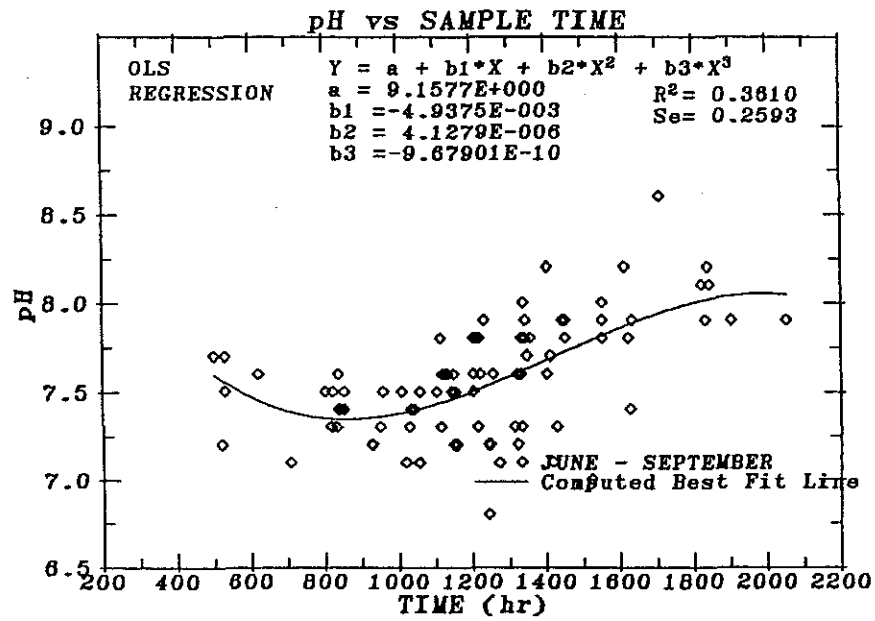
BIOLOGICAL OXYGEN DEMAND STEP TREND (OCT-MAY)

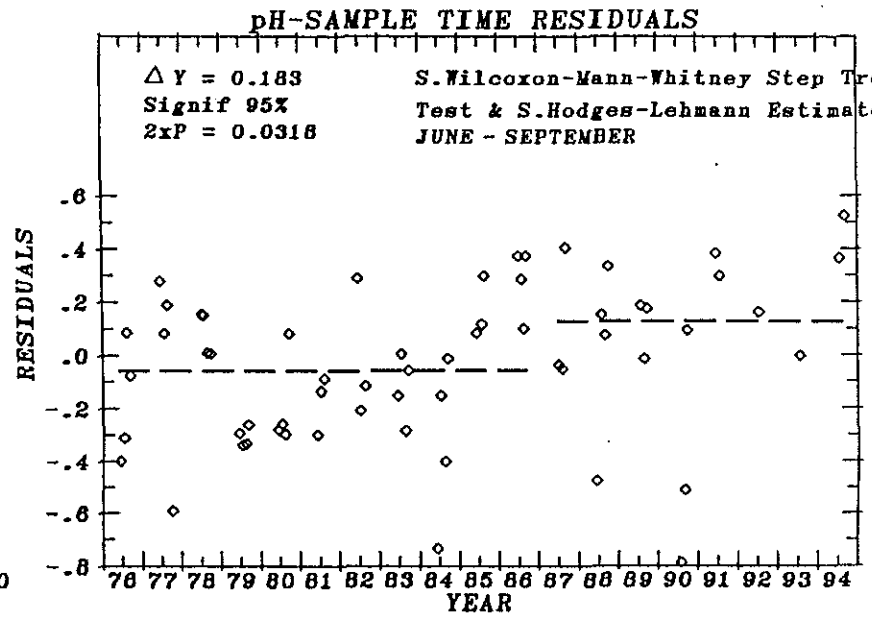


MCKENZIE RIVER AT COBURG RD (rm 7.1)









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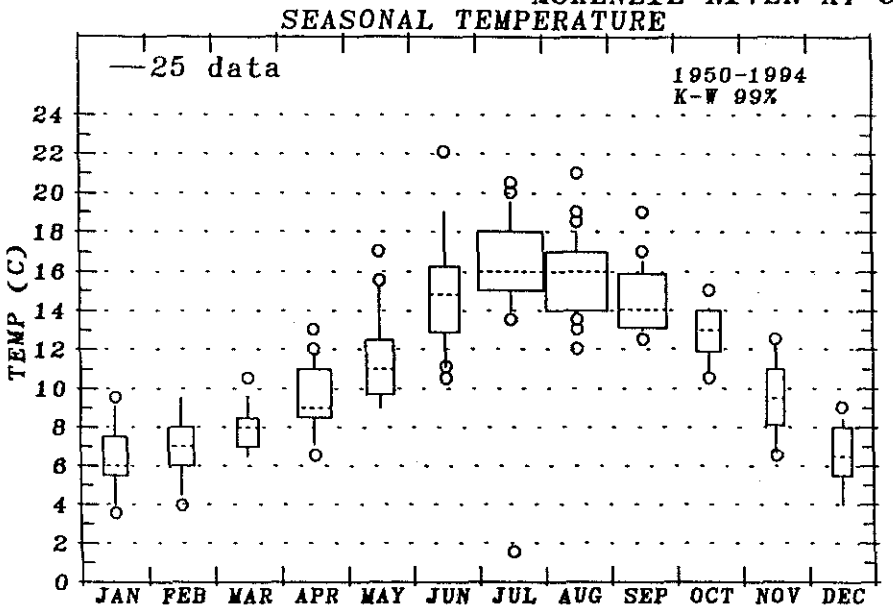

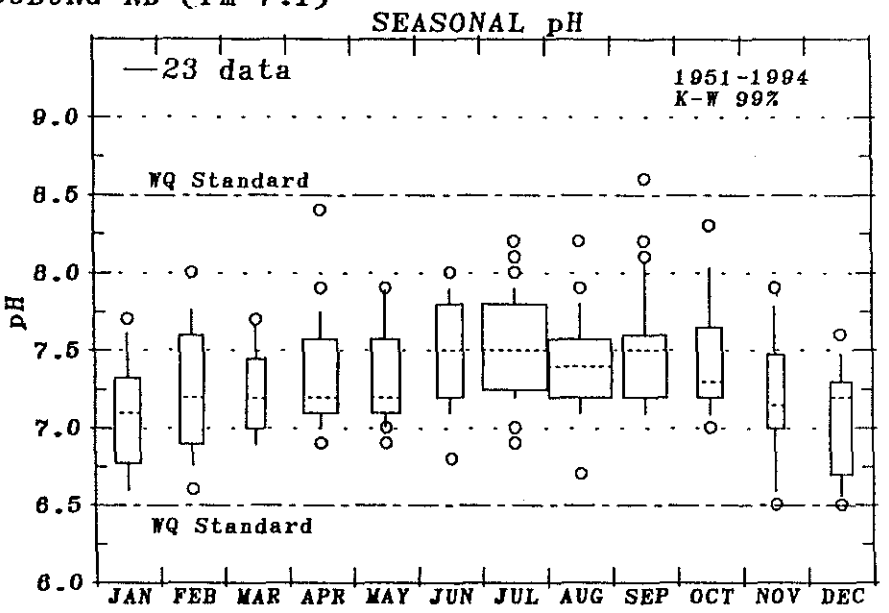

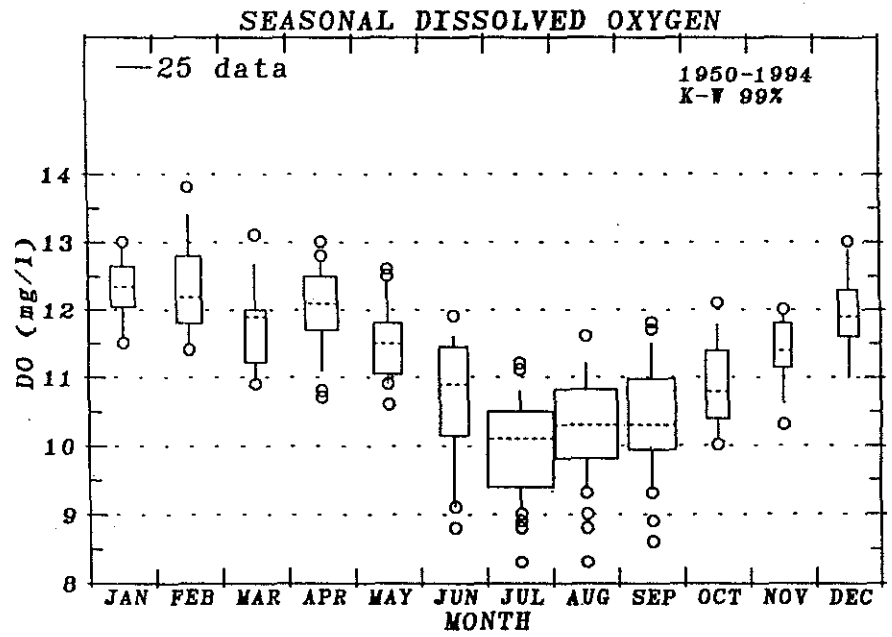

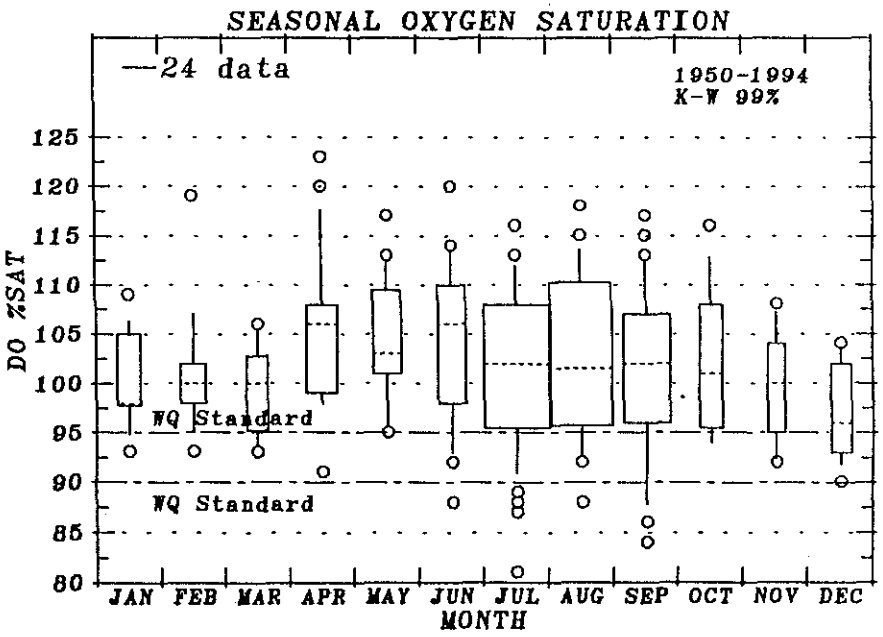

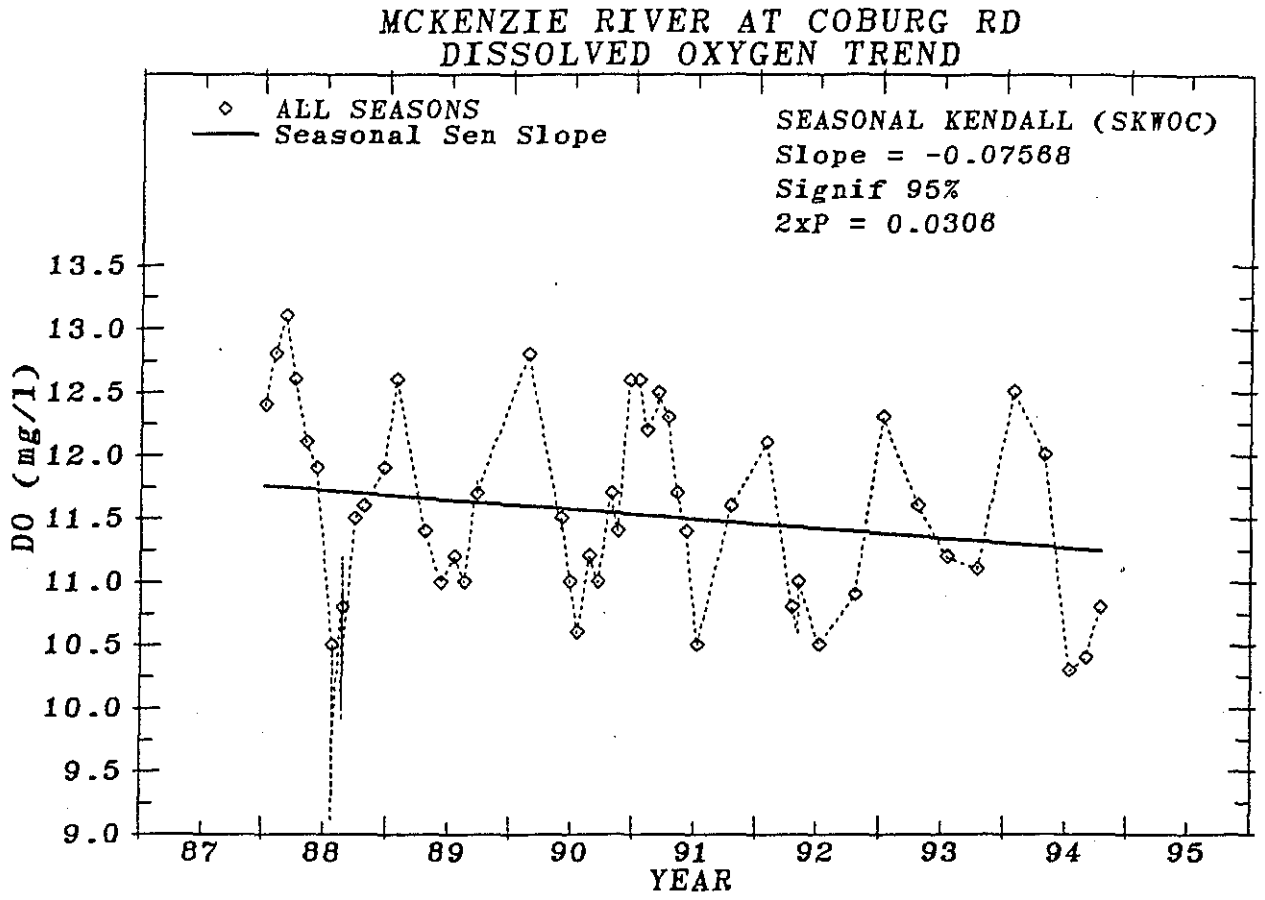
MCKENZIE RIVER AT COBURG RD
DISSOLVED OXYGEN TREND
ALL SEASONS
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = -0.07568
Signif 95%
2xP = 0.0306
DO (mg/l)
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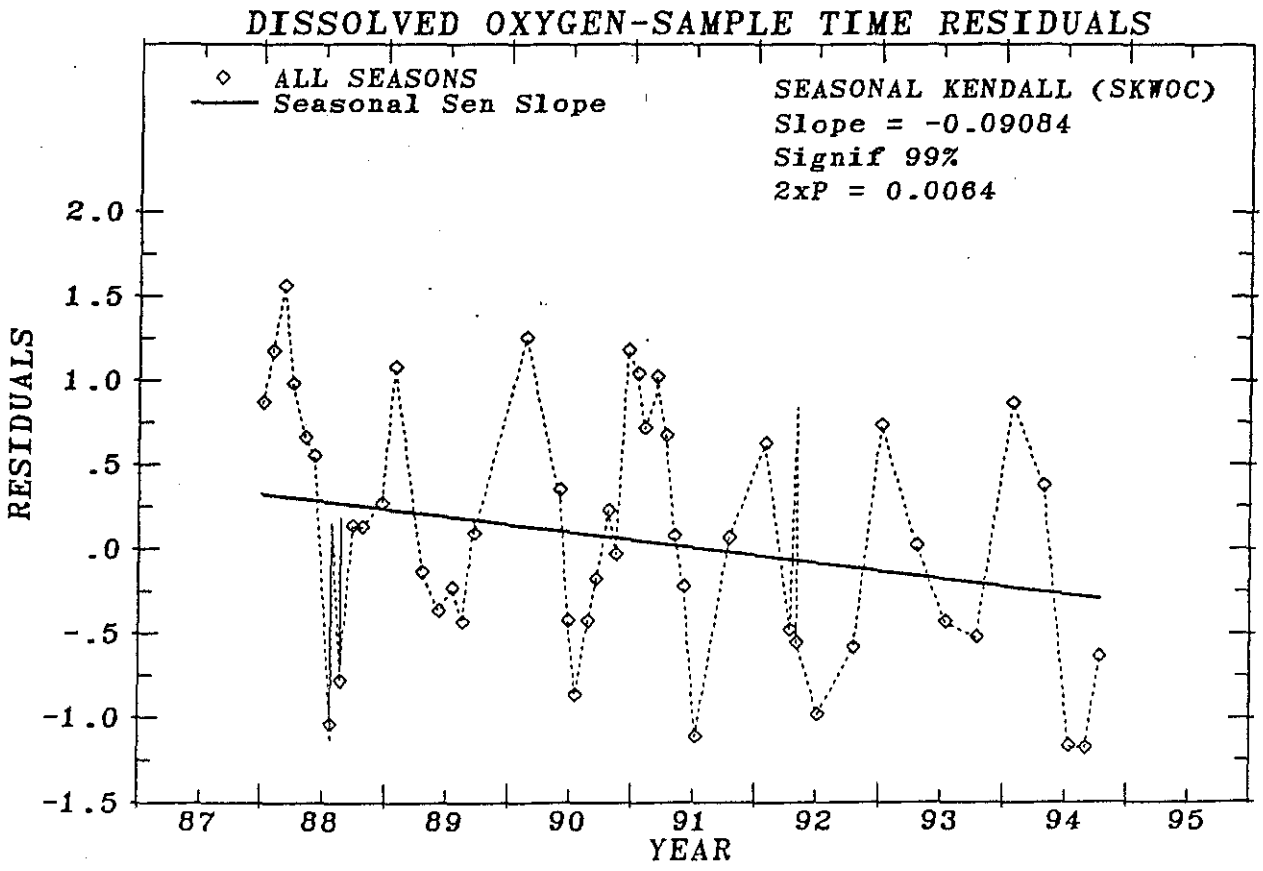
DISSOLVED OXYGEN-SAMPLE TIME RESIDUALS
ALL SEASONS
Seasonal Sen Slope
SEASONAL KENDALL (SKWOC)
Slope = -0.09084
Signif 99%
2xP = 0.0064
RESIDUALS
2.0
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YEAR

State of Oregon
Department of Environmental Quality Memorandum

Date: February 1, 1995

To: Three Basin Rule Panelists

From: Paul Burnet, Program Coordinator/DEQ

Subject: Panel Presentations to the EQC

Thank you for participating in the Three Basin Rule panel presentations to the Environmental Quality Commission. Your presentation, though brief, will play an important role in highlighting key issues for the Commission. Additional details on the Commission meeting and format are presented below:

1. Meeting location: Portland Conference Center, Morrison Room
300 N.E. Multnomah, Portland
(The Portland Conference Center is located just north of the Oregon Convention Center. The Conference Center may be reached on the MAX line [Convention Center station]. Free parking is also available in the Conference Center parking lot.)

2. Panel presentations: The Commission is scheduled to address the Three Basin rule at 1:00 pm (following a lunch break). The Chairman of the Commission will determine the order in which the panels will be heard. Each panelist will be asked for a brief presentation, which should be approximately 4 minutes in length. The Commissioners may also wish to ask questions of panelists. Written comments will not be necessary, as the Commission will be deliberating on the Three Basin Rule the same day. The meeting will be tape recorded.

3. Commission Protocol: It is customary to address your comments to the Chair and the Commissioners (e.g., "Mr. Chair, members of the Commission, ..."; or, "Chair Wessinger, members of the Commission, ..."). When responding to a question from one of the Commissioners, your response should be directed through the Chair (e.g., "Mr. Chair, Commissioner _____ ...."). Each Commissioner has a visible name plate for identification.

If you have technical questions on the proposed Three Basin Rule, please call Lynne Kennedy/DEQ, at 229-5371; for questions on the panel, please call Paul Burnet at 229-5776.

TESTIMONY OF ARTHUR H. DITTO,
PRESIDENT, KINROSS GOLD U.S.A., INC.

before the
ENVIRONMENTAL QUALITY COMMISSION

February 16, 1995
Portland, Oregon

Good afternoon, Chairman Wessinger and members of the commission. My name is Art Ditto. I appreciate this opportunity to address the issue before you today on behalf of Kinross Corporation.

Kinross owns, operates or has an interest in nine mining properties in the United States, Canada and Africa. We are proud of our progressive approach to environmental protection and reclamation at all of our projects. For example, we reclaim sites continuously during the life of the mine instead of waiting until the end. Our company policy is to meet or exceed all environmental requirements and to practice sound environmental management even in the absence of regulation. In 1993, the State of Idaho recognized our efforts with an award for environmental stewardship at our DeLamar mine there.

In Oregon, we have worked constructively with DEQ, the United States Forest Service, the Division of State Lands, the Oregon Department of Fish and Wildlife, the Department of Geology and Mineral Industries, environmental organizations and local communities to address environmental issues early in the permitting process as we seek to develop an underground mine near Mill City in Marion County.

The Bornite Mine is a $20 million capital investment with a $3.2 million annual payroll. It would provide more than 80 family-wage jobs. In addition, the company would pump an additional $2 million or more per year into the local economy for supplies at the site. Local officials in the area have told us the mine will help cushion the blow from the collapse of the local timber industry.

But just as important as the economic contribution is the fact that the mine can be built, operated and eventually reclaimed without harm to the environment. We use no cyanide in our process. The operation will not generate acid runoff during or after the productive life of the mine. We take the ore from underground, which means no open pits. The water we use in our process is continuously recycled and is not discharged. Along with millions of dollars in bonds, we set aside money from the day production begins to pay for eventual reclamation of the site.

Because the mine is located in an area of high rain and snowfall, we must be able to discharge runoff water that collects in the tailings pond to avoid potential

overflows. DEQ told us two years ago that we would have to obtain a National Pollution Discharge Elimination System (NPDES) permit in order to do that. We understood from the beginning that no degradation of water quality for beneficial uses in the North Santiam River or its tributaries would be allowed. But because of the rainfall, we cannot eliminate all discharges.

The Three-Basin Rule you are considering today was essentially "discovered" by DEQ staff during our NPDES permit review process. As written -- even with the revision proposed by your staff -- this rule would prevent our mine or industry of any kind from even applying for an NPDES permit.

Our company is confident that we can mine copper underground without any measurable degradation to water quality in Cedar Creek, the Little North Fork or the main North Santiam River. DEQ's own staff has concluded that the discharge would not adversely affect water quality. Furthermore, we are committed to meeting whatever water discharge standards and monitoring requirements that DEQ considers reasonable to achieve this goal.

What we can't understand, especially after working extensively for more than two years with responsible federal, state and local officials in Marion County, is an outright ban on mining in the area. It certainly is not justified if the issue is water quality. We have demonstrated that water quality can be protected without banning the kind of mine we propose. And we have committed to further treatment of our water discharge if DEQ thinks it is necessary to provide additional protection.

I urge you today to return to a version of the Three-Basin Rule that is closer to the one sent out for public comment in December. That version would impose stringent requirements to protect water quality and drinking water supplies. The problems your staff identified with monitoring and enforcement can be solved in a less draconian manner than banning all industry from an area that clearly needs and wants to boost its local economy and can do so while protecting the environment. At a minimum, if you adopt the staff recommendation or any more restrictive alternative, then in all fairness you should grandfather preexisting permits and applications.

Thank you for this opportunity to address the Commission. I would be happy to answer any questions.

NORTHWEST ENVIRONMENTAL ADVOCATES

Columbia/Williamette
RIVERWATCH
133 S.W. 2nd Ave. #302
Portland, OR 97204

February 10, 1995

Bill Wessinger, Chair
Environmental Quality Commission
c/o Department of Environmental Quality
811 S.W. Sixth Ave.
Portland, OR 97204

Re: Three Basin Rule

Dear Commissioners:

Having been a member of the 3-Basin Advisory Committee and subcommittee, I am sure that we are all equally weary of this issue. For that reason, I have tried to make this letter as short as possible. If the result is that I have been too cryptic, please feel free to call me to discuss it.

I. OVERVIEW

While the old rule looked good -- affording a high level of protection and easy implementation -- it did not work. It had no effect on non-point sources or non-regulated stormwater and was overly simplistic. It may have been ignored by the Department in part because its simplicity failed to comport with the complexity of the real world and its regulatory programs. Overall, the staff's proposed replacement is an improvement. Northwest Environmental Advocates (NWEA) would like to see more protection afforded by the rule but we understand the very serious limitations in Department resources. In proposing additional elements for the Commission to consider in this letter, we have tried to be mindful of this resource problem.

II. LEVEL OF WATER QUALITY SOUGHT

There are two important questions posed by the 3-Basin rule, namely: 1) How clean to keep the waters of the three subbasins? and 2) How to accomplish that goal with the resources available? While it is both tempting and expedient to jump over the first question to answer the second, to do so puts the cart before the horse. The Commission should not avoid establishing the goal of this rule: how clean should these waters be?

If the Commission decides to allow a little degradation without any type of cap, over the course of decades this will amount to a lot of degradation. **The Commission will have only succeeded in slowing the rate of degradation.** On the other hand, the Commission could decide that water quality should be protected at an absolute level because people, fish and wildlife of 50 or 100 years from now will have just as much need for clean water as we do now. Even

if Commission adopts this most protective goal, and exhorts the Department to maximize enforcement, water quality in the subbasins would likely degrade because of the patchy nature of the Department's legal authorities combined with its lack of resources.

The Staff's proposed rule provides significant assurance of a slowed rate of degradation. There are, however, many details that should be addressed if the Commission wants to ensure protection of the three basins at today's quality. **For this reason, the Commission should instruct the staff to evaluate these subbasins for nomination as Outstanding Resource Waters (ORW)**, pursuant to the process and guidelines developed in the current Triennial Review of Water Quality Standards. The Commission can then decide whether to provide the permanent protection that status could afford to the three basins side-by-side with nominations for other deserving waterbodies. ORW designation would include a management plan which would ensure a higher level of protection than this rule. Much of the work for such a plan has already been done by the staff and the subcommittee.

III. RATIONALE FOR ESTABLISHING PROTECTION GOAL

Drinking Water

The public has expressed overwhelming opposition to allowing additional degradation in the three basins based primarily on their use for drinking water. While we believe that aquatic life is far more sensitive to alterations in water quality than people drinking treated water, there is an important exception. Many communities in Oregon have been and continue to be encouraged to use slow sand filtration treatment. This method requires less operator expertise than conventional treatment systems and therefore ensures a higher level of public health protection. Its drawback is its sensitivity to pollution loads, particularly bacteria and turbidity, and apparently it is also not effective in filtering metals. **Given the state's policy to encourage slow sand filtration, should have a concurrent policy to ensure the treatment method is not rendered unworkable by excessive pollution.** It is also worth noting that there is a human pathogen, called Cryptoporidium, present in human and animal fecal matter which is not treatable with chlorination disinfection. This pollutant -- which killed 100 people in a highly publicized outbreak in Milwaukee, WI -- is of particular to municipal water purveyors.

In establishing the protection goal, the Commission should look far into the future. Even a slowed rate of degradation will still ultimately threaten the use of these waterbodies for drinking water sources. Yet people will be drinking water from them as far into the future as we can see.

Aquatic Life

We believe that the protection of aquatic life is a far more compelling rationale than drinking water for providing an exceptionally high level of protection in these three basins. Water quality here is generally good. This is in contrast to the many watersheds in the Columbia River Basin which are hard pressed to support beneficial uses such as anadromous fish. The uses in the three basins include both anadromous and resident fish ranging in status from endangered to sensitive, according to the Oregon Department of Fish & Wildlife. It does not make sense to allow the degradation of water quality -- the habitat of fish -- where we currently have wild salmon. In the long run it will be more costly to restore environmental quality where is has been lost than to protect it. It may not even be possible to restore fish populations where they have been eradicated. The aquatic life in these three basins is already threatened because their waters are not pristine. Parts of some of them are "water quality limited" -- violating state water quality standards -- for parameters such as temperature, and dissolved oxygen. The narrative standards that protect aquatic life and the sediment standard are also likely violated in tributaries impacted by development, such as the Lower Clackamas. It is worth noting that the nondegradation requirements of the water quality limited listings apply notwithstanding the 3-Basin rule.

IV. STORMWATER

Construction Stormwater

Construction stormwater for areas larger than 5 acres is covered by a general permit that was issued in September, 1991. According to citizens, the program is not working well to protect what were once healthy salmon streams in, for example, the Clackamas Basin. This is largely due to extremely limited staff, developers' failure to properly implement Best Management Practices (BMP), and the infancy of the program. The program also breaks down when the developer, having graded the entire property, sells the individual lots thereby voiding the applicability of the general permit. The general permit specifically states that the erosion control plans it requires should meet rules specific to certain river basins. The Commission should take this opportunity to improve construction stormwater regulation -- particularly on the critical Clackamas -- in ways which will not impact the Department's resources but will help water quality.

We urge the Commission to consider the following improvements to the staff proposal to address construction stormwater:

- Amend the 3-Basin rule to require a general permit for construction stormwater for any size lot. Those sites of

under 5 acres could have erosion plans approved and inspections performed by municipal building inspectors to avoid adding to the Department's work load. This would also address the problem of DEQ's loss of regulatory authority that occurs once a site is sold into lots.

- **Require holders of construction stormwater permits to provide the reports to DEQ, and therefore the public, on a monthly basis**, and perhaps more frequently where problems are detected. Currently the developers hold their self-inspection reports unless DEQ requests them. For projects that last over a year, the developer sends the reports to DEQ once a year. This is obviously well past the time for regulatory or remedial action to stop erosion from destroying fish habitat.

- **"Deputize" citizens to inspect construction sites and/or impacts of stormwater** on tributaries through visual or biomonitoring. DEQ's general permit for construction stormwater is easily interpreted and would lend itself to such citizen assistance.

These changes will lead developers to increase their self policing because they will know they are being watched more. Citizens will be better able to assist the Department where now they feel helpless and are utterly frustrated in their attempts to protect critical spawning habitat in tributaries. The lessons learned from the increased level of attention to this problem will be applicable statewide.

Long Term Stormwater

While NWEA approves of the staff's direction with regard to on-going stormwater discharges, the rule does not adequately address this source's contribution to water quality degradation. We recognize that the Commission must balance the need for better controls and treatment for stormwater with the fact that the stormwater program is in its early stages of development. While the requirements of the 3-Basin rule should not be so much more onerous as to drive developers into water quality limited (WQL) basins, neither should the rule neglect stormwater's contribution to the destruction of important aquatic habitat.

While existing areas of stormwater run-off should be handled under proposed staff rule item 6(b), **new development should be required to have stricter controls in place now.** It simply makes more sense to build good stormwater controls and treatment into new developments rather than allowing new construction to go forward knowing that it will soon be deemed inadequate to the task. This avoids the future costs associated both with debating the point and actual retrofitting.

The Commission can act now to ensure a high level of protection from long term stormwater discharges by:

- Encouraging the Department to apply its biomonitoring program where it is most needed, namely the tributaries where the beneficial uses needing protection are located. This is also where traditional ambient water monitoring neither takes place nor shows the adverse impacts on the use. Biomonitoring can help protect sensitive areas of ecosystem and effects of storm-driven loads.

- Make the finding now that stormwater is a significant source of total degradation in the three basins and direct the staff to begin identifying regulatory mechanisms and permit conditions to require more stringent control technologies and practices.

- Instruct the staff to develop a higher level of treatment (controls and practices) for new construction. This would be implemented through the individual stormwater permits issued to municipalities.

V. CONCLUSION

In light of the fact that development of this rule has been largely unrewarding for all involved, the Commission should know that it has been useful in identifying areas where current regulatory programs fall short. Those problems should be remedied statewide in the future.

Finally, we encourage the Commission to protect the water quality of these three basins in the most efficient way possible. Northwest Environmental Advocates does not support protecting these subbasins at the expense of protecting and restoring the waters elsewhere in Oregon.

I look forward to seeing you on Thursday.

Sincerely,

Nina Bell
Executive Director

cc: Mike Downs
Lydia Taylor
Lynne Kennedy

GEORGE V. EIGHMEY
STATE REPRESENTATIVE
DISTRICT 14
MULTNOMAH COUNTY
HOUSE OF REPRESENTATIVES

COMMITTEES:
Human Development Services — 1993
Asset Forfeiture — 1993-94
PERS Task Force — 1993-94
Commerce — 1993-94
Ways & Means — 1995
Subcommittee on Public Safety
Children & Families — 1995

February 15, 1995

DEQ
Water Quality Division
811 SW 6th Avenue
Portland, OR 97204

On January 25 my office sent to your department a letter that expressed my concern about the amendments to OAR 340-41-470, or The Three Basin Rule. The provisions outlined in this proposal allowed degradation to the three river basin area of the Clackamas, McKenzie and North Santiam Rivers. That was unacceptable to my office and to some of the constituents that I represent.

We have received your proposal to EQC in which you offer a Staff-Recommended Alternative to the above mentioned amendments. Although these amendments do not meet the desired requirements to preserve the area in a manner that we feel is complete we do however feel that it is a viable option. We recognize the need for economic and land development and the need to leave room for minimal lowering of the water quality in order to accommodate these needs. This proposal makes an acceptable compromise between those who want to protect the water quality of the area and those who want to develop it.

It is our understanding that the new proposal to EQC will allow the following provisions, which we feel are of upmost importance to protect the area, under prescribed stipulations:

Section 6
Long-term general and individual storm water permits may be allowed as required by State and/or Federal law. Requirements apply:

(a)
Monitoring and water quality evaluation of the in-stream water quality impacts of the discharges;

(b)
Department may institute regulatory mechanisms or modify permit conditions to require control technologies and/or practices which result in protection that is greater than that required statewide.

Capitol Office: H-371 State Capitol, Salem, OR 97310 — (503) 986-1414 email: RepGeorge@aol.com
District Office: 1423 S.E. Hawthorne Blvd., Portland, OR 97214 — (503) 231-9970

Section 7
No permits for new industrial or confined animal feeding operation waste discharges provided:

(A)
There is no waste discharge to surface water;and

(B)
All groundwater quality protection requirements of OAR 340-40-030 are met.

It is our understanding that these particular provisions and the rest of the proposal allow only minimal discharges for industry and development and that if such an industry should not respect these provisions or should a new industry propose plans that require additional discharge, steps to improve the situation and/or denial of a permit shall be made.

We realize that in a growing and prosperous area we must make room for economic and land development, but when making room for these actions it is also necessary to protect the water quality of the water ways involved for the use of surrounding communities, the wildlife and those who use the area for recreational purposes. The proposal you have made to EQC we feel takes these issues into account and is an acceptable compromise.

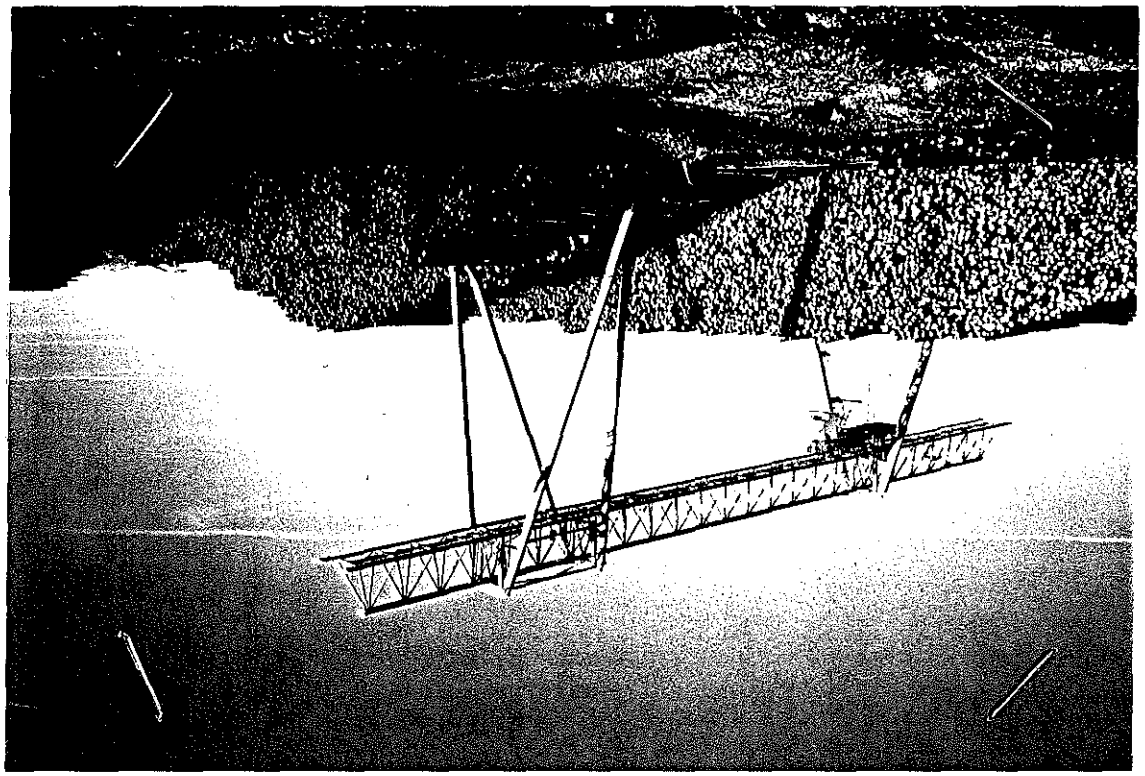
Thank You

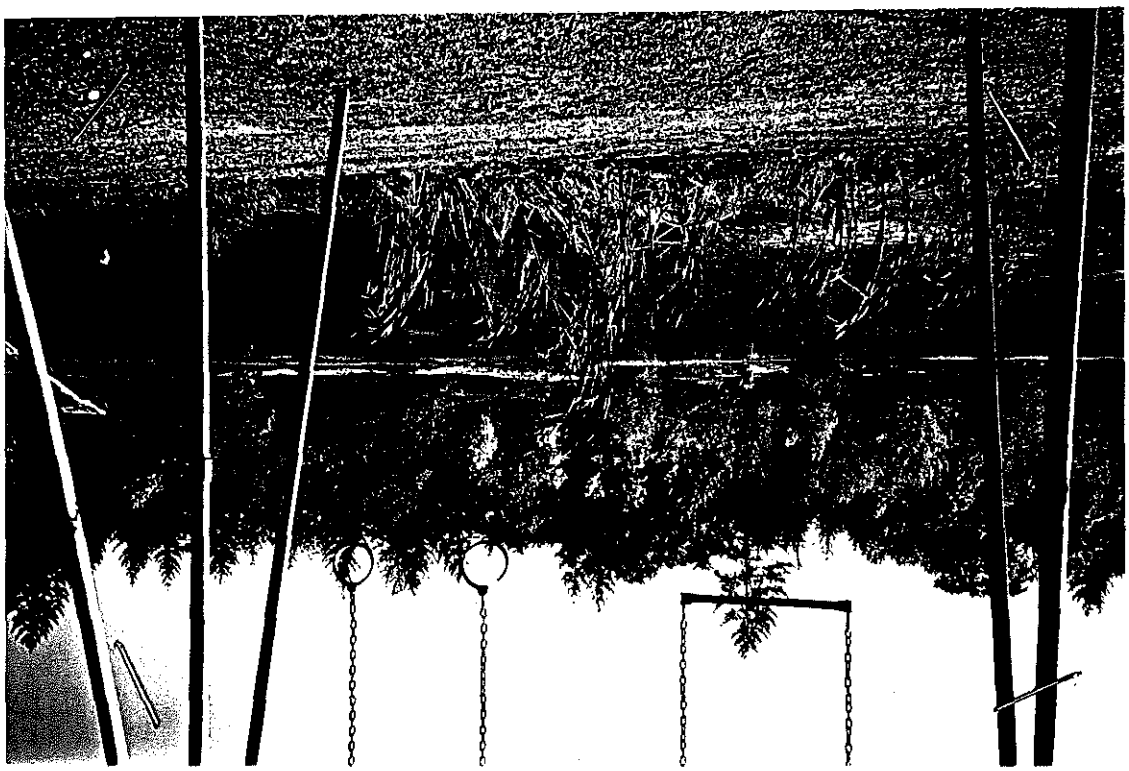
George Eighmey

Rep. George Eighmey

The following Representatives have signed on to this letter in order to show their support for the approval of this proposal by EQC on February 16, 1995. These Representatives support this proposal in order to maintain water quality throughout the State of Oregon and because many of their districts will be directly effected by the decision made by EQC.

Rep. Avel Gordly
Rep. Lisa Naito
Rep. Cynthia Wooten
Rep. Sharon Wylie
Rep. Floyd Prozanski
Rep. Tony Corcoran
Rep. Barbara Ross





CITY OF
PORTLAND, OREGON
OFFICE OF PUBLIC UTILITIES

Mike Lindberg, Commissioner
1220 S.W. Fifth Avenue
Portland, Oregon 97204
(503) 823-4145
FAX: (503) 823-3017

February 16, 1995

TO: Lydia Taylor, Director (FAX: 229-5850)
Oregon Department of Environmental Quality

FROM: Mike Lindberg Jeff Golden for MDL
Commissioner of Public Utilities
City of Portland

RE: Today's EQC Deliberation on the 3-Basin Rule

Based on my understanding of the latest draft that your Department will be submitting to the Commission today, I would like to commend your staff on its apparent responsiveness to public concerns expressed clearly and consistently at several public hearings in the last few weeks. It would appear that the current draft offers a significantly higher and more appropriate level of protection of water quality in these basins than did staff's original draft revisions.

My hope is that the respect that has been accorded to public input in this process will be sustained as the Commission approaches its final decision. Any last-minute change that materially weakens the latest staff proposal could do significant damage to that process, as well as the willingness of citizens to participate in future discussions. As that willingness is essential to effective formulation of public policy, my hope is that the current staff recommendation will be substantially endorsed by the Commission.

Thank you sincerely for your consideration of both this comment and my letter of January 13, 1995 on this subject. And my thanks to your staff for its conscientious work on this issue.

cc: Members of the Portland City Council

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To LYDIA TAYLOR	From JEFF GOLDEN
Co. DEQ	Co. COMMISSIONER LINDBERG'S OFFICE
Dept.	Phone #
Fax # 2295850	Fax #

Post-it® Fax Note 7671 | Date 2/15 | # of pages ▶ 2

To Lydia Taylor	From Nina Bell
Co./Dept. Director	Co.
Phone #	Phone #
Fax # 229-6124	Fax #

NORTHWEST ENVIRON

Columbia/Willamette RiverWatch
133 S.W. 2nd Ave. #302
Portland, OR 97204

DEPARTMENT OF ENVIRONMENTAL QUALITY
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OFFICE OF THE DIRECTOR

February 15, 1995

Bill Wessinger, Chair
Environmental Quality Commission
c/o Department of Environmental Quality
811 S.W. Second Ave.
Portland, OR 97204

Dear Commissioners:

Northwest Environmental Advocates (NWEA) and the Northwest Environmental Defense Center (NEDC) have some detailed comments on the staff's proposed rule in addition to the policy issues raised in NWEA's last letter.

I. DETAILS ON RULE LANGUAGE

PROBLEM: Section (2)(d) defines "new" permits but does not clearly state that the permits in question are those issued by DEQ, as opposed to other agencies.

> **Proposed change:** "...discharges which did not previously have an NPDES or WPCF permit, and existing discharges which have a NPDES or WPCF permit, but request..."

PROBLEM: Section (4)(c) allows, even encourages, land application at so-called "agronomic rates." The likely over application will result in even more uncontrolled non-point source pollution than might otherwise occur without the rule.

> **Proposed change:** We suggest two remedies: 1) require the reporting of the actual rate of application so that if problems are detected DEQ can determine appropriate regulatory controls; and 2) remove the "or" and replace it with an "and." Otherwise, section (4) serves as an alternative to section (7) instead of in addition to it.

II. EXEMPTIONS FOR INDUSTRIAL TYPES

It is widely known that Kinross Copper Company has been actively lobbying for an exemption to the proposed rule's prohibition on new NPDES permits for industrial sources. In response, we make the following observations:

- **If Kinross and other mining companies are as clean as they claim to be, operating under a WPCF should not be overly burdensome.**
- The subcommittee discussed treating certain industrial

types differently, based on their likely impacts to water quality. The desire for a more streamlined rule -- one that retained some flexibility but protected water quality at a high level -- resulted in the staff's current proposal.

While that proposal treats industrial types more or less equally, it does address the both ends of the continuum, namely the most and the least benign. For example, log ponds, which are currently wholly under-regulated, have substantial impacts. At the other end of the spectrum, staff believes that suction dredging is largely benign.

It should go without saying that large-scale mining is not a benign source. If the Commission were to exempt mining from the rules that cover other industrial sources, it would be singling out one category of sources with a significant potential to impact water quality without performing the same evaluation for each other category of industrial source. This is not an appropriate method of setting public policy. The public would correctly assume that such an exception was the result of high levels of political pressure. The result would be both bad policy and a very poor image for the Department and the Commission.

- The best technologies can and do fail. DEQ has had several recent experiences in Oregon with failed technologies and "best" management practices. One example is the Karban Rock quarry on the Salmonberry River which installed 'the best stormwater retention facilities' the DEQ regional staff had ever seen. Notwithstanding, the facilities failed and prime wild steelhead spawning habitat has been seriously threatened. **If the Commission decides to exempt Kinross and/or mining in general it must address the problems of catastrophic failure and failed technologies.**

We hope you are able to incorporate these comments into your deliberations tommorrow.

Sincerely,

Nina Bell
Executive Director
Northwest Environmental Advocates

Karl Anuta, Presidenmt
Northwest Environmental Defense Center

cc: Lydia Taylor
Mike Downs
Lynne Kennedy

A review of the mathematical approach used in "Spill and 1995 Risk Management"

Prepared by

James J. Anderson,

School of Fisheries and Center for Quantitative Science

University of Washington

February 15, 1995

Introduction

The document "Spill and 1995 Risk Management[1]" presented by the Agencies and Tribes claims to provide scientific justification for the implementation of a spill management plan for the 1995 juvenile anadromous fish outmigration season. The document outlines a spill risk analysis and recommends that total dissolved gas supersaturation levels should be managed to between 120 to 125% for a 12 hour period.

The analysis used a mortality equation to identify a *critical level* of total dissolved gas at which the decrease in reservoir survival from gas bubble disease just balances the gain in dam passage survival from spill. Because of difficulties in developing a theoretical basis for mortality the authors resorted to a curve fitting technique to select a mortality model. The result was an equation that explains mortality in terms of dissolved gas only. The authors claimed that exposure time and depth of fish were indirectly incorporated in the model. The typical critical level was determined to be about 130 to 135% of total dissolved gas saturation. The recommended level, 120 to 125%, had no mathematical basis, other than it was below the critical level.

The mathematical and statistical aspect of the Document are reviewed here and significant flaws are identified. Because of these flaws I conclude that the spill recommendations of the agencies and tribes' will have dire consequences to juvenile salmon.

The three flaw identified are:

- poor fit to data underestimates mortality
- ignoring time underestimates exposure time to gas in river passage
- not explicitly formulating depth underestimates its impact

1. Document reviewed was revision from 1/13/95 and is referenced as the Document from here in.

Mortality function

To establish the critical level of total dissolved gas the Document first developed a mortality equation. Based on the physiological principles three factors are important in controlling gas bubble disease mortality, 1) total dissolved gas (TDG), 2) fish depth (D) and exposure time to the gas (T). The authors of the Document realized the importance of these factors but were unable to develop a rigorous model that explicitly contained them[1]. Instead they developed a single variable equation relating mortality to TDG only. Mathematically the approach was flaw and significantly overestimates the critical TDG level.

The author's mortality function was developed by fitting arbitrary equations to a variety of data on mortality vs. TDG level. The equation selected was based on statistical measures of goodness of fit and *common sense* [their words][2]. The model was *not* developed from first principles of the physiological mechanisms of mortality. Models developed by this curve fitting approach ignore science[3]. Such models can never be proven right and from a statistical basis alone there is no *a prior* reason for selecting one model over another if they both fit the data within some arbitrary statistical level of confidence. Although the spill model selected achieved their statistical measures of confidence it does not fit the data in the context of a spill risk analysis.

The equation selected has a single driving variable, TDG, and two free parameters, β_0 and β_1. The equation is

$$\text{Mortality} = 100 \cdot \frac{\exp(\beta_0 + \beta_1 \cdot \text{TDG})}{1 + \exp(\beta_0 + \beta_1 \cdot \text{TDG})} \qquad (1)$$

The parameters have no biological meaning nor does the equation. The equation has three major flaws; 1) it does not fit the relevant data,2) it ignores exposure time, 3) it ignores fish depth. As a consequence the equation seriously overestimates the critical level of TDG.

---

1. On page 33 of the Document: "*The development of mortality as a function of dissolved gas concentration has been difficult.*" On page 38, "*The effect of time of exposure proved to be difficult to assess with the given data set.*"

2. On page 37... *residual analysis, R-squared determination, goodness-of-fit test and common sense.*"

3. Press et al. (page 471, 1988 Numerical Recipes in C) express this point well. "The analysis of data inevitably involves some trafficking with the field of statistics, that gray area which is surely not a branch of mathematics as it is neither a branch of science.

A poor fit to data

Equation (1) is inadequate because it does not fit the morality data (Fig. 1). Specifically, the model does not generate a random distribution of residuals against the data (Fig. 2). Notice in the residual plot that the equation underestimates observed mortality by up to 800%. The deviation is greatest near 125% TGD which is exactly the level recommended in the Document. To put this in context, at 125% TDG saturation the equation predicts 7% gas bubble disease mortality while the observed data, to which the equation was *fit*, has over 60% mortality.

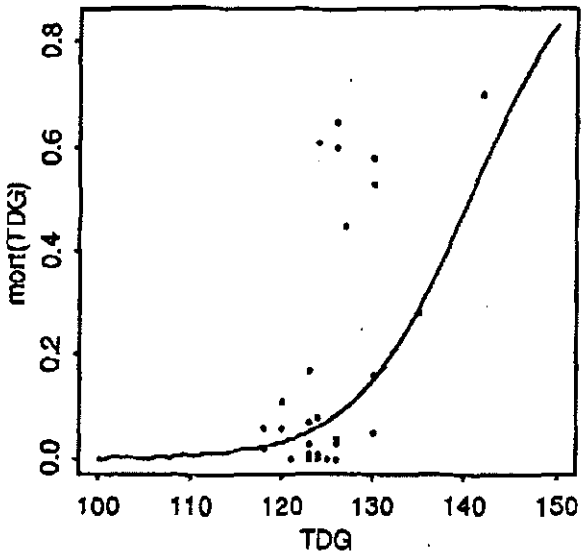

Fig. 1 The mortality function based on in-situ cage studies up to 18 ft. in depth (Groups 1 and 2). This is Figure 5 in the Spill and 1995 Risk Management document.

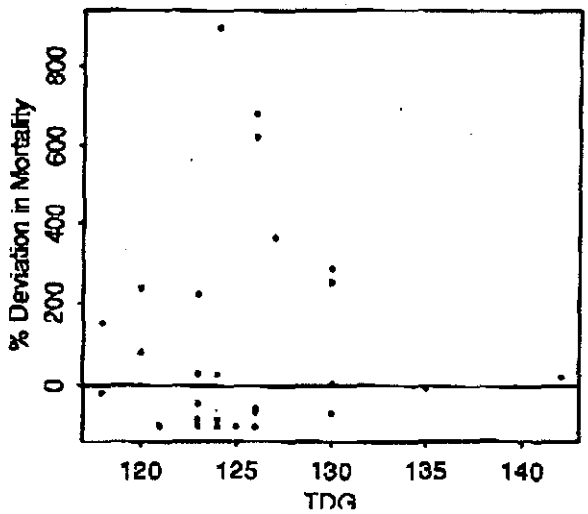

Fig. 2 Residuals of Eq (1) expressed as a deviation of the data from equation in percent of equation value.

Errors from ignoring exposure time

The spill model ignores exposure time. This was justified by the claim that...*the effect of duration of exposure was indirectly incorporated into the model* [since] *duration of the tests* [used to fit the model], *which ranged from 3 to 92 days, encompass the average passage time through the Snake and lower Columbia river under most flow conditions* (page 38).

This claim, that time is indirectly incorporated into the model, is wrong. The experiments with higher TDG levels were run for shorter periods of time than experiments with lower TDG levels. Thus the mortality functions generated from the experimental data are biased when applied to in-river conditions. At higher gas levels the experiments had exposures is less than in-river travel times and at lower gas levels the experiments had greater time (Fig. 3).

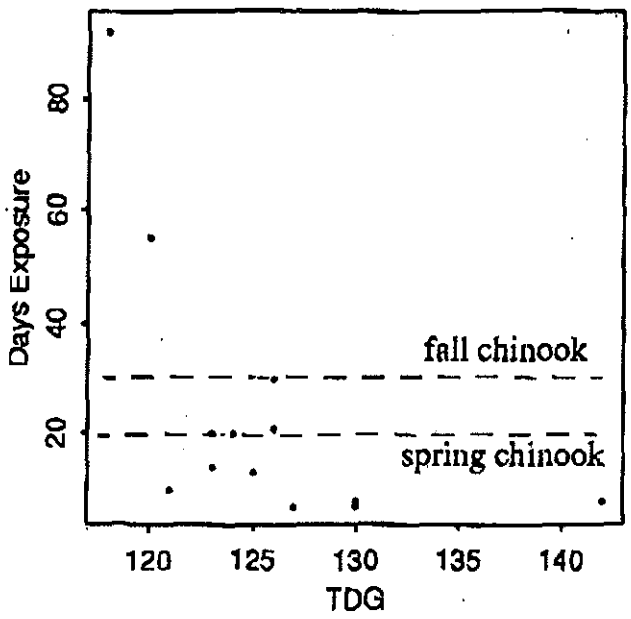

Fig. 3 A trend in experiment exposure time vs. TGD is illustrated by points from the Groups 1 and 2 data in the Document. The dashed lines are the travel times of fall and spring chinook migrating in-river. Note that in migration exposure time is independent of TDG while in experiments exposure time is roughly inversely related to TDG.

The bias in exposure time for particular stocks is significant and its affect on mortality can be estimated by comparing the observed mortality in experimental conditions to the predicted mortality obtained by extrapolating the experiments to river travel times. To predict the in-river mortality the *rate* of mortality is first estimated for each data point using experiment's duration and mortality. The equation is

$$R = -\frac{\log(1 - \text{Mortality}_{experiment})}{\text{Experiment Duration}} \quad (2)$$

Next, the gas bubble disease mortality of a fish migrating through the river can be expressed using the mortality rate R and an estimate of the in-river travel time. The equation is

$$\text{Mortality}_{river} = 1 - \exp(-R \cdot \text{Trave Time}) \quad (3)$$

Using equations (2) and (3) with the Groups 1 and 2 data in the Document the predicted in-river mortalities for juvenile chinook are significantly greater than the mortalities observed in the experiments. This example illustrates that by ignoring exposure time the model underestimates in-river gas bubble disease mortality by 30 to 50%.

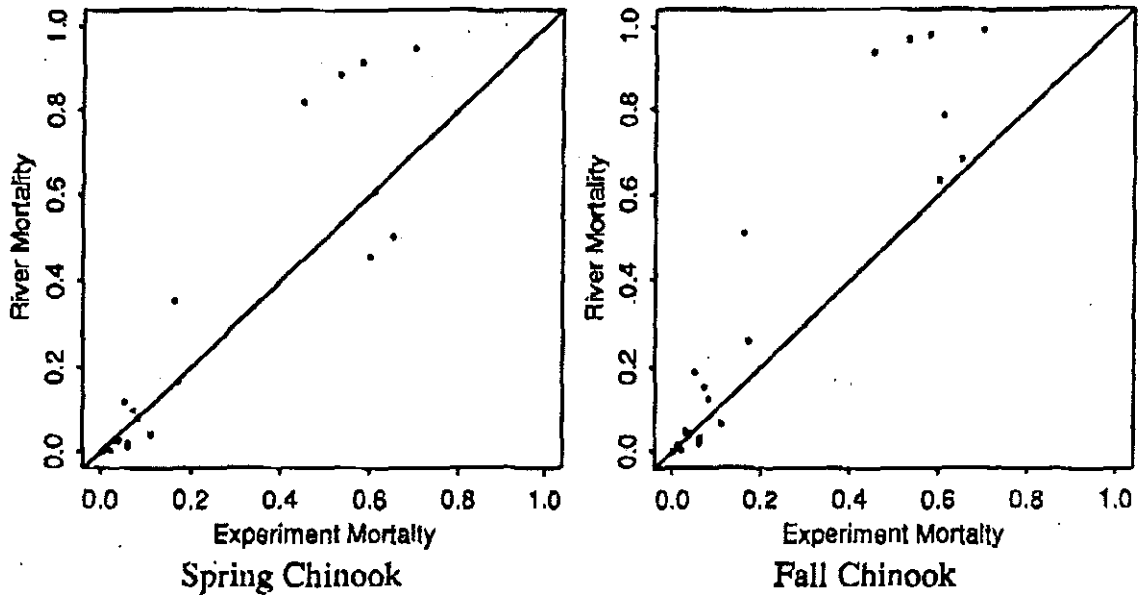

Fig. 4 Ignoring exposure time in the mortality equation underestimates spring and fall chinook in-river mortality when compared to the mortality in gas bubble disease experiments. Points above the line have greater in-river mortality than observed in experiments. Spring and fall chinook travel time are 20 and 33 days respectively.

Errors in fish depth

The mortality model does not account for fish depth directly in its formulation. Again, an attempt was made to indirectly factor in depth by fitting the equation with data from experiments conducted in deep exposure tanks (the Group 1 and 2 data in the Document). The rational is that these deep tank experiments (ranging between 7 and 18 ft. deep) were representative of fish migratory depth.

The approach underestimates the impact of TDG when fish migrate near the surface and when nitrogen levels are high. In CRiSP1.5 a fish vertical distribution is explicitly incorporated in the model. A sensitivity analysis of CRiSP1.5 indicates that, at higher levels of spill, fish depth becomes a significant variable in determining mortality (Fig. 5.). This sensitivity is missing in the mortality equation developed in the Document.

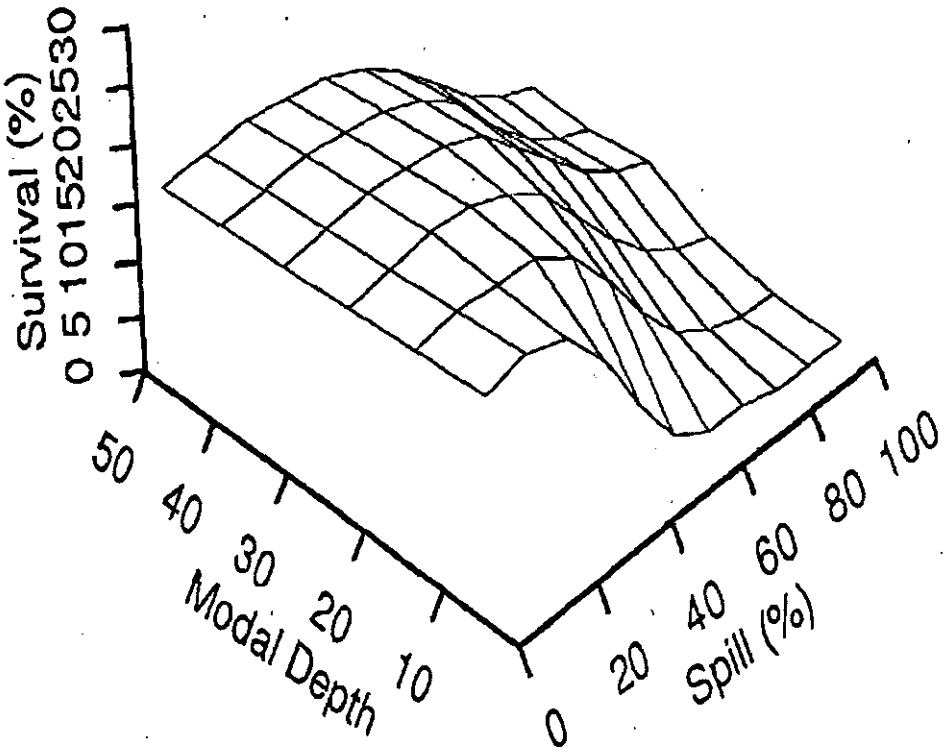

Fig. 5 Relationship between fish survival percent sill and modal depth of fish as generated from CRiSP1.5

Optimum and Critical TDG

The optimum spill level recommended in the agency and tribal technical staffs document is 120% to 125% TDG. This level is arbitrary and is not a direct result of the analysis. The risk analysis identified a hypothetical *critical level* of TDG where gas bubble disease and turbine passage mortalities are equal. The *optimum* TDG level in the Document is some arbitrary value below the critical level.

Furthermore, the document does not mention that by the nature of the system, beyond the critical level survival declines precipitously. This feature makes it imperative that the critical level be accurately assessed and not exceeded.

The Document concluded that the critical level is near 130%. For comparison an

analysis with CRiSP1.5 (Anderson et al. 1995, Anderson 1995) give a critical level of 122%, which far below the 130% in the Document (Fig. 6). The optimum levels for spill management are also significantly different; 115% recommended by CRiSP, 120-125% recommended in the Document. Note that the Document recommended (optimum) level is the CRiSP critical level.

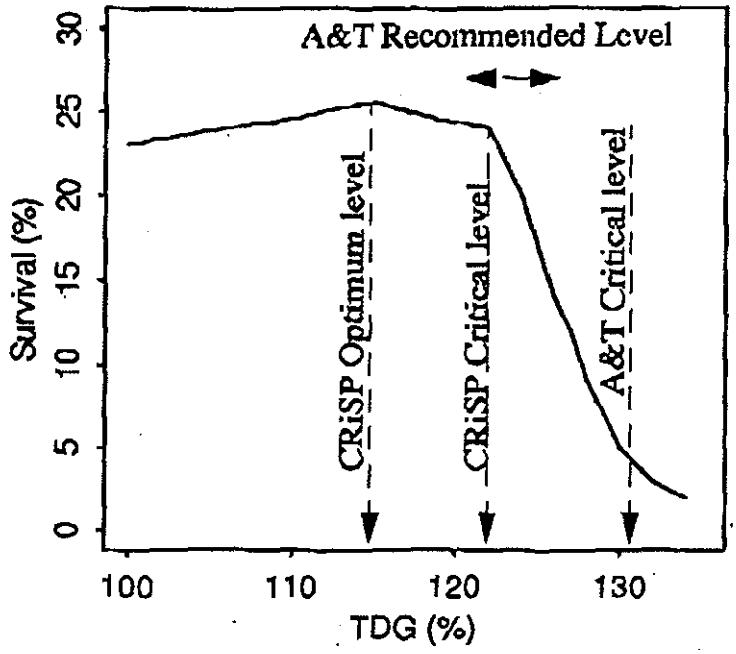

Fig. 6 CRiSP analysis of the impact of TDG on in-river survival of spring chinook. Critical and Optimum levels of spill are 115% and 122%. Above the critical level survival decreases rapidly.

Conclusion

Lower levels of spill can have a small benefit on fish survival but high levels and the accompanying TDG kill fish. The agency and tribal technical staff made significant errors in their risk assessment document and through an review of their work and from the results of CRiSP I conclude that their recommendations will have an adverse effect on endangered salmon species.

Anderson, J. J., et al. 1995. CRiSP1.5 manual

Anderson, J.J. 1995, The Impacts of a Spill Program. Document prepared January 12 1995.

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FACSIMILE COVER SHEET

300 Pioneer Tower
888 S.W. Fifth Avenue
Portland, OR 97204-2089
(503) 228-6351

Fax (503) 295-0915
Cable Address Portlaw
Telex 910010486 Bullivant

DATE: February 15, 1995 Number of pages including cover: 21

FROM: R. Erick Johnson Ext. 4475 C/M No. 8994/79

Prepared By: G. Fleming Ext. 4533

TO:	FAX No:	PHONE No.:	FIRM:
1) William W. Wessinger	(503) 464-2299		Ore. Environ. Qual. Comm.
2) Henry C. Lorenzen, Esq.	(503) 276-3148	(503) 276-3331	Corey, Byler, Rew, et al.
3) Carol Whipple	(503) 229-5850	(503) 229-5300	c/o DEQ Director's Office
4) Linda R. McNahan	(503) 229-5950	(503) 229-5300	c/o DEQ Director's Office
5) Dr. Emery N. Castle	(503) 737-1579		Oregon State University
6) Robert P. Baumgartner	(503) 229-6124	(503) 229-5877	Dept. of Envir. Quality

Please call the Fax operator at (503) 499-4563 if all pages are not received. Thank you.

Message/Comments: _____

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& HOFFMAN
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

300 Pioneer Tower
888 S.W. Fifth Avenue
Portland, OR 97204-2089
(503) 228-6351

Fax (503) 295-0915
Cable Address Portlaw
Telex 5101010486 Bullivant

R. ERICK JOHNSON
Direct Dial (503) 499-4478

February 15, 1995

By Facsimile and Mail
(503) 464-2299

Mr. William W. Wessinger, Chairman
Oregon Environmental Quality Commission
121 S.W. Salmon, Suite 1100
Portland, Oregon 97204

Re: Proposed Amendments to Oregon DEQ
Total Dissolved Gas Limits

Dear Mr. Wessinger:

We are writing on behalf of Pacific Northwest Generating Cooperative, which submitted on January 13 detailed comments[1] on the proposed rule, to provide additional information pertinent to the EQC's decision, scheduled for tomorrow's EQC meeting, whether to amend DEQ's rules to permit a possibility of temporarily increased levels of dissolved gas supersaturation.

Our focus in this letter is on the procedural posture of the proposed rule. The attachments to this letter should, however, be considered in both this procedural context and in the context of any substantive decision to allow actual increases in

[1] PNGC's comments were supported by analyses of highly qualified scientists. They urged the Commission not to pass either of the proposed forms of rule modification because (1) they both presume a decision to pass salmon smolts past the dams inriver via massive spill, as opposed to by means of the Corps of Engineers' transport program; (2) massive spill will not improve on the success of the transport program; and, (3) massive spill is likely to kill a significant number of wild Snake River salmon smolts (the young fish listed for protection under the Endangered Species Act).

If the Commission determined that the existing DEQ TDG rules required modification, PNGC also urged the Commission to adopt a rule modification that would (1) retain in the EQC authority to make all substantive decisions about increasing TDG limits; (2) require a meaningful and substantive scientific demonstration of the wisdom of the proposed actions justifying allowing TDG levels to exceed the normal 110% standard; and, (3) not presume that inriver passage was the only viable means of getting the listed salmon smolts past the dams.

levels of dissolved gas supersaturation in the Columbia or Snake Rivers.

At the time its January 13 comments were filed, PNGC did not have access to the "Spill and 1995 Risk Management" paper filed on January 13 by the Oregon Department of Fish and Wildlife. This report is said to have been prepared by technical staffs of Oregon, Idaho, Washington and tribal fisheries agencies. There are indications that the principal author of the draft is the Fish Passage Center. However, the State of Idaho has abandoned its support for the proposed massive spill program and disavowed support for modifications to Oregon's TDG rule to facilitate spill. (Letter from Gov. Batt to Mr. Baumgartner, January 13, 1995)

We obtained from DEQ a copy of the Spill and 1995 Risk Management paper and sent copies to Dr. Larry Fidler, Dr. Wesley Ebel, Dr. Donald Chapman, and Dr. James Anderson. Drs. Fidler and Ebel are preeminent experts in gas bubble trauma and disease, which the TDG rule is designed to avoid. Dr. Chapman is a leading expert on mainstem salmon passage issues. Dr. Anderson is the University of Washington professor who is responsible for the design of the leading salmon passage and lifecycle computer models.

Attached to this letter are copies of the comments of Drs. Ebel (Attachment 1) and Chapman (Attachment 2) on the Spill and 1995 Risk Management paper. Drs. Fidler and Anderson are expected to provide their comments directly to Mr. Baumgartner and/or to the EQC Chair and members by fax before the start of tomorrow's meeting.

These comments are significant to the procedural issues before the Commission because the proposed rule modifications ask the Commission to presume, or prejudge, that salmon passage will be by spill instead of by means of transport. Limiting consideration to "inriver" survival, as do both of the proposed rule modifications, means that spill might be increased even though the net effect was to reduce salmon survival. That is because spill at collector projects is inconsistent with transportation, and transportation offers proven survival advantages over spill. There is intense debate at this time between proponents of massive spill and proponents of the transport program. By at least striking the "inriver" limitation, the EQC will focus on the critical question whether salmon will, in fact, be advantaged by increasing TDG, a form of pollution this very rule is designed to control.

It does not make sense for the EQC to step in and take sides in this debate unless the EQC will entertain an extensive hearing and weigh carefully the scientific merits of the competing positions.

The Spill and 1995 Risk Management paper relies heavily on reports by Mundy et al. (1994) and the Ad Hoc Transportation Review Group (1993) to dismiss the benefits of the transport program. The Oregon Department of Fish and Wildlife has elsewhere recently taken the position that there is no empirical evidence that the transport program works. The EQC should not rely on these assertions and presume that spill is to be favored over transport. As Dr. Ebel says in his letter dated February 13 (Attachment 1):

> "A risk assessment model is only as accurate as the values used to calculate the risk. I found several errors in interpretation of the results from some of the literature cited. As a result, some of the values used are incorrect and some of the conclusions drawn from some important research are either distorted or incorrect.
>
> "* * * * *
>
> "* * * I am intimately familiar with the transportation studies because I initiated and carried out the first study in 1968 and was either co-investigator in later studies or assisted in planning and direction of the studies. * * * Since 1968, over 29 tests utilizing spring, summer and fall chinook in transport and control releases have been carried out. All but two of these tests show a benefit from transportation. The two that did not show a benefit indicated no significant difference in returns of transported and non-transported (control) fish." [emphasis added]

The Spill and 1995 Risk Management paper is seriously flawed and unreliable. Drs. Ebel and Chapman's comments go into some detail in pointing out the errors in this paper. We understand that Drs. Fidler and Anderson have also identified serious errors and will identify them in their comments.

The Commission needs to have a much better scientific record presented to it before it could find the necessary support for enacting a revised rule that presumes inriver passage. The

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Commission need not and should not take that step until there is time for a reasoned critical review of the Spill and 1995 Risk Management paper and an opportunity for the Commission to hear from the experts in the field of gas bubble trauma.

Thank you for considering our views.

Very truly yours,

R. Erick Johnson

R. Erick Johnson
For Pacific Northwest
Generating Cooperative

cc: Henry C. Lorenzen, Esq.
Ms. Carol A. Whipple
Ms. Linda R. McMahan
Dr. Emery N. Castle
Mr. Robert P. Baumgartner
(By Facsimile)

ATTACHMENT 1

February 13, 1995

William W. Wessinger, Chairman
Oregon Enviromental Quality Commission
121 S. W. Salmon, suite 1100
Portland, OR 97204

Dear Mr. Wessinger:

Review of Spill and 1995 Risk Management document

General: The state and tribal fishery managers have prepared the above risk management document to justify increasing the dissolved gas concentration in a range of 120 to 125 percent based on 12 hour averages. The risk assessment model compares the predicted mortality that will occur to juvenile and adult migrants from TDG (total dissolved gas) induced by spilling against that which occurs from passage through turbines.

A risk assessment model is only as accurate as the values used to calculate the risk. I found several errors in interpretation of the results from some of the literature cited. As a result, some of the values used are incorrect and some of the conclusions drawn from some important research are either distorted or incorrect.

For example, they state that 30 to 92 percent of the fish pass through turbines even where screening and bypass systems are installed. This is a very misleading statement. At dams where turbines are completely screened (Lower Granite, Little Goose, Lower Monumental, and John Day) guidance ranges from 40 to 80 percent for spring chinook, 75 to 86 percent for steelhead, and 25 to 35 percent for subyearlings. Guidance values for Bonneville II are lower, but testing continues there. Guidance values for Bonneville I are similar to upstream dams. Probably the most serious errors are in the values used for turbine mortality. They use 32 percent for turbine mortality at Ice Harbor Dam. The correct value is 14.5 percent. Thirty two percent mortality was recorded by Long for releases in the backroll. Fifteen percent mortality was cited for Bonneville I. The study by Holmes gave a range of 12 - 15 percent. Thus 13.5 percent would be a more appropriate value. Eighteen percent turbine mortality is incorrect for Bonneville II. The correct value is 2 - 4 percent. Not recorded is a turbine mortality of 3.5 - 9.2 percent for Rocky Reach Dam and 5 percent recorded for Lower Granite Dam. A 27 percent spillway mortality (steelhead) for Lower Monumental dam and a 13.5 percent spillway mortality (chinook) for Bonneville are not mentioned.

The authors of the risk analysis place substantial emphasis on the in-site live cage studies done by Meekin,

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Turner and Weitkamp. The authors state that concentrations were as high as 126 and 128 percent and no mortality occurred. For most of the duration of these tests the concentrations were nearer 120 percent. Considering the clearer water (fish tend to be deeper in clear water, Dawley et. al., 1975) and the duration of the tests (7 days), I would not expect mortality. They do not refer to a test done in the Snake River where concentrations of TDG were 127 percent for the entire duration (7 days) and 48 percent mortality occurred in the volitional cage 4.5 m. deep. It appears the modelers must have given more weight to in-situ experiments that showed lower mortality rates. In figure 5, page 42, there are several observations above the mortality line between 120 and 130 TDG.

The authors also suggest that fish will detect and avoid supersaturated water by either sounding or moving laterally. Data indicates that there is a tendency for some salmonids to be distributed deeper in supersaturated water, but it isn't sufficient to avoid death in higher concentrations of TDG. There is some evidence that salmonids can avoid supersaturated water by moving laterally to normally saturated water, but this is irrelevant when large areas are supersaturated and there is no normally saturated water to escape to.

Collection and transportation is dismissed as having no value and it is unclear what value screening and bypass systems might have. Sublethal effects of higher than normal TDG levels are not addressed. I understand that this assessment only deals with survival of in-river fish and therefore the effects of transportation are omitted. However, if the goal is to increase adult returns, transportation and its value must be considered. As spill increases at collector dams, fewer fish are transported. Thus fewer fish receive the benefit from transportation.

The reports by Mundy et. al. and the Ad Hoc Transportation review group cited to dismiss transportation are seriously flawed. I am intimately familiar with the transportation studies because I initiated and carried out the first study in 1968 and was either co-investigator in later studies or assisted in planning and direction of the studies. From the first study conducted in 1968 to the present studies underway, the experimental design of the experiments mandates that the primary point of evaluation of adult returns is at the dam where the juveniles were marked and assigned to treatment groups. In addition, the studies were designed with replicates for both transport and control groups so that variance in return rates could be computed for various statistical tests. Thus, data must be treated in aggregate for proper analysis. The Ad Hoc review group chose to separate returns and analyze data from alternative sites such as hatcheries and spawning grounds where in many

cases they were analyzing adult returns ranging from 0 - 15 fish from one or two replicates of one experiment. From this type of analysis they chose to draw their main conclusions, ignoring the main and most valuable data. They also did not review any data obtained prior to 1980. Since 1968, over 29 tests utilizing spring, summer and fall chinook in transport and control releases have been carried out. All but two of these tests showed a benefit from transportation. The two that did not show a benefit indicated no significant difference in returns of transported and non-transported (control) fish.

There are also some errors and omissions in the Mundy report, but the main flaw in this report is that the executive summary and conclusion do not always agree with the data and information contained in the text. The executive summary also omits commenting on the fall chinook data from McNary Dam which is clearly in favor of transportation. Generally, the executive summary highlights the negative aspects of transportation and omits the positive. The quote by the Mundy report; "available evidence is not sufficient to identify transportation as either a primary or supporting method of choice for salmon recovery" is simply incorrect. See detailed comments.

The agencies and tribes acknowledge the fact that a succession of el nino events may have had a serious impact on recent runs, but they do not consider the fact that over 90 percent of the spring and summer chinook hatchery production is infected with bacterial kidney disease, and that 7 of 9 years from 1985-1993 were extreme drought years. Droughts seriously reduce tributary production of smolts and el ninos seriously reduce early ocean survival. The combination of the two can override anything that might be done in the river.

I do not deny that spilling of water at the correct level and the correct location and time can increase survival. The question is: how much, where and when? A blanket endorsement to spill anywhere and anytime with TGS gas levels allowed to remain between 120 to 125 percent is not the answer. It is possible that an increase of the daily average TDG to 115 percent with a daily maximum instantaneous value of 120 percent could increase survival in some stretches of the river particularly where bypasses are not installed.

Specific Comments:

p. VI, par. 2, line 6:

30 to 92 percent is misleading, at dams where turbines are completely screened (Lower Granite, Little Goose, Lower Monumental and John Day) guidance ranges from 40 to 80 percent for spring chinook, 75 to 86 percent, for steelhead.

and 25 to 35 percent for sub-yearlings. Guidance values at Bonneville second powerhouse are lower, but testing continues there. Guidance values for Bonneville First Powerhouse are similar to the upstream dams.

p. VI, par. 3, line 6:
Research carried out in the 1960's, 1970's and 1980's (Bjornn 1992) indicated high spill delays adult migrants. Observation of pre-spawning mortality during periods when gas levels ranged between 120 and 125 percent (p. 29) seem to refute this statement.

p. 4, par. 2, lines 8 and 9:
The direct and indirect mortality components are not known for bypasses except for the data obtained at Bonneville Dam.

p. 5, par. 2, line 3:
The turbine range 8-32 percent is not correct. See later comment page 30.

p. 5, par.3. lines 1-3:
See comment p. VI, par. 2, line 6 above.

p. 5, par. 3, line 4:
There are no data to support this contention. In fact, data shows that stresses encountered in the bypasses are completely alleviated during holding and transport (Maule et. al., 1988 and Congelton et. al., 1984).

p. 5, par. 3, line 2:
This was true because mid-Columbia dams do not have bypass systems nor do they collect and transport.

p. 5, par. 3. lines 4 - 6:
Hilborn found this relationship for the same reason Raymond did. Petroskys' analysis is flawed because he does not account for fish transported. How does one know whether the high return rates were not due in large part to transport? In 1983, over 6,000,000. fish were transported. There is no disagreement over the fact that low adult returns result from extreme low flow years such as 1973 and 1977. Fish arriving at Lower Granite Dam were in very poor condition in spite of the fact that no dams had been encountered before their arrivals.

p. 5, par. 3, last line:
Same comment as p. VI. par. 3. line 6.

p. 7, par. 2:
It is conceded that juvenile salmon receive compensation because of their normal depth distribution, but it isn't sufficient to completely avoid symptoms of GBT (gas bubble trauma) or mortality. Intermittent exposure is

irrelevant to juvenile migrants. Once the fish are in a block of supersaturated water they have no means of recovering in unsaturated water.

p. 7, par. 5:

Throughout the duration of the studies done by Meekin and Turner and Weitkamp the concentration of TDG were nearer 120 percent than 126 or 128 percent. The high concentrations of 126 and 128 percent occurred only on one day of the tests. Considering the clear water, (fish tend to be deeper in clear water, Dawley et. al., 1975) and the duration of the tests, I would not expect mortality. They do not refer to a test done in the Snake River where concentrations of TDG were 127 percent for the entire duration and 48 percent mortality occurred in the volitional cage 4.5 m. deep.

p. 8, par. 3:

Both the Ad Hoc Transport group report 1992, and the Mundy et. al. 1994 report are seriously flawed. There are some errors and omissions of data in the Mundy report, but the main flaw in this report is that the executive summary and conclusions do not always agree with data and information contained in the text. There are criticisms of the experimental design throughout the report. Apparently the review group was not aware of the fact that many elements of the experimental design are dictated by the agencies. Such things as numbers of fish marked and location of releases were usually changed or regulated by state and tribal agencies. For example, on several occasions NMFS was not allowed to mark and release controls and on some years was not allowed to mark any experimental releases. The executive summary also omits commenting on the fall chinook data from McNary Dam which is overwhelmingly in favor or transportation. Generally, the executive summary highlights the negative aspects and omits the positive. The quote by the Mundy report: "available evidence is not sufficient to identify transportation as either a primary or supporting method of choice for salmon recovery" is simply incorrect. See my detailed comments attached regarding the Ad Hoc Transport group report.

p. 8, par. 4, last line:

Mundy's statement is incorrect. No controls returned from the groups marked, but 9 marked transported fish returned to Lower Granite Dam when trap efficiency was only 12 percent and 24 to upstream hatcheries. No statistical analysis was done because no controls returned. It is likely that if smolts had not been transported in 1977 no adults would have returned from that years out-migration (Park et. al. 1980 and 1981).

p. 9, par. 1, line 8:

"Physiological stress, such as that associated with transportation operation and salt water transition ---." They should add: "and passing over spillways." There is no reason to suspect that passing over a high spillway does not cause stress!

p. 9, par. 4, line 3:
same comment as above (p. 9, par.1, line 8)

p. 14, par. 2, line 8:
There are numerous other studies that are also used.

p. 20, par. 4, line 2:
Lateral avoidance apparently does occur but this is irrelevant when there is no normally saturated water to escape to.

p. 27, par. 3, line 2:
The higher juvenile recovery proportions are based on adjustments for spill but not for fish guidance efficiency. Fish guidance efficiency must be adjusted, if for example, more turbines are placed on line during high flow periods. Again, adult returns could be in part due to the proportion transported especially if fish were in better condition in higher flow years.

p. 28, par. 1, line 9:
It appears the modelers must have given more weight to the in-situ experiments that showed lower mortality rates. In figure 5, page 42, there are several observations above the mortality line between 120 and 130 TDG.

p. 30, Table 4:
Some values are incorrect. Ice Harbor (1968) was 14.5 percent not 32 percent. 32 percent was recorded for releases in the backroll of the turbine discharge. Bonneville first powerhouse mortality estimate was 12-15 percent so 13.5 percent would be a more appropriate value. The Lower Monumental data was for 1975, not 1972. This same experiment indicated 27 percent mortality for steelhead passing over a standard spillway. It is interesting that they chose not to use this value. The value quoted for Bonneville II of 18 percent is not appropriate. This was based on only one year of adult returns. The adult returns were not sufficient from that one year of returns to conclude anything. The appropriate data to use is the combined juvenile recoveries from all years. When this is done the mortality ranges from 2-4 percent (Gilbreath et. al. 1993 and Dawley et. al. 1994) The value of 18 percent for turbine mortality obtained in 1993 should not be used. The study was designed mainly to determine if estimates of turbine, spill, and reservoir mortality could be accurately estimated. Experimental difficulties in 1993 may have compromised this estimate of turbine mortality. A revised

more accurate estimate will be available for the 1994 data. Not recorded is a turbine mortality 3.5 - 9.2 percent estimated by RMC (1994) at Rocky Reach Dam and 5 percent estimated by RMC (1994) at Lower Granite Dam. A deflector spillway mortality of 13.2 percent at Bonneville Dam (Johnsen and Dawley, 1974) is also not recorded.

p. 30, par. 2, line 1:

Smolt passage index. There are serious problems in using the smolt passage index to develop reasonably accurate population estimates because the method does not account for seasonal changes in FGE (fish guidance efficiency) which varies considerably through the season and numbers collected also vary drastically depending on volume of spill. Assuming a 1:1 ratio of spill volume to fish passage and a constant FGE for the season for each species results in significant error. The smolt passage index is useful for comparison between or among years, but could result in substantial errors in estimating population at various locations (dams) in the river.

p. 43, par. 3, line 1:

In light of some of the errors (i.e. turbine mortality, FGE, and spillway mortality) noted in values used in the risk analysis, I don't believe this is very accurate.

p. 56, par. 2, Depth distribution:

Adults may remain at sufficient depth to compensate for fairly high levels TDG, but the fact remains that mortalities do occur when there are delays in migration and adults are seeking fishway entrances. Even if there are minimal delays, adults must ascend to a maximum of 6 ft. of depth to enter and pass up the fish ladders.

p. 66, par. 4, list of activities:

One important research activity that was recommended by the NMFS working group of experts was research to determine the quantitative relationship among visible signs of GBT and direct effects (mortality) and indirect effects such as disease resistance and ability to avoid predators. This is extremely important information that is needed to determine what various symptoms of GBT mean when they become evident in the fish.

Sincerely yours,

Wesley J. Ebel

Wesley J. Ebel, Ph.D.
Fish and Wildlife Consultants
107 NW 185th Street
Seattle, WA 98177

ATTACHMENT 2

Comments on "Spill and 1995 risk management" by D. W. Chapman

p. 1, last para. Since the present FCRPS is "ill equipped to control dissolved gas levels," one can either take risks with in-river migration or can transport as many smolts as possible in barges equipped with de-gassing equipment. The transportation alternative is supported by empirical data, the former is not.

p. 4. last para. Spill is indeed an effective management measure for passing smolts at one dam. Spill as an alternative to transportation around the FCRPS is not, as demonstrated by a TBR of 1.6 in transport studies in 1986 at Lower Granite, when river flows were higher than average and moderate spill occurred at most dams throughout May.

p. 5, top para. The problem here is that moving toward an 80% FPE with spill not only increases TDG, but takes fish away from the transportation facilities at collector dams. This review by the agencies sees that as an advantage, but the empirical data tell me it is a large mistake to reduce transportation.

p. 5, second full para. It is important to note that fish size and stage of development affects guidance efficiency. The range cited in this paragraph is lower than appropriate. FGE of 35-40% is more typical. Modelers often use FGE as high as 47% for subyearlings.

p. 5, third full para. The effect of spill in reducing delay in passage at forebays and tailraces needs to be better supported than by a personal communication with Snelling (1994). Spill could reduce delay for spilled fish and increase it for bypassed fish, for all we can tell from the literature.

p. 6, first full sentence. This is conjecture, presented as fact. Whatever benefit might accrue from spill in urging fish across the concrete, it has nothing discernible to do with reversion to parr. Rather, smolt readiness to migrate has a great deal to do with rate of movement down the system.

p. 6, second full para. Are the authors saying that both high flow and high spill produced better returns? Which is it, and what else was involved? We have noted in commenting on the draft BO that the SAR data of Petrosky on Marsh Creek is badly confounded by correlates of spill fraction, changes in numbers of turbines and impoundments, and other factors, including changes in marine survival. Petrosky examines only water particle travel time as an independent variate, hence misses consideration of other factors entirely.

The uncritical acceptance of Hilborn et al. (1993) is inappropriate. That work has been criticized and is in revision, in part because it, like Petrosky's analysis, failed to examine any factor other than flow in the Columbia River.

The 1977 flow, like the 1973 year, was extremely low. Inriver migrants were in poor condition when they arrived at the first dam. Critics have pointed out that those two years had so many confounding problems that neither should be relied upon in the Sims and Ossiander (1981) data set.

p. 7, first full para. Of the citations in the fourth line of this paragraph, only Gray and Haynes (1977) can be said to have examined hydrostatic compensation in the natural environment. They found that adult chinook tended to move deeper in reservoirs during upstream migration when gas levels were high. To investigate juvenile hydrostatic compensation in the natural environment (not in cages) would require a similar radiotracking effort that none of the other citations included. Juvenile compensation for gas is one thing in a cage, where migration, predators, and normal feeding requirements are not important to survival, and another in the open river. Unstated here is information, if any exists, that would demonstrate that adults attempting to find fishways and passing through them are unaffected by TDG.

p. 7, second full para. What juveniles do in cages may or may not indicate what they do in the open river where they must migrate, pass dams, and avoid predators. The authors of this review might be right or may be very wrong about the ability of juveniles to compensate as they migrate.

p. 8, first sentence. External symptoms, evaluated without a microscope, are thought to be of little value (Montgomery Watson 1994). Furthermore, the cite of

Toner (1993) is to a brief abstract presented at the C of E annual research review. In it, Toner says: *the dissolved gas concentrations measured at the sampling locations from 27 April through 14 June averaged 112%, with a range from 103 to 122%; concentrations above 120% occurred upstream from RKm 179 from 11 May through 21 May.* It is misleading to state in the Spill and Risk Management review that Toner worked "During high spring spills which caused total gas levels to reach 128% saturation."

p. 8B. The first paragraph of this section is a strongly biased treatment of transportation. It is the type of treatment that I have come to expect from opponents of transportation. The treatment uses selective quotes, and fails to seriously deal with empirical data. It is political, not scientific. As an example of the latter, critics often argue that TBRs are flawed because controls for Lower Granite tests were trucked to the Little Goose tailrace. That is a scientific criticism that one can discuss. As an example of what one might argue in a debate on the scientific merits of transport studies, responding to the argument about trucked controls, one could point out that recent analysis of the 1986-88 TBRs for spring chinook at McNary indicate 1.55:1.0 (Townsend and Skalski 1994). Truck transport of controls was not an issue at McNary (control smolts were released to the tailrace via the bypass outfall). I would also point out that the controls avoided mortality in passing through Little Goose project. However, the political treatment of transportation in this section is not worthy of serious comment.

p. 9, first full para. The paragraph on BKD is interesting. It indicts transport as a possible period of transmission of disease. If BKD transmission is a problem for transported smolts, but not, apparently, for inriver migrants, then one should expect negative TBRs in the extant transport studies of the 1980s. The review might want to comment on the positive TBRs reported.

p. 9, second full para. An unbiased review might have pointed out the consistently high TBRs for fall chinook transported from McNary Dam (three avoided projects) and noted that they might be expected to apply equally to Snake River fall chinook, which arrive at about the same sizes at collection facilities.

p. 9, fourth full para. The first sentence is probably correct. The comment about inriver migrants that pass dams via turbines and/or collection/bypass facilities, and their exposure to substantial sources of stress and mortality (avoided by spill passage) is also interesting. No one yet has examined a spilled smolt to determine if it had elevated stress. Who is to say if dropping over the spillway is less stressful than going through a bypass system, or even going through a turbine and surviving? This paragraph is a story without cites. Here is the real issue: ***What is the relative survivability to adulthood of smolts that arrive at collector dams and are collected and transported versus those that are passed over the dam in spill?*** The TBR for 1986 comes closest to evaluating this point. Controls, avoiding Little Goose project because they were trucked to the tailrace of Little Goose, survived at about 62% the rate of fish transported from Lower Granite Dam around the FCRPS. Flow was above average in 1986, and substantial spill occurred.

p. 9-10. The administrative law judge ruled against short-haul transport around Priest Rapids Dam. He did not rule on the Snake and McNary long-haul transport programs, nor could he, for FERC is not in a regulatory role at Corps dams.

p. 13, first full para. Should add predator/prey interactions and trophic dynamics to the list of independent variates.

p. 16, l. 10. The comment that since TDG *...has often been in the range of 125% since Bonneville was built, salmon should have disappeared from the Columbia River 25 years ago...*, is hardly useful or probative. Twenty-five years ago, the Snake River dams were not all in place and their effects felt,. Only Ice Harbor was operating. Canadian storage had just come on line, Dworshak effects were not felt. The question is whether high TDG caused by FCRPS spill has helped to depress salmon populations in years of high and low returns. No one can answer that question definitively, in part because of cyclic ocean survival.

p. 17, last para. It would be well to dispense with the notion that live-cage bioassays represent natural river conditions. They are better than obligatory shallow-depth cages, but they do not represent response of fish to predation, migration, food and feeding, encounters with dams, or sounding through turbines.

p. 18, first full para. It should be noted here that the observations of GBT were based on external appearance of the smolts, an inadequate monitoring tool (Montgomery Watson 1994).

p. 19, para. 1. The statement that external symptoms did not always presage mortality pertains to laboratory tests. No data are available on the percentage of fish with external symptoms that are stress-prone to mortality *in the wild* from other sources, including turbine and spill passage, predation, and disease.

p. 19, first full para. Since external symptoms are inadequate evaluations of GBT, the symptoms seen at McNary (1-7% daily in juveniles, none in adults) may nor may not mean that fish were not dying or that they would not die after exposure. After all, examinations of juveniles in sampling facilities cannot include fish that do not arrive at the sampling point. One should be cautious about concluding, on the basis of Dawley (1986) that the levels of spill in 1986 caused no mortality. Remember, 1986 is the year when the TBR was 1.6:1.0, so inriver migrants survived 62% as well as transported smolts.

p. 19, last para. *....It is only inferred that fish effected by gas bubble disease may be more susceptible to predation, disease and delay.* That point is correct. It equally applies to the travel-time/survival inference.

p. 20, para. 3. One might well ask how long smolts were exposed to 120% TDG and what the experimental conditions were from which Mesa's conclusions were drawn. It is impossible to tell on the basis of the personal communication cite.

p. 20, first part para. Avoidance in a laboratory tank may not be possible or usual in a natural environment where fish must avoid predators, migrate, pass dams, and feed.

p. 22, full para. This is a good summary of depth distributions. In the last two sentences, we see that 14-15% of fish tracked (could be salmon or steelhead,

based on hydroacoustics) were in the top 4 m under spill and no-spill conditions. We do not know whether the same 15% remained at shallow depths for extended periods, or whether that 15% interchanged with fish that used deeper water.

p. 234, first full para, last two sentences. Now let us follow the logic train. Spilled water, say from a high nighttime spill, moves through the reservoir in 16-20 h as a distinct mass. This is water particle travel time for spilled water, right? Fish are supposed to move passively with the current (see review, p. 5, last sentence), right? So does this not mean that fish that move in spill will move with the spilled block of water? Does this further suggest that spilled smolts would not only move with the water block but could find themselves in spill at the next dam, traveling passively in that block of high-TDG water, etc., etc.? So should not the review revisit the last sentence of this paragraph?

p. 24, first full para., l. 4. I was not aware that involuntary spill occurred in 1994. FPC weekly reports do not indicate involuntary spill, as turbine capacity was not exceeded. A NMFS-authorized voluntary spill did occur.

p. 25, third full para, l. 5. *...In fact, the highest recovery proportions* (etc.).... It could state that recaps of chinook released at RI were lower at 187 kcfs in May, with 57% spill (1991), than at 158 kcfs and 31% spill (1989), or at 141 kcfs and 24% spill (1992). It could have noted other inconsistencies. I suspect there is no significant difference among most of the recovery rates.

p. 27, first full para. The analysis should treat more than spill. Like the SAR comparison for various water particle travel times, the analysis is confounded by multiple variates that change over time. Ocean productiviy and survival is one important variate. The mid-1980s was a period of sharply increased ocean survival for many salmon stocks, including the Snake River groups. Ocean effects mask events in the migration corridor, witnesseth the events surrounding the 1994 and 1995 adult spring chinook runs.

p. 29, third full para., l. 2-4. I agree that the 32% turbine loss at Ice Harbor was confounded and should not be used. So why use it as part of the range of turbine

losses on p. 5, first full para., l. 3?

Post p. 32. Too much conjecture is involved in the risk analysis. On the one hand, turbine losses saved by an 80% FPE are presented as if they can actually be saved, and that 80% FPE can be achieved. Later (p. 43), the review indicates that managing spill to TDG of 120-125% will benefit smolts. Back on p. 1, the statement is made that *The present Snake and Columbia hydroelectric system is ill equipped to control dissolved gas levels.* The latter statement does not inspire confidence in ability to manage spill to TDG of 120-125%. One also must doubt the ability to secure 80% FPE without greater TDG.

The basic problem with the risk analysis is that input assumptions control output values, and many of the input values are wrong, suspect, or/and other too weak to take seriously. I think the entire effort should be set aside until better input information is available. For now, I would ignore it.

The fact is that we have empirical information from TBRs that tells us inriver smolt migration *with spill* and above-average flow causes higher mortality than transportation does (see 1986 TBR of 1.6:1.0 for transport from LGR. I trust empirical information pertinent to the system in the 1980s as at least an order of magnitude more reliable than the modeling done in this review.

Signed: D. W. Chapman

BULLIVANT HOUSER
BAILEY
PENDERGRASS
& HOFFMAN
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

300 Pioneer Tower
888 S.W. Fifth Avenue
Portland, OR 97204-2089
(503) 228-6351

Fax (503) 295-0915
Cable Address Portlaw
Telex 5101010486 Bullivant

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FROM: R. Erick Johnson Ext. 4475

Prepared By: G. Fleming Ext. 4533

TO:	FAX No:	PHONE No.:	FI
1) William W. Wessinger	(503) 464-2299		C
2) Henry C. Lorenzen, Esq.	(503) 276-3148	(503) 276-3331	C
3) Carol Whipple	(503) 229-5850	(503) 229-5300	C
4) Linda R. McMahan	(503) 229-5850	(503) 229-5300	C
5) Dr. Emery N. Castle	(503) 737-1579		C
6) Robert P. Baumgartner	(503) 229-6124	(503) 229-5877	I

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