

9/27/1985

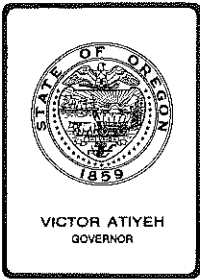
**OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS**



**State of Oregon
Department of
Environmental
Quality**

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Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. L, September 27, 1985, EQC Meeting

Appeal of Subsurface Variance Denial
by Mr. and Mrs. Nile Sponaugle

Background

The pertinent legal authorities are summarized in Attachment "A".

Mr. and Mrs. Sponaugle own a ten (10) acre parcel of land in Jackson County, identified as Tax Lot 1400, in Section 4, Township 35 South, Range 1 West. They plan to remodel an existing building on the property into a residence. On December 17, 1984, Jackson County Department of Planning and Development, the Contract Agent for the Department in Jackson County, evaluated the property to determine if it was suitable for placement of an on-site sewage disposal system. Three (3) pits exhibited soil textures of silty clay loam over silty clay to clay over a cemented pan. The silty clay and clay soil textures (found at depths of six (6), four (4), and fifteen (15) inches from the surface) are poorly drained and cause water to be perched above them during the rainy season. County staff observed standing water in each pit at those respective depths, and water was ponded in the shallow depressions throughout the property even though there had been no rain for several days. The water level in a hole augered on the highest ground rose to within six (6) inches of the surface. The land surface was found to be nearly level. It was the County's opinion that the perched water table is undrainable. Because of these site development limitations the property was determined to be unsuitable for placement of either a standard or alternative sewage disposal system.

On April 17, 1985, an application for variance from the on-site sewage disposal rules was received by the Department and assigned to Mr. Sherman Olson, Variance Officer. On May 15, 1985, Mr. Olson examined the site and held a public information gathering hearing. A drainage channel separates the proposed primary and future replacement drainfield areas. The two (2) areas are similar in that they have a dark brown clay at or near the surface, over a cemented gravel hardpan. Permeability in the clay is estimated to be slow at best, while in the hardpan the permeability

would be very slow. The soils are of the Agate-Winlo complex, and have been leveled. The mounds (Agate soil) have been out to fill the intermound (Winlo soil) areas. Soil morphological characteristics indicate seasonal groundwater frequently occurs at or near the ground surface since the site was leveled. The groundwater is perched above the clay soil horizon. Ponded water was observed immediately east of the primary area during the site visit. A water well is located approximately ninety (90) feet south of the primary drainfield area.

Mr. and Mrs. Sponaugle proposed to rip through the cemented pan in the drainfield areas and then install an equal distribution loop drainfield below the hardpan in the primary area. It was their thought that ripping the site would eliminate the perched groundwater problem. They expected that by using reduced flow plumbing fixtures the quantity of wastewater would be low. The system they proposed to construct would require variance from the following administrative rules:

1. OAR 340-71-220(2)(a), which limits the installation of systems to sites with an effective soil depth of thirty (30) inches or more, while maintaining a six (6) inch separation between the trench bottom and the layer limiting soil depth. The clay horizon, encountered at the ground surface in two (2) pits and at twelve (12) and fourteen (14) inches in the other pits, is a layer that limits effective soil depth.
2. OAR 340-71-220(2)(b)(B), which requires temporary or seasonal water tables be located at least twenty-four (24) inches below the surface, and prohibits installation of disposal trenches deeper than the level of the water table.
3. OAR 340-71-220(2)(i)(Table 1)(1), which prohibits the installation of a system closer than one hundred (100) feet from a well.

After evaluating the variance record, Mr. Olson was unable to find that strict compliance with the rules regulating on-site sewage disposal are inappropriate, or that special physical conditions render strict compliance to be unreasonable, burdensome, or impractical. In Mr. Olson's opinion, ripping through the hardpan into the cemented gravels will not likely cause a lowering of the water table, nor will it beneficially impact the permeability of the dark brown clay soil horizon. He believes that during the wet season shallow groundwaters will fill the voids created by ripping and rise to normal levels. This phenomena is commonly referred to as the "bath tub" effect whereby it is frequently found that excavations into very slowly permeable soil formations fill with groundwater to the same levels that would be reached had the excavation not occurred. Given the site's limitations, installation of a drainfield will probably result in a seasonal failure by causing sewage to break out at the ground surface or back up through the house plumbing. Mr. and Mrs. Sponaugle were notified of the variance denial by letter dated June 21, 1985 (Attachment "B").

On July 8, 1985, the Department received a letter from Mrs. Sponaugle appealing the variance officer's decision (Attachment "C"). She feels the

denial creates a severe and unreasonable hardship. Her husband has a severe emotional handicap and is unable to work in public. He needs to be in the setting this property affords. Mrs. Sponaugle has had the property since 1971, and knows that it will drain, although there may be three (3) months each year when the drainage may not be everything desirable. She suggests using the septic tank as a holding tank when drainage is a problem, having it pumped as necessary.

Alternatives and Evaluation:

Mr. and Mrs. Sponaugle desire to remodel an existing building on their property into a residence. This may be accomplished only if a method of sewage disposal acceptable to the Department is available to serve the house. The following alternatives were considered and evaluated in conjunction with the variance hearing and appeal:

1. The most preferred method would involve connection to a public sewerage facility. Unfortunately, there is no public sewerage facility in the area.
2. An optional method would utilize an on-site sewage disposal system that complies with the requirements within OAR 340, Division 71, the On-Site Sewage Disposal rules. Jackson County staff have evaluated this alternative and found the property to be unsuitable for placement of either a standard or alternative sewage disposal system because shallow effective soil depths and the presence of a seasonally perched water table at or within inches of the surface.
3. Mr. and Mrs. Sponaugle pursued another acceptable option by applying for a variance from on-site system siting requirements. The issuance of an on-site construction-installation permit could be authorized through the variance provisions established by statute and administrative rule, after it had been determined that use of the system would not constitute a greater risk to the public health and welfare than a system that complies fully with the Commission's rules. The variance officer found that because the site is so poorly drained during the wet season, the high groundwater conditions would most probably cause any soil-dependent sewage disposal system to fail during periods of high water.
4. A request to use the septic tank as a holding tank during periods of high groundwater was examined by Mr. Olson. When used within a system, the septic tank's primary function is to permit separation of solids, grease, oil and scum from the waste water by sedimentation and flotation. Clarified waste water passes from the septic tank to the absorption facility, while the other sewage constituents are retained in the septic tank. The tank is always filled to its full capacity. On the other hand, a holding tank's sole purpose is to act as a waste water storage vessel and must be pumped out before it becomes full. Except for pumping access, holding tanks are made completely water-tight so as to prevent sewage discharges from the tank or groundwater infiltration into the tank. To operate during periods of low

groundwater the Sponaugle tank would have an outlet fitting connected to the disposal trenches. When operating as a holding tank during periods of high groundwater the disposal trenches would become completely filled with a combination of groundwater and septic tank effluent and cause the wastewater to flow back through the effluent sewer pipe into the septic tank. The liquid level in the tank would rise until sewage begin to breakout onto the ground surface or backed up through the house plumbing. Pumping of the septic tank, even at very frequent intervals, would not alleviate the problem of inadequate storage capacity due to groundwater inflow into the septic tank during pumping operations.

5. Installation of a holding tank was evaluated as an alternative sewage disposal system. Existing on-site rules allow permanent use of holding tanks to serve a small industry or commercial facility and for temporary use by residence provided that: 1) the application for a permit includes a legal commitment from the appropriate legal jurisdiction that it will extend a community or area-wide sewerage system meeting the requirements or the Commission within 5 years of the date of application, and 2) the holding tank meets the design, construction, setback and special requirements, of the on-site sewage disposal rules. There are no sewerage plans to extend sewers to the Sponaugle's property which is located four miles southwest of Shady Cove. Thus, the temporary use of a holding tank is not considered a usable alternative.
6. A potential sixth option concerns the construction and use of a sewage stabilization pond (lagoon). Installation of this type of system is not dealt with through the on-site sewage disposal system rules, but rather OAR 340, Division 45. Lagoon systems to serve individual residences are discouraged due to needed on-going operation and maintenance program, but this option is available to the Sponaugles. To pursue this alternative, general practice is to retain a certified engineer to prepare engineering plans and specifications and to apply for a Water Pollution Control Facilities permit. This is necessary to assure that the ponds are properly sized, diked and sealed to balance waste flows with precipitation and evaporation, and to prevent surface discharge and groundwater contamination. Additionally, engineering plans must include needed safety and operation and maintenance features for a lagoon facility of this size. Permit fees and annual compliance determination schedule fees are associated with a Water Pollution Control Facilities permit.

Pursuant to ORS 454.660, decisions of the variance officer may be appealed to the Environmental Quality Commission. Such an appeal was made. The Commission must determine whether strict compliance with the rules or standards regulating the installation of on-site sewage disposal systems is inappropriate for cause, or that special physical conditions under strict compliance to be unreasonable, burdensome, or impractical. Staff recommends the decision of the variance officer be upheld.

Summation

1. The pertinent legal authorities are summarized in Attachment "A":
2. On December 17, 1984, staff with the Jackson County Department of Planning and Development evaluated the ten (10) acre parcel to determine if an on-site sewage disposal system could be installed. They determined the site to be poorly drained, with a seasonal water table as close as four (4) inches from the ground surface. The water was perched above tight soil horizons of silty clay, clay, and a cemented pan. The property was found to be unsuited for placement of a standard or alternative sewage disposal system.
3. On April 17, 1985, the Department received a variance application. It was assigned to Mr. Olson.
4. Mr. Olson examined the property and conducted an information gathering hearing. After closing the hearing, Mr. Olson received and evaluated the variance record. He found the site limitations and the testimony provided did not support a favorable decision. Because of high seasonal groundwater levels and shallow soil depths, it was his opinion that the system would most probably fail during periods of high groundwater. Mr. and Mrs. Sponaugle were notified of the variance denial by letter.
5. Mr. and Mrs. Sponaugle filed for appeal of the variance decision.
6. All available options were evaluated. The only sewage disposal system alternative available to Mr. and Mrs. Sponaugle is a individual non-discharging lagoon treatment system. This type of system is regulated under Division 45 of Oregon Administrative Rules, Chapter 340.

Director's Recommendation

Based upon the findings in the summation, it is recommended that the Commission adopt the findings of the variance officer as the Commission's findings and uphold the decision to deny the variance.



Fred Hansen

Attachments "A" Pertinent Legal Authorities
"B" Variance Denial Letter
"C" Letter of Appeal

Sherman O. Olson:h
WH320
229-6443
August 19, 1985

ATTACHMENT "A"

1. Administrative rules governing subsurface sewage disposal are provided for by Statute: ORS 454.625.
2. The Environmental Quality Commission has been given statutory authority to grant variances from the particular requirements of any rule or standard pertaining to subsurface sewage disposal systems if after hearing, it finds that strict compliance with the rule or standard is inappropriate for cause or special physical conditions render strict compliance unreasonable, burdensome or impractical: ORS 454.657.
3. The Commission has been given statutory authority to delegate the power to grant variance to special variance officers appointed by the Director of the Department of Environmental Quality: ORS 454.660.
4. Mr. Olson was appointed as a variance officer pursuant to the Oregon Administrative Rules: OAR 340-71-415.
5. Decisions of the variance officers to grant variances may be appealed to the Commission: ORS 454.660.

S00:h
WH320.1



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

June 21, 1985

CERTIFIED MAIL

Mr. & Mrs. Nile Sponaugle
P. O. Box 2260
White City, Oregon 97503

Re: WQ-SSS-Variance Denial
T.L. 1400; Sec. 4;
T. 35S.; R. 1W., W.M.;
Jackson County

Dear Mr. & Mrs. Sponaugle:

This correspondence will serve to verify that your requested variance hearing, as provided for in OAR 340-71-430, was held at the proposed site, on May 15, 1985. Just prior to the hearing I visited the site to gather soils and topographical information relevant to your variance proposal. Poorly drained, leveled soils of the Agate-Winlo complex are present throughout the site. Soil morphological characteristics indicate season groundwater frequently occurs near ground surface since the site was leveled. The groundwater perches above a clay horizon immediately above a hardpan. Below the hardpan I observed cemented gravels to the bottom of each pit. Mottling was observed at the soil surface in each of the four (4) pits examined. Because the clay horizon begins at zero (0) to fourteen (14) inches from the surface, it is not possible, in my opinion, to effectively dewater the site. The hardpan and cemented gravels are restrictive to the movement of water, and typically extend to sixty (60) inches or deeper.

You have proposed to rip through the hardpan, expecting the perched water table to drain. Afterwards, an equal distribution loop system would be installed below the hardpan. This would require variance from the following rules:

1. OAR 340-71-220(2)(a), which limits the installation of systems to sites with an effective soil depth of thirty (30) inches or more, while maintaining a six (6) inch separation between the layer that limits effective soil depth and the bottom of the disposal trench. At your site, the layer that limits effective soil depth begins with the clay horizon (encountered at the surface in two (2) pits, and at twelve (12) and fourteen (14) inches in the other pits. The hardpan and the cemented gravels are also layers that limit effective soil depth.
2. OAR 340-71-220(2)(b)(B), which requires temporary or seasonal water tables be located at least twenty-four (24) inches below

Mr. & Mrs. Nile Sponaugle
June 21, 1985
Page 2

the surface, and prohibits installation of the disposal trenches deeper than the level of the water table. During the wet season, water ponds on the surface over portions of your property.

Variance from particular requirements of the rules or standards pertaining to on-site sewage disposal systems may be granted if a finding can be made that strict compliance with the rule or standard is inappropriate for cause, or that special physical conditions render strict compliance unreasonable, burdensome, or impractical. In my opinion, the perched water table will not be affected by ripping through the hardpan into the underlying cemented gravels. I suspect that once the void spaces created by ripping become filled with groundwater, the water table will again rise to the surface. Based upon my review of the verbal and written testimony contained in the record, I am unable to make a favorable finding. Your variance is regretfully denied.

Pursuant to OAR 340-71-440, my decision to deny your variance request may be appealed to the Environmental Quality Commission. Requests for appeal must be made by letter, stating the grounds for appeal, and addressed to the Environmental Quality Commission, in care of Mr. Fred Hansen, Director, Department of Environmental Quality, Box 1760, Portland, Oregon 97207, within twenty (20) days of the date of the certified mailing of this letter.

Please feel free to contact me at 229-6443 if you have questions regarding this decision.

Sincerely,



Sherman O. Olson, Jr.
Assistant Supervisor
On-Site Sewage Systems Section
Water Quality Division

S00:m
WM328

cc: Brad Prior, Jackson County,
Warren Harger, Jackson County,
Southwest Regional Office, DEQ

Environmental Quality Commission
 Box 1760
 Portland, Oregon 97207
 C/O Mr Fred Hansen, Director
 Department of Environmental Quality

DEPARTMENT OF ENVIRONMENTAL QUALITY
 RECEIVED
 JUL 2 1985

WATER QUALITY CONTROL

Dear Mr. Hansen,

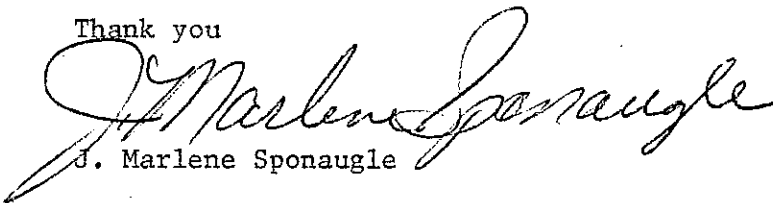
I wish to appeal the decision of Mr. Sherman Olson to deny our variance request. I appeal on the grounds that it creates a severe, and unreasonable hardship on myself as sole breadwinner for my family. My husband, is severely emotionally handicapped. He is unable to work in the public at this time. He has been able to do construction on the property, and maintain it to some degree. He needs to be in a farm setting.

I have been in possession of the property, since 1971, and I know that it will drain. There may be 3 months out of the year that drainage would not be everything desirable. I propose, that during that time we use the septic tank as a holding tank, and have it pumped out if necessary. I'm sure that I can have one designed for that type of system. Then the drain field could be used during the season of year when it will drain properly.

Please give my request every consideration, as I have, so to speak put all my eggs in one basket, and have used all my resources to ~~that~~ making that 10+ acres into a home for myself and my husband.

There would only be ~~that~~ ^{the} two of us living there, and I fail to see, how, we could create enough waste to pollute even our property, much less anyone's around us. We would not have automatic laundry facilities, and we would install low water usage toilet and shower.

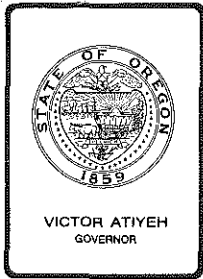
Thank you


 J. Marlene Sponaugle

Encl: Copy of letter of refusal by Sherman O. Olson Jr.

State of Oregon
 DEPARTMENT OF ENVIRONMENTAL QUALITY
 RECEIVED
 JUL 08 1985

OFFICE OF THE DIRECTOR



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. M, September 27, 1985, EQC Meeting

Variance Review for Brookings Energy Facility, Curry County

Background and Problem Statement

On September 14, 1984, the Environmental Quality Commission granted a one year variance from OAR 340-21-027(2) for the Brookings Energy Facility (B.E.F.) (Attachment A-Agenda Item No. J of the September 14, 1984 Commission Meeting). As a provision of that action, the Commission requested that the performance of the permittee during the variance period be reviewed at the end of the one year period.

The variance request was precipitated by the Commission's adoption of OAR 340-21-027, Municipal Waste Incinerators in Coastal Areas on January 6, 1984. The rule allows an increased total particulate emission rate for coastal incinerators and requires that continuous temperature recorders be operated and that specified minimum operating temperatures be met. Toxic organic compounds, such as dioxins and furans, can be emitted from waste combustion operations if adequate temperatures are not maintained.

The rule was adopted to provide control of toxic organic compound emissions while eliminating the need for variances from the particulate emission standards or for expensive pollution control equipment. B.E.F. received notification of the proposed rulemaking and public hearing but did not submit written or oral testimony.

The variance granted to B.E.F. allowed manual recording of operating temperatures instead of the automatic recording specified by the rule. In approving Alternative 2 as presented in the September 14, 1984 staff report, the Commission authorized manual recording for one year. During the Commission's consideration of the variance request, the Commission confirmed that the readings would be required at five minute intervals during warm-up and at fifteen minute intervals during the combustion phase. The variance deals only with the method and frequency of obtaining permanent temperature records. The variance did not exempt the permittee from meeting the temperature and other operating requirements in the rule.

The Commission acted on the basis of ORS 468.345(1)(b). This statute authorizes the granting of a variance if "special circumstances render strict compliance unreasonable, burdensome or impractical due to special physical conditions or cause." The cost of obtaining and installing the required recording equipment was considered to be an applicable special circumstance. Cost estimates were not submitted by the permittee, but based on information submitted for a similar facility in Coos County, the Department estimated the cost of compliance to be approximately one thousand dollars.

During the past year, the permittee has failed to fully comply with the variance requirements. The Department provided the permittee with forms for recording temperatures by letter of October 22, 1984 (Attachment B). A draft permit addendum specifying the variance requirements was sent on October 25, 1984. In response, the Department received a letter from Mr. Pete Smart, President of B.E.F., on November 15, 1984 (Attachment C). Mr. Smart had not yet implemented the manual temperature recording. In his letter he professed to be unaware of the Commission's instructions and the frequency requirements for manual recording. Mr. Smart's view that a two hour interval for monitoring is sufficient for temperature monitoring particularly concerned the Department. On December 17, 1984 Permit Addendum No. 1 was finalized (Attachment D). The permittee began to manually record temperatures shortly thereafter.

The facility was inspected by the Department on January 11, 1985. While the incinerators were not in operation at the time, temperature recording sheets were available and were reviewed. These recordings showed violations of the temperature and recording requirements. Specifically, the permittee had failed to record the temperatures for the required two hour period after the last charges were loaded and to follow the specified warm-up schedule. A typical warm-up period appears to be four hours, or about half the daily operating time, rather than the specified thirty minutes. B.E.F. personnel typically leave the site shortly after loading the last charge making further manual recording during the burndown phase impossible. The facility appears to be operating at temperatures lower than those required for more than half of the daily operating cycle. These violations were discussed with the facility operator during the inspection and with Mr. Smart on January 15, 1985.

Subsequent record sheets have not shown a trend toward resolving these problems. Conditions had not changed when inspections were conducted on April 3 and June 19, 1985. On July 23, 1985, a Notice of Violation was issued for temperature violations and recording violations observed during the inspection in June (Attachment E). At the request of Mr. John Coutrakon, attorney for B.E.F., Air Quality and Regional staff met with Mr. Coutrakon, Mr. Smart, and other representatives of B.E.F. on August 12, 1985. Attachments F, G, and H relate to that meeting. Responses to questions raised by Mr. Coutrakon are included as Attachments I and J.

Current Status

B.E.F. and the Department continue to disagree about the need for specified operating temperatures and the need to monitor and record those temperatures. B.E.F.'s attorney has requested that Commission consideration of the variance be deferred, pending further analysis of the need for these requirements. This report is being presented in response to the Commission's expressed intention of reviewing the variance at this time.

In July of 1985, the Department learned of plans to convert B.E.F. to an energy recovery facility. Mr. Tom Bradley, a consultant and professor at Oregon Institute of Technology, has been retained to implement the conversion and Mr. Smart has referred the Department to Mr. Bradley for all questions regarding the conversion project. As a part of the project, a temperature recorder for each unit has been ordered and delivered to Mr. Bradley. The Department is awaiting an answer to a request for cost data on the recorders. On August 20, 1985, Mr. Bradley informed the Department that the recorders are ready for installation at any time. The Department further understands that a power sales contract has been obtained by B.E.F. from the Coos Curry Electric Cooperative and that all equipment has either been obtained or placed on order. Installation is expected to proceed in the near future.

During the past year, representatives of B.E.F. have expressed, verbally and in writing, the desire to be allowed to operate the facility in conformance with the original Air Contaminant Discharge Permit issued in 1979 prior to the adoption of the Coastal Incinerator rules by the Commission. That permit required a secondary chamber temperature of 1600°F, a more stringent particulate emissions rate of 0.1 grains per dry standard cubic foot or less, and the operation of temperature recorders. The permittee was cited for failure to install and operate temperature recorders as required in that permit in a Notice of Violation and Intent to Assess Civil Penalty (AQ-SWR-82-40) on May 5, 1982. The primary arguments the permittee has presented in support of allowing the lower operating temperature are the improvement the incinerators provide over the previous practice of open burning of the waste and the continued authorization of open burning at other locations, such as at Powers. The Department believes that the B.E.F. and Coos County incinerators (the two facilities that are subject to the rule) did not operate in compliance with those earlier permit conditions and for that reason proposed the adoption of the Coastal Incinerators rules in 1983.

The Coastal Incinerator Rules (OAR 340-21-027) were adopted on the basis of technical reports on municipal solid waste incineration and the destruction of toxic organic compounds. A large body of information is available on these topics. Additional technical literature reviewed by the Department since the adoption of those rules firmly supports the residence time and temperature requirements. However, subsection 340-21-027(b)(A) specifies the minimum temperatures required during burner warm-up. This subsection was adopted to ensure that garbage is not introduced to a cold unit and to ensure that the temperature is rapidly brought up to 1800°F once garbage is

introduced. This subsection is currently under review by the Department, as the operators of both B.E.F. and the Coos County incinerators have questioned the feasibility of the start up requirements. The Department is delaying further enforcement action of this subsection until additional data can be collected, provided that this is done within a reasonable time frame. Both permittees have been asked to document the maximum achievable start-up temperature profile. Neither permittee has done this to date, although Coos County officials have recently agreed to do so. Review of subsection (2) has not changed the Department's support of the provisions of OAR 340-21-027 which require the use of automatic temperature recorders and operation at 1800°F after the specified warm-up period.

Alternatives and Evaluations

The variance granted by the Commission on September 14, 1984 has effectively expired unless further action is taken. The Commission has the following alternatives:

Alternative 1

The Commission could simply let the variance expire since the variance was adopted for a one year period, which has now ended. There are numerous factors which support this course of action. For one, the original basis for the variance no longer exists.

The variance was granted on the grounds that the permittee could not afford to obtain the required instrumentation. Since that time, temperature recorders have been obtained, although they are not yet installed. This alternative would, in effect, mandate expeditious installation and operation of the recorders.

In addition, the permittee has failed to comply with the variance requirements. One provision of OAR 340-21-027 specifies that recording be continued until two hours after the last load is charged. Since the variance provided relief only of the means of recording and not the periods of recording, the permittee's failure to record during this burn-down phase is a violation of the variance.

Throughout the variance period the permittee violated other provisions of the Air Contaminant Discharge Permit culminating in the issuance of a Notice of Violation on July 23, 1985.

Use of the recorders would also be required if B.E.F. is converted to an energy recovery facility. Now would seem to be an appropriate time to ensure that the facility can be operated in accordance with the regulations, rather than extending the problems to an expanded facility.

Alternative 2

The Commission could extend the variance for some period. This alternative would allow the permittee to continue with manual recording of the secondary chamber temperature, as specified in the September 14, 1984 variance approval. This variance was highly unsuccessful in that the permittee failed to comply with all of the Commission's directions and was issued a Notice of Violation for failing to comply with a variance provision and related operating requirements. The variance was adopted because the cost of obtaining and installing the required temperature recorders represented an economic hardship, as allowed for in ORS 468.345(1)(b). The temperature recorders have since been ordered and are available for installation as part of an energy recovery conversion, so the economic hardship basis is no longer viable. The Commission would have to discover some other basis to support a variance before an extension could be issued.

The Commission may be presented with a request to exempt B.E.F. from other provisions of OAR 340-21-027 or to rescind some or all of the rule. Since this agenda item does not anticipate any such action by the Commission, those alternatives are not listed. The Department has continued to review the basis for the rule and, with the exception of the start up provisions which are still under review, finds no basis for its relaxation in this or any other case. The Department finds the permittee's reluctance to commit to operating at the required temperature to be contradictory with the permittee's progress in converting to energy recovery. The temperatures specified in the rules will be essential to the successful operation of an energy recovery facility.

Summation

1. On September 14, 1984 the Commission granted to Brookings Energy Facility a one year variance from OAR 340-21-027(2) to allow manual, rather than automatic, temperature recording.
2. During the variance period, the permittee repeatedly violated provisions of the variance and Air Contaminant Discharge Permit and a Notice of Violation was issued on July 23, 1985.
3. The basis on which OAR 340-21-027 was adopted, control of toxic organic compounds by operating at 1800°F with a gas retention time of one second, has continued to be supported by technical reports published since the rule was adopted. The Department considers these operating conditions and the use of automatic temperature recorders essential to insure that toxic air pollutant emissions from incomplete combustion of refuse are minimized.

4. The basis on which the variance was authorized, economic hardship, is no longer valid since the permittee has ordered and has available the required equipment.
5. Unless a basis for a continued variance is established, the Commission should find that a further variance is not warranted and the use of automatic temperature recorders should be required.

Director's Recommendation

Based on the findings in the Summation, it is recommended that the Commission allow the variance from OAR 340-21-027(2) for Brookings Energy Facility to expire and that no new variance be issued. The permittee should be instructed to immediately begin proper operation of the facility in accordance with the Commission's rules, including use of the temperature recorders. The permittee should be required to install and operate the temperature recorders within 45 days. During the 45 day installation period, the permittee shall maintain compliance with their Air Contaminant Discharge Permit No. 08-0039, Addendum No. 1, Condition 8. The Commission should instruct the Department to pursue additional enforcement actions if necessary to gain compliance with these requirements.

It is also recommended that the Commission not undertake any reconsideration of OAR 340-21-027 until the Department has re-evaluated subsection (2) and prepared its recommendations.



Fred Hansen

- Attachments:
- A. 09/14/85 Agenda Item No. J
 - B. DEQ letter of 10/22/85
 - C. BEF letter of 11/09/84
 - D. Permit Addendum #1 with issuance letter
 - E. Notice of Violation, NOV-AQ-SWR/C-85-72, July 23, 1982
 - F. W. L. Sims memo to file
 - G. 08/15/85 letter to Fred Hansen from John Coutrakon
 - H. 08/15/85 letter to Wendy Sims from John Coutrakon
 - I. DEQ letter of 08/22/85
 - J. DEQ letter of 08/30/85

Wendy Sims:s
229-6414
September 12, 1985

AS1656



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. J, September 14, 1984, EQC Meeting

Request for a Variance From OAR 340-21-027(2) for Brookings Energy Facility, Curry County

Background & Problem Statement

On July 18, 1984, a variance request was received from Mr. Pete Smart, President of the Brookings Energy Facility (Attachment A). This facility incinerates municipal solid waste from Curry County in two modular incinerators under the authority of Air Contaminant Discharge Permit 08-0039. Mr. Smart has requested that a variance from Conditions 8 and 10 of that permit (Attachment B) be granted to the Brookings Energy Facility (BEF). These conditions require the installation and operation of a continuous temperature recorder (pyrometer) pursuant to Oregon Administrative Rule 340-21-027(2).

The above cited rule was adopted by the Environmental Quality Commission on January 6, 1984. OAR 340-21-025 was amended at the same time. As a result of these new rules, the maximum allowable particulate emission rate for small coastal municipal waste incinerators changed from from 0.1 to 0.2 grains/dry standard cubic foot and minimum exhaust gas temperatures/gas residence times were established. The operator of an incinerator was further required to install a temperature recording pyrometer. This requirement is to insure a continuous temperature level capable of destroying toxic air pollutants.

Comments on the new rule were solicited from both the BEF and the Curry County Board of Commissioners. A public hearing was held on November 21, 1983. An announcement of the hearing containing the hearing notice and the complete proposed rules package was mailed to both parties on October 4, 1983 (Attachments C,D). An additional hearing announcement was sent to the Brookings Energy Facility on October 20, 1983. The proposed temperature monitoring requirements were prominently mentioned in all of the documents. No written testimony was received from either party, nor was either represented at the public hearing.

After expiration of the previous Air Contaminant Discharge Permit, a proposed renewal permit was sent to BEF on April 4, 1984. The proposed permit incorporated the temperature recorder requirement from the new rules. The final date for submission of written comments on the proposed permit was May 15, 1984. On May 16 and May 18 respectively, comments were received from BEF and the Curry County Board of Commissioners (see Attachment A). Both requested deletion of the temperature recorder requirement in favor of manual recording. Similar comments were received from the City of Brookings on May 29, 1984. After considering the comments that were received, the Department issued the Air Contaminant Discharge Permit on May 25, 1984 without changes from the proposed permit.

The Department does not have the authority to revise the permit conditions as requested because the conditions are based on the Commission's rules. The Department advised the permittee that a variance could be requested from the Commission (Attachment E).

Alternatives and Evaluations

Several alternatives are available to the Commission. The variance request can be approved, approved with conditions concerning manual recording, approved with reinstatement of the previous particulate emissions limitation, or denied.

Under ORS 468.345(1), the Commission is authorized to grant variances from any rule if any of the following conditions are met:

- (a) Conditions exist that are beyond the control of the persons granted such variance; or
- (b) Special circumstances render strict compliance unreasonable, burdensome or impractical due to special physical conditions or cause; or
- (c) Strict compliance would result in substantial curtailment or closing down of a business, plant or operation; or
- (d) No other alternative facility or method of handling is yet available.

Subparts (b) and (c) are claimed by the permittee as reasons for the variance request. It is the responsibility of the permittee to supply documentation to support these claims.

Subpart (b), as noted above, applies in cases where special physical conditions make compliance unreasonable, burdensome, or impractical. Both incinerators at Brookings are already equipped with primary and secondary chamber temperature probes and gauges. Space is not unduly restricted at the site, so the addition of a recorder does not present any

physical problem. A recorder could be mounted on each incinerator or the wires could be extended to allow for installation at a location more convenient to the operator. Space requirements could be further reduced by the use of a multi-channel recorder which could simultaneously record temperatures from both incinerators. In his letter of August 15, 1984 (Attachment H), Mr. Smart maintains that environmental conditions can constitute special physical conditions. The Commission considered the environmental conditions in making its decision to adopt the coastal incinerator rules. The Department believes that a less restrictive rule would increase the potential for emissions of toxic air contaminants.

Subpart (c) applies in cases where compliance is not economically feasible. The permittee has stated that enforcement of the rule "could very possibly" cause closing down of the operation. The Department requested that the BEF supply economic data including financial reports and temperature recorder cost estimates (Attachments E,F). In response, an earnings statement for 1983 was submitted (see Attachment H). This statement indicates that Brookings Energy Facility incurred a net loss of \$5,740.33 on income revenues totalling \$317,405.26 in 1983. According to Item M on page 3 of Attachment H, representatives of the Brookings Energy Facility do not have any data on the cost of temperature recorders. Based on a cost estimate submitted for the Coos County incinerators (see Attachment G), the Department estimates the cost of compliance to be approximately one thousand dollars.

The permittee maintains that since he is discussing cost reduction possibilities with Curry County officials, additional costs would jeopardize the operation. Disposal costs are generally a small portion of the total cost of handling solid waste, with collection and hauling contributing the major share. Even if compliance resulted in a small increase in disposal rates, the Department would not expect an appreciable increase in the customer billing rate.

While recognizing the net loss incurred at the BEF in 1983, the Department can find no justification for the permittee's request for a variance based on subparts (b) or (c). Subparts (a) and (d), which the permittee did not request consideration under, are not applicable.

ORS 468.345(4) requires consideration of the equities involved and the advantages and disadvantages to residents and to the operator of the BEF. The only other facility subject to the temperature recorder rule is the Coos County incinerator installation at Beaver Hill. This facility had a variance from the particulate emissions limitation which was withdrawn after adoption of the relaxed limits. This facility is required to install and operate temperature recorders. No other facilities burn municipal solid waste in Oregon. A permit issued for the proposed facility in Marion

County, which would be much larger than the coastal incinerators, also requires continuous temperature recording.

The capital expenditure needed to comply with the rule appears to be slight, so there is little probability of a facility closure. If closure occurred, an alternate means of disposal would have to be developed and would most likely offset job losses. Similarly, any outcome of the variance request review is unlikely to affect the competitive position of the facility, since it is not in a competitive market.

Residents of the areas surrounding the facility could be affected by increased emissions of toxic air pollutants and by a change in garbage collection fees. The need for high temperatures to destroy potential toxic air pollutants is not at issue in this variance request, rather the means of documenting the actual operating temperatures. The more reliable and accurate the means, the lower the possibility of increased toxic air pollutant emissions.

A temperature recorder has the advantage of providing a continuous readout. Accuracy is maintained by performing maintenance and calibration checks at an interval appropriate to the specific instrument.

In contrast, manual recording is much less reliable in terms of frequency of recording and accuracy. Human error is not the only disadvantage. Further problems are caused by the variable nature of municipal solid waste. BTU value, moisture content, ash content, and other variables which affect combustion fluctuate. Data must be collected often enough to insure that the proper temperatures are maintained at all times.

The superior ventilation along the Oregon coast assists in removal of pollutants from the ambient air. However, this may not be adequate in the case of toxic contaminants. Effects from toxic air pollutants may result from very low concentrations. Concerns have been raised that these effects may not be seen for many years during which time some pollutants may accumulate in body tissues.

The potential for deviations in temperature control and toxic air pollutant emissions are compared below for each alternative.

Alternative 1: Approval of Variance Request

The request, as submitted, would be a permanent variance. Any impacts from granting the variance would continue for the lifetime of the facility. In addition, the variance request and other communications received from Mr. Pete Smart propose that the temperatures be manually recorded, at times yet to be specified, during the daily operating schedule. No detail on these

specified times or identification of how or by whom the times would be chosen is given.

This alternative has the highest probability of temperature deviations and adverse air pollution effects. Since the variance would be permanent, the effects would continue indefinitely.

Alternative 2: Approval of Modified Variance

Under this alternative, the facility operator would be allowed to manually record temperatures for a specified time period, such as one year from the date of approval. Temperatures would be recorded at each incinerator at five minute intervals during warm-up and at fifteen minute intervals during the combustion phase.

This alternative is a compromise between the rule and the variance request. It provides ample time for the permittee to procure the necessary capital for the recorders. The frequency of manual data collection should help to guard against lengthy temperature drops. The possibility of human error is not diminished, however.

Alternative 3: Approval With Particulate Emissions Limitations

This alternative would allow manual temperature recording and reduce the particulate emissions limit from 0.2 grains per standard cubic foot of exhaust gases to the previous limit of 0.1. Since gaseous toxic air pollutants tend to adsorb onto particulate matter, the loss of control over operating temperature would be compensated for by the increased removal of toxics-laden particulate matter.

Adequate control of toxic emissions would be achieved under this option. However, particulate emission control equipment would probably have to be installed. Coos County estimated that such equipment would cost over \$500,000 for the Coos County facility. Since the cost of this equipment would far exceed the cost of temperature recorders, there does not seem to be an advantage to this alternative.

Alternative 4: Denial of Variance Request

Denial of the variance request would provide the intended control of toxic air pollutant emissions and the associated protection of the public health. Any fluctuation in temperature, either above or below 1800° F, could be readily detected.

This alternative has additional benefits to the incinerator operator. By correlating incinerator temperature and auxiliary fuel usage with other

operating parameters, such as the mix of garbage charged, the need for auxiliary fuel could be minimized. The cost of auxiliary fuel was a major issue raised at the November 21, 1983 hearing. In addition, an employee would be freed from having to manually record the temperatures.

Summary

1. The operator of the Brookings Energy Facility is seeking a variance from OAR 340-21-027(2) which requires the installation of temperature recorders at coastal municipal waste incinerators.
2. OAR 340-21-025 was modified in January 1984 to allow for increased particulate emissions from coastal municipal waste incinerators. OAR 340-21-027 was simultaneously adopted to establish combustion temperature and residence time requirements. The temperature/time requirements are integral to controlling toxic air pollutant emissions at the higher particulate emission rates. The use of temperature recorders was required to insure and document compliance with the temperature requirements.
3. Manual temperature recording would be less effective than automatic recording given the variable composition of municipal solid waste and the possibility of operator error.
4. The president of the Brookings Energy Facility and the Curry County Board of Commissioners did not comment during the public comment period or the public hearing concerning the adoption of OAR 340-21-025 and -027. Objections to the proposed Air Contaminant Discharge Permit requirement of temperature recorders were received from both parties after the permit was re-drafted to include the rule requirements.
5. The applicant has requested the variance on the basis of ORS 468.345(1)(b) and (c) for special physical conditions and cost implications. The applicant has not adequately documented either consideration.
6. Approval of the variance request could result in increased ambient concentrations of toxic air pollutants, due to deviations from the required operating temperatures.
7. The Department has been unable to establish any basis for granting the variance request.

Director's Recommendation

Based upon the findings in the Summation, it is recommended that the Commission deny the variance request from OAR 340-21-027(2) for the Brookings Energy Facility.



Fred Hansen

- Attachments:
- A. Request for Variance From Mr. Pete Smart, Brookings Energy Facility
 - B. Air Contaminant Discharge Permit 08-0039, Brookings Energy Facility
 - C. Letter to Board of Commissioners, Curry County, October 4, 1983
 - D. Letter to Pete Smart, October 4, 1983
 - E. Letter to Pete Smart, June 22, 1984
 - F. August 3, 1984 letter from DEQ to Mr. Pete Smart
 - G. Testimony from J.R. Perkins, Public Works Director, County of Coos
 - H. Letter from Pete Smart to EQC, August 13, 1984

WENDY L. SIMS:a
229-5259
August 15, 1984
AA4612

BROOKINGS ENERGY FACILITY
BOX 1240
BROOKINGS, OR 97415

July 14, 1984

Environmental Quality Commission
P. O. Box 1760
Portland, OR 97207

Dear Commissioners:

The purpose of this letter is to request a variance to certain "special conditions" of Air Quality Permit No. 08-0039 as provided by ORS 468.345, subsections 1-a, b, c and 4.

About April 10, 1984 we received a letter with a copy of the proposed permit attached from Lloyd Kostow. This letter was in response to an earlier application from us for renewal of Permit no. 08-0039 and was dated April 4, 1984. In this letter Mr. Kostow invited written comments which were to be considered before final issuance of the permit. We submitted a letter of comment, objecting to two special conditions of the proposed permit. Letters from the Curry County Commission and the city of Brookings (site of the facility) were also sent to Mr. Kostow requesting a variance from those same two special conditions. A letter, dated May 25, 1984, was received from Mr. Kostow informing us that the permit would not be changed. He cited OAR 340-21-027(2) and attached a copy of Permit No. 08-0039 identical to the draft copy received in April. Mr. Kostow also informed us that we may appeal to a representative of the Environmental Quality Commission. This prompted us to send such an appeal to Fred Hansen, Director. We have just received a letter from Mr. Hansen, dated June 22, 1984, from which we quote: "An exemption from the rules would require a variance which can only be granted by the E Q C." Copies of all the above mentioned letters are attached and we would like for their content to be a part of this appeal for variance.

We are requesting a variance to Special Conditions 8 and 10 of Permit No. 08-0039, which conditions require installation and operation of continuous recording pyrometers according to a specific time frame. We propose that we be allowed to manually record lower and upper chamber temperatures at specified times during the daily operating schedule. This request is primarily based on information that has already been detailed in letters to Lloyd Kostow and Fred Hansen (attached and marked).

We believe that the geographic, demographic, and economic situations of Curry County and Brookings Energy Facility are such that a variance should be granted according to ORS 468.345, subsections 1-4. This ORS states that a specific variance shall be granted if the commission finds (1-b) "that strict compliance with the rule or standard is inappropriate because: special circumstances render strict compliance unreasonable, burdensome, or impractical. ." Also (4), "The commission . . . shall consider . . . the ~~advantages and disadvantages to residents~~ and to the person conducting the activity for which the variance is sought." We believe the evidence to show that in this case "strict compliance" to the rules to be unreasonable, burdensome, and impractical when all conditions are considered. We also believe that strict compliance ~~would work to the disadvantage of the residents~~ of Curry County and to B E F, the entity that disposes of the solid waste for the residents.

ATTACHMENT #1
State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED
JUL 20 1984

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JUL 18 1984

OFFICE OF THE DIRECTOR

We urgently request careful consideration of marked sections of all the attached material. Granting of this variance will allow us to continue with the job at hand (disposing of solid waste in a safe and reasonable manner). We are presently discussing possible methods by which disposal costs may be reduced with county officials. Any additional cost could very possibly cause the whole operation to fit into a category to which ORS 368.345, subsection 1c could apply.

We have been operating for some five years in the same spot and even now many residents of the area do not know where the facility is. That should say something about the the lack of pollution of the operation.

Respectfully Yours,

A handwritten signature in cursive script, appearing to read "P. Smart".

Pete Smart, President
Brookings Energy Facility

issue an order, the failure shall be considered a determination that the construction may proceed. The construction must comply with the plans, specifications and any corrections or revisions thereto or other information, if any, previously submitted.

(5) Any person against whom the order is directed may, within 20 days from the date of mailing of the order, demand a hearing. The demand shall be in writing, shall state the grounds for hearing and shall be mailed to the director of the department. The hearing shall be conducted pursuant to the applicable provisions of ORS 183.310 to 183.550.

(6) For the purposes of this section, "construction" includes installation and establishment of new air contamination sources. Addition to or enlargement or replacement of an air contamination source, or any major alteration or modification therein that significantly affects the emission of air contaminants shall be considered as construction of a new air contamination source. [Formerly 449.712]

468.330 Duty to comply with laws, rules and standards. Any person who complies with the provisions of ORS 468.325 and receives notification that construction may proceed in accordance therewith is not thereby relieved from complying with any other applicable law, rule or standard. [Formerly 449.739]

468.335 Furnishing copies of rules and standards to building permit issuing agencies. Whenever under the provisions of ORS 468.320 to 468.340 rules or standards are adopted by either the commission or a regional authority, the commission or regional authority shall furnish to all building permit issuing agencies within its jurisdiction copies of such rules and standards. [Formerly 449.722]

468.340 Measurement and testing of contamination sources. (1) Pursuant to rules adopted by the commission, the department shall establish a program for measurement and testing of contamination sources and may perform such sampling or testing or may require any person in control of an air contamination source to perform the sampling or testing, subject to the provisions of subsections (2) to (4) of this section. Whenever samples for air or air contaminants are taken by the department of analysis, a duplicate of the analytical report shall be furnished promptly to the person owning or operating the air contamination source.

(2) The department may require any person in control of an air contamination source to provide necessary holes in stacks or ducts and

proper sampling and testing facilities, as may be necessary and reasonable for the accurate determination of the nature, extent, quantity and degree of air contaminants which are emitted as the result of operation of the source.

(3) All sampling and testing shall be conducted in accordance with methods used by the department or equivalent methods of measurement acceptable to the department.

(4) All sampling and testing performed under this section shall be conducted in accordance with applicable safety rules and procedures established by law. [Formerly 449.702]

468.345 Variances from air contamination rules and standards; delegation to local governments; notices. (1) The commission may grant specific variances which may be limited in time from the particular requirements of any rule or standard to such specific persons or class of persons or such specific air contamination source, upon such conditions as it may consider necessary to protect the public health and welfare. ~~The commission shall grant such specific variance only if it finds that strict compliance with the rule or standard is inappropriate because:~~

(a) Conditions exist that are beyond the control of the persons granted such variance; or

(b) Special circumstances render strict compliance unreasonable, burdensome or impractical due to special physical conditions or cause; or

(c) Strict compliance would result in substantial curtailment or closing down of a business, plant or operation; or

(d) No other alternative facility or method of handling is yet available.

(2) The commission may delegate the power to grant variances to legislative bodies of local units of government or regional air quality control authorities in any area of the state on such general conditions as it may find appropriate. However, if the commission delegates authority to grant variances to a regional authority, the commission shall not grant similar authority to any city or county within the territory of the regional authority.

(3) A copy of each variance granted, renewed or extended by a local governmental body or regional authority shall be filed with the commission within 15 days after it is granted. The commission shall review the variance and the reasons therefor within 60 days of receipt of the copy and may approve, deny or modify the variance terms. Failure of the commission to act on the variance within the 60-day period shall be considered a determination that the variance

granted by the local governmental body or regional authority is approved by the commission.

(4) In determining whether or not a variance shall be granted, the commission or the local governmental body or regional authority shall consider the equities involved and the advantages and disadvantages to residents and to the person conducting the activity for which the variance is sought.

(5) A variance may be revoked or modified by the grantor thereof after a public hearing held upon not less than 10 days' notice. Such notice shall be served upon all persons who the grantor knows will be subjected to greater restrictions if such variance is revoked or modified, or are likely to be affected or who have filed with such grantor a written request for such notification.

[Formerly 449.810]

468.350 Air and water pollution control permit for geothermal well drilling and operation; enforcement authority of director. (1) Upon issuance of a permit pursuant to ORS 522.115, the director shall accept applications for such appropriate permits under air and water pollution control laws as are necessary for the drilling of a geothermal well for which the permit has been issued and shall, within 30 days, act upon such application.

(2) The director shall continue to exercise enforcement authority over a permit issued pursuant to this section; and shall have primary responsibility in carrying out the policy set forth in ORS 468.280, 468.710 and rules adopted pursuant to ORS 468.725, for air and water pollution control at geothermal wells which have been unlawfully abandoned, unlawfully suspended, or completed. [1975 c.552 §34]

468.355 Open burning of vegetative debris; local government authority. (1) The Environmental Quality Commission shall establish by rule periods during which open burning of vegetative debris from residential yard cleanup shall be allowed or disallowed based on daily air quality and meteorological conditions as determined by the department.

(2) After June 30, 1982, the commission may prohibit residential open burning in areas of the state if the commission finds:

(a) Such prohibition is necessary in the area affected to meet air quality standards; and

(b) Alternate disposal methods are reasonably available to a substantial majority of the population in the affected area.

(3)(a) Nothing in this section prevents a local government from taking any of the follow-

ing actions if that governmental entity otherwise has the power to do so:

(A) Prohibiting residential open burning;

(B) Allowing residential open burning on fewer days than the number of days on which residential open burning is authorized by the commission; or

(C) Taking other action that is more restrictive of residential open burning than a rule adopted by the commission under this section.

(b) Nothing in this section affects any local government ordinance, rule, regulation or provision that:

(A) Is more restrictive of residential open burning than a rule adopted by the commission under this section; and

(B) Is in effect on August 21, 1981.

(c) As used in this subsection, "local government" means a city, county, other local governmental subdivision or a regional air quality control authority established under ORS 468.505. [1981 c.765 §2]

MOTOR VEHICLE POLLUTION CONTROL

468.360 Definitions for ORS 468.360 to 468.405. As used in ORS 468.360 to 468.405:

(1) "Certified system" means a motor vehicle pollution control system for which a certificate of approval has been issued under ORS 468.375 (3).

(2) "Factory-installed system" means a motor vehicle pollution control system installed by the manufacturer which meets criteria for emission of pollutants in effect under federal laws and regulations applicable on September 9, 1971, or which meets criteria adopted pursuant to ORS 468.375 (1), whichever criteria are stricter.

(3) "Motor vehicle" includes any self-propelled vehicle used for transporting persons or commodities on public roads and highways, but does not include a motor vehicle of special interest as that term is defined in ORS 481.205 (6)(c).

(4) "Motor vehicle pollution control system" means equipment designed for installation on a motor vehicle for the purpose of reducing the pollutants emitted from the vehicle, or a system or engine adjustment or modification which causes a reduction of pollutants emitted from the vehicle. [Formerly 449.949; 1975 c.670 §4]

CURRY COUNTY OREGON BOARD OF COMMISSIONERS

Donald K. Buffington

Kelly G. Ross

John Glenn Mayea



Mack Arch on the Curry Coast

BOX 746

GOLD BEACH, OREGON 97444

(503) 247-7011

May 15, 1984

Department of Environmental Quality
Lloyd Kostow, Manager
P.O. Box 1760
Portland, Oregon 97207

RE Brookings Energy Facility No. 9047 -- Discharge Permit
No. 8-0039.

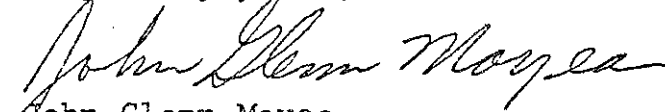
Dear Lloyd:

We respectfully request that you consider deleting items 8 and 10, page 3, from the proposed Air Contaminant Discharge Permit. We feel that the ~~same results could be obtained by a manual recording by the permittee~~ at specified times in the operating schedule.

Curry County leases the equipment to B.E.F. and ~~any impact on them will result in a like impact on Curry County~~. Under present budget constraints any additional costs would be very difficult for us to cope with. We live in a sparsely populated area with our own "~~built-in air conditioning system~~" and we feel this is ~~not necessary~~ for the efficient operation of this facility.

Thank you for your consideration in this matter of great concern to us.

Very truly yours,


John Glenn Mayea
Chairman

JGM:db

pc: B.E.F.
Commissioner Ross
Commissioner Buffington
City of Brookings

CITY OF BROOKINGS

888 Elk Drive
Brookings, Oregon 97415

The Home of Winter Flowers



May 25, 1984

Department of Environmental Quality
Lloyd Kostow, Manager
P.O. Box 1760
Portland, Oregon 97207

REFERENCE: Brookings Energy Facility No. 9047
Discharge Permit No. 8-0039

Dear Lloyd:

We realize that our comments are past the May 15, 1984 deadline for comments, but we ask you to consider our comments.

The City staff supports and agrees with the Curry County request for deletion of items 8 and 10 on page 3 of the Discharge Permit No. 8-0039.

Continuous monitoring is needed in an urban setting and/or where air inversions exist, but the Brookings Energy Facility is in a rural area and no air inversion exists. The prevailing winds continuously cleanse the air in the area, and the winds prevail toward a large, forested area.

Continuous monitoring equipment certainly requires more maintenance and accomplishes little toward the daily operations. The proposed alternative of manually recording the maximum and minimum temperatures is a reasonable alternative.

The Brookings Energy Facility proposal may not be ideal but certainly appears to be adequate and could suffice until energy sales reach a sufficient level to purchase the pyrometer.

Curry County and the Brookings Energy Facility budgets will be overly burdened to purchase this equipment. We feel that the operator will make the manual reading alternative work and the plant is designed to reduce pollutants to a minimum.

Thank you for your consideration in this matter.

Respectfully,

Leo Lightle

Leo Lightle
Engineering Technician

LL/dmvn

cc: Brookings Energy Facility
Curry County Commissioners



4/14/84

Department of Environmental Quality

522 SOUTHWEST 5TH AVE. PORTLAND, OREGON

MAILING ADDRESS: P.O. BOX 1760, PORTLAND, OREGON 97207

April 4, 1984

Brookings Energy Facility, Inc.
P.O. Box 1240
Brookings, OR 97415

Final Date for Submission
of Written Comments:
May 15, 1984

Re: Application No. 9047
Proposed Air Contaminant
Discharge Permit No. 08-0039

Gentlemen:

Your application for renewal of your Air Contaminant Discharge Permit has been reviewed by the Department of Environmental Quality and proposed air contaminant discharge permit provisions have been drafted. You are invited to review the attached copy and submit any comments you may have in writing by the final submission date noted above. If the proposed permit is satisfactory, no response to this notice is necessary.

Enclosed for your information is a copy of the public notice concerning your permit. This notice is published in the Secretary of State's bulletin and distributed to the media and interested individuals.

All comments received will be evaluated by the Department of Environmental Quality and action on your application will be taken in the near future.

Sincerely,

Lloyd Kostow

Lloyd Kostow, Manager
Program Operations
Air Quality Division

JO:a

AM4297

Enclosures

cc: Coos Bay Branch, DEQ
Southwest Region, DEQ

Permit Number: 08-0039
 Expiration Date: 2-1-89
 Page 3 of 5 Pages

- a. Prior to the initial charge of wastes and for the first 30 minutes of incineration of the initial charge, 1600° F for 1 second.
- b. For the period beginning 30 minutes after the initial charge of wastes to the time of the final charge, 1800° F for 1 second or 1700° F for 2 seconds or a temperature and corresponding residence time linearly interpolated between the aforementioned two points.
- c. For a 2 hour period after the final charge of waste, 1600° F for 1 second.

8. The permittee shall install, calibrate, maintain, and operate according to manufacturer's specifications a continuous recording pyrometer. The pyrometer shall be located at a point within the incinerator exhaust system which has been approved by the Department.

9. The permittee shall not incinerate any materials which may emit potentially poisonous or toxic substances. Materials which are not to be incinerated should include any significant identifiable quantities of pesticides and herbicides, electrical switching gear, or heavy metals such as zinc, cadmium, lead and mercury.

Compliance Demonstration Schedule

10. The permittee shall provide for recording pyrometers as specified in Condition 8 in accordance with the following schedule:

- a. By no later than 60 days after issuance of this permit, the permittee shall submit detailed plans and specifications, to the Department of Environmental Quality for review and approval.
- b. By no later than 120 days after issuance of this permit, the permittee shall complete the installation of and place in operation the recording pyrometers.
- c. Within seven (7) days after item b above is completed, the permittee shall inform the Department in writing that the item has been accomplished.

Monitoring and Reporting

11. The permittee shall effectively inspect and monitor the operation and maintenance of the plant and associated air contaminant control facilities. A record of all such data shall be maintained for a period of two years and be available at the plant site at all times for inspection by the authorized representatives of the Department. At least the following parameters shall be monitored and recorded at the indicated interval.

5/24/84

RE: APPLICATION NO. 9047
DISCHARGE PERMIT N08-0039

YD KOSTOW, PROGRAM OP. MGR.
AIR QUALITY DIVISION, D E Q
P O BOX 1760
PORTLAND, OR 97207

DEAR SIR:

YOUR LETTER OF APRIL 4, WITH THE ENCLOSED DRAFT OF THE PROPOSED DISCHARGE PERMIT NO. 08-0039 HAS BEEN RECEIVED AND REVIEWED. IT IS CLEAR THAT D E Q STAFF HAS APPLIED MUCH TIME AND EFFORT IN THE DEVELOPMENT OF THE PROPOSED PERMIT WITH REGARD TO BOTH GENERAL AND SPECIFIC AIR QUALITY CONTROLS. WE APPRECIATE THE NEED OF MINIMIZING POLLUTION FOR THE OVERALL LIVEABILITY OF OUR STATE AND FOR SAFETY AND WELFARE OF THE PEOPLE.

THERE ARE, HOWEVER, AT LEAST TWO SPECIFICS OF THE PROPOSED PERMIT WHICH, IF APPLIED TO THE OPERATION OF THE B E F INCINERATORS, WOULD SEVERELY IMPACT BOTH THE OPERATORS OF THE FACILITY AND THE PEOPLE OF CURRY COUNTY; THIS WITHOUT ANY APPRECIABLE BENEFIT TO THE LIVEABILITY OF THE AREA OR THE HEALTH AND WELFARE OF THE CITIZENS. THESE THINGS ARE DETAILED ON PAGE 3 OF THE PROPOSED PERMIT, ITEMS 6 AND 10.

WE RESPECTFULLY REQUEST THAT THESE TWO ITEMS BE DELETED IN THEIR ENTIRETY FROM THE PERMIT. WE PROPOSE TO REPLACE THEM WITH A REQUIREMENT THAT THE PERMITTEE MANUALLY RECORD LOWER AND UPPER CHAMBER TEMPERATURES AT SPECIFIED TIMES DURING THE OPERATING SCHEDULE. ~~THE REASONS~~

~~ARE AS FOLLOWS:~~
DUE TO A COMBINATION OF FACTORS THE INSTALLATION, MAINTENANCE AND OPERATION OF ~~CONTINUOUS RECORDING PYROMETERS WILL ACCOMPLISH LITTLE OR NOTHING TOWARD THE IMPROVEMENT OF AIR QUALITY IN THIS COUNTY OR IN THE STATE OF OREGON.~~

A. INCINERATION EQUIPMENT IN USE IS ~~ALREADY DESIGNED TO REDUCE POLLUTANTS TO A MINIMUM~~. SIMILAR EQUIPMENT IS IN USE IN THIS STATE, IN OTHER STATES, AND IN OTHER COUNTRIES, ~~AND IN UNPOPULATED AREAS.~~

B. B E F INCINERATORS ARE LOCATED IN A RELATIVELY ~~UNPOPULATED SECTION OF A POPULATED COUNTY.~~

C. INSTALLATION OF THESE PYROMETERS IS NOT WARRANTED SINCE ~~TEMPERATURE MONITORING EQUIPMENT~~ MINUS THE AUTOMATIC RECORDING FEATURE ~~IS AN INEFFECTIVE AND UNNECESSARY HARDSHIP ON CURRY COUNTY.~~

D. COASTAL ~~AREAS ARE VULNERABLE TO POLLUTION~~ OF STAGNANT AIR IN THE POPULATED AREAS.

E. IN PRIOR YEARS D E Q STAFF HAS INDICATED BOTH VERBALLY AT THE SITE AND BY LETTER THAT SUCH EQUIPMENT WAS UNNECESSARY.

2. INSTALLATION AND OPERATION OF SUCH EQUIPMENT (PAGE 3, ITEM 3) IS ~~UNNECESSARY AND WOULD WORK AN UNNECESSARY HARDSHIP ON CURRY COUNTY.~~

A. INCINERATION EQUIPMENT WAS PURCHASED BY CURRY COUNTY AND IS BEING OPERATED BY B E F BY A LEASE PURCHASE AND CONTRACT. ANY IMPACT ON THE OPERATOR WILL ALSO ~~BE AFFECTED BY THE CONTRACT.~~

B. CURRY COUNTY AND B E F ARE "PARTNERS" IN THE SOLID WASTE DISPOSAL BUSINESS. UP TO NOW ~~PROFITABLE~~ ARE BEING GENERATED BY THE OPERATION OF THE INCINERATION EQUIPMENT. THERE CAN BE NO REDUCTION IN MARGIN OF PROFIT SINCE ~~THEY HAVE ALREADY PURCHASED THE EQUIPMENT~~ IS MORE THAN B E F OR THE PEOPLE OF CURRY COUNTY CAN AFFORD UNDER PRESENT ECONOMIC AND BUDGETARY CONDITIONS. ~~THEY HAVE ALREADY PURCHASED THE EQUIPMENT~~ RECOVERY ~~WILL BE MADE SO THAT EQUIPMENT PURCHASE~~

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

May 25, 1984

Mr. Pete Smart, President
Brookings Energy Facility, Inc.
PO Box 1240
Brookings, OR 97415

Re: Renewal of Air Contaminant
Discharge Permit No.: 08-0039
Application No.: 9047

Dear Mr. Smart:

The Department of Environmental Quality has completed processing your permit application. Based upon the material contained in your application, the additional submissions and comments made by you and the comments received in response to the public notice, the Department has issued the enclosed Air Contaminant Discharge Permit. This permit was issued to you pursuant to Oregon Revised Statutes 468.310 and 468.320 and Oregon Administrative Rules, Chapter 340, Divisions 14-005 through 14-050, and 20-140 through 20-185.

Comments on the proposed permit were received from you and from the Chairman of the Curry County Board of Commissioners. Both parties requested that conditions 8 and 10 of the proposed permit, requiring continuous recording pyrometers, be deleted in favor of manual temperature control verification.

Continuous recording pyrometers are required at the Brookings Energy Facility in accordance with Oregon Administrative Rule 340-21-027(2). This regulation was promulgated by the Environmental Quality Commission on January 6, 1984, as part of a package of regulations for small municipal waste incinerators in coastal areas. Prior to adoption, a public hearing on the proposed regulations was held on November 21, 1983. Written comments were also solicited.

DEQ notified you of the proposed rulemaking and the opportunity for comment in a letter dated October 4, 1983. However, DEQ received no comments, either written or oral, on the proposed regulations from any party associated with the Brookings Energy Facility. In particular, no objection to the requirement that continuous recording pyrometers be installed at Brookings was received.

Mr. Pete Smart

May 25, 1984

Page 2

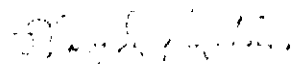
In addition to the pyrometer requirement, the regulations adopted on January 6, 1984 relax the maximum allowable particulate emissions rate. This change was made in recognition of some of the factors highlighted in your letter, including the meteorological and population density characteristics of the coastal areas, and the difficulty in attaining the existing standard with the type of equipment in use along the coast. Temperature requirements were added to insure that the relaxed particulate standards would not result in increased emission of toxic organic compounds, such as dioxin. The continuous recording pyrometers are a necessary tool for insuring compliance with the temperature requirements and, as a result, preventing excessive emissions of organic compounds. On this basis, the contribution of the recording pyrometers to preventing the deterioration of air quality cannot be dismissed.

Continuous recording pyrometers are the most effective way of collecting the required temperature data. They can provide continuous, accurate, and reliable data at an operating cost lower than that which would likely result from effective manual data collection. As a result, the requirement for installation of this equipment is retained in the enclosed permit.

If you wish to appeal any of the conditions or limitations contained in the permit, you may request a hearing before the Environmental Quality Commission or its ~~authorized representative~~, pursuant to OAR, Chapter 340, Divisions 14-025(5), and 11-005 through 11-140, and ORS Chapter 183. If you have any questions, please contact John Odisio at 229-5057.


You are urged to carefully read the permit and to take all possible steps to comply with the conditions contained therein so as to minimize degradation to the environment of Oregon.

Sincerely,


Lloyd Kostow, Manager
Program Operations
Air Quality

WS:a
AS113
Enclosure

cc: Southwest Regional Office
Coos County Branch Office
EPA



Department of Environmental Quality

VICTOR ATIYEH
Governor

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 239 5696

June 22, 1984

Mr. Pete Smart, President
Brookings Energy Facility, Inc.
PO Box 1240
Brookings, OR 97444

Re: Air Contaminant Discharge
Permit 08-0039

Dear Mr. Smart:

I have reviewed your letter of June 9, 1984 regarding Air Contaminant Discharge Permit 08-0039 for the Brookings Energy Facility. The letter requested that an amendment or variance be made regarding the permit requirement for continuous temperature recorders.

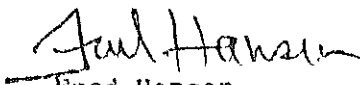
As the Air Quality staff has informed you, under Oregon Administrative Rules (OAR) 340-14-025(5), a permittee can appeal the conditions or limitations of a permit by presenting to the Director a written request for a hearing. However, deletion of permit conditions 8 and 10 regarding recording pyrometers would be a violation of OAR 340-21-027(2), and is consequently beyond the authority of the Director. An exemption from the rules would require a variance, which can only be granted by the Environmental Quality Commission.

The Commission considers specific variance requests in accordance with Oregon Regulatory Statute 468.345 (enclosed). A permittee must demonstrate that compliance with the rule being contested is inappropriate for one of the special circumstances listed in subsections (a) through (d) of the statute. If the variance request is being justified in part or in whole on financial grounds, cost information and other economic data must be provided.

Please note that variances may be limited in time. Historically, the Commission has granted variances only in cases where the permittee demonstrates a need for additional time to meet the permit conditions.

Condition 10 of permit 08-0039 contains a timetable for installation of the recording pyrometer. This condition is enforceable unless a request for a variance is pending before the Commission. Any request for a variance should be presented to the Commission, at the address given above, with the time frame required for submittal of pyrometer plans and specifications.

Sincerely,


Fred Hansen
Director

FH:s
AS173

Enclosure

cc: Air Quality Division
Southwest Regional Office

DEQ/LRAPA Guidance to Applicants for
Air Quality Control Variances

State statutes authorize the EQC and LRAPA Board of Directors to deny, grant, modify or revoke specific variances to air contamination rules and standards, subject to the conditions and limitations of ORS 468.345.

The following requirements and criteria are applicable to all air program variance requests:

First, any variance must meet the conditions of ORS 468.345. If the Commission or Board approves a variance request, it must make a finding, based on the evidence presented, that strict compliance is inappropriate due to any of the conditions below:

- a) Conditions exist that are beyond the control of the persons granted such variance; or
- b) Special circumstances render strict compliance unreasonable, burdensome or impractical due to special physical conditions or cause; or
- c) Strict compliance would result in substantial curtailment or closing down of a business, plant or operation; or
- d) No other alternative facility or method of handling is yet available.

The information, data, reports and documentations supporting at least one of these specific assertions must be submitted by the applicant.

If economic hardship is the basis for requesting a variance, to the extent practicable, the following information should be submitted:

1. Complete copy of most recent financial statement.

At a minimum, this should include a balance sheet and income statement, but any related schedules also should be obtained. (e.g., Statement of changes in financial position, supplemental schedule of administrative expenses, etc.)

2. Complete copies of financial statements for the prior two or three years.
3. Copies of tax returns for the prior two or three years.
4. Detail of ownership. (i.e., Is company owned by a single individual; a family; a wide variety of individuals; another company?)
5. Do the owners of the company in question own any other related companies/ If so, obtain financial statements and tax returns for all such entities.

6. Name and phone number of company's accountant or chief financial officer.
7. Name and phone number of company's outside accountants.
8. A clear, written evaluation and statement by the applicant of the financial consequences of failure to obtain the requested variance.

Secondly, in considering the merits of the request, the Commission or Board must evaluate the equities involved, the advantages and disadvantages to residents affected by the emissions, and to the person conducting the activity for which the variance is sought. The following criteria are typically used to make that evaluation:

- a) Demonstration of good-faith effort to comply prior to applying for the variance;
- b) How the situation of the applicant presents an unusual hardship in comparison with similar sources in the same general area;
- c) What alternate or interim control measures are to be implemented throughout the variance period;
- d) Whether the variance is properly conditioned to protect air quality to the fullest extent, including requirements for inter-

mediate compliance steps, and submittal of plans, specifications and progress reports;

- e) If the requested variance period is the shortest time practicable and compliance will be achieved at the end of it.

The information, data, reports and documentation pertaining to the operation for which the variance is sought must be submitted by the applicant.

The DEQ, or LRAPA staff report will also address these criteria and air quality impact, public health and welfare impacts, equities, advantages and disadvantages.

Under LRAPA rules, variances cannot be for a period of time longer than twelve months from the date of issuance.

Requests for variance must be filed, in writing, with the appropriate DEQ Regional Office, DEQ Headquarters or LRAPA Offices. The information contained in the written request should address the appropriate requirements and criteria listed above as fully as practicable. The request should include supporting documents, data, reports, or correspondence sufficient in scope to allow the Commission/Board to make a specific finding as required by ORS 468.345 and to rule on the request.

The DEQ or LRAPA Director will review the request and, based on the information and supporting material contained therein, will present recommendations including, but not limited to, approval, conditional approval, or denial of the request. The requestor should be prepared to appear at a regularly scheduled EQC or LRAPA Board meeting to support his request to the Commission or Board.

AIR CONTAMINANT DISCHARGE PERMIT

Department of Environmental Quality
522 Southwest Fifth, Portland, OR 97204
Mailing Address: Box 1760, Portland, OR 97207
Telephone: (503) 229-5696

Issued in accordance with the provisions of ORS 468.310

ISSUED TO:

Brookings Energy Facility, Inc.
P.O. Box 1240
Brookings, OR 97415

INFORMATION RELIED UPON:

Application No. 9047
Date Received: 1-13-84

PLANT SITE:

3/4 of a mile off of Highway 101
on Carpenterville Road,
Brookings, Oregon

ISSUED BY DEPARTMENT OF ENVIRONMENTAL QUALITY


FRED HANSEN, Director

May 25, 1984
Dated

Source(s) Permitted to Discharge Air Contaminants:

| <u>Name of Air Contaminant Source</u> | <u>Standard Industry Code as Listed</u> |
|--|---|
| Incinerator - 1000 pounds per hour and greater capacity | 4953 |

Permitted Activities

The permittee is herewith allowed to discharge exhaust gases containing air contaminants only in accordance with the permit application and the limitations contained in this permit. Until such time as this permit expires or is modified or revoked, the permittee is herewith allowed to discharge exhaust gases from those processes and activities directly related or associated thereto in accordance with the requirements, limitations, and conditions of this permit from the air contaminant source(s) listed above.

The specific listing of requirements, limitations and conditions contained herein does not relieve the permittee from complying with all other rules and standards of the Department, nor does it allow significant levels of emissions of air contaminants not limited in this permit or contained in the permit application.

Performance Standards

1. The permittee shall at all times maintain and operate all air contaminant generating processes and all contaminant control equipment at full efficiency and effectiveness, such that the emissions of air contaminants are kept at the lowest practicable levels.
2. Particulate emissions from each incinerator shall not exceed 0.2 grains per standard cubic foot corrected to 12% CO₂.
3. Visible emissions from either incinerator shall not equal or exceed an opacity of twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour.
4. The permittee shall not use any distillate fuel oil containing more than:
 - a. 0.3 percent sulfur by weight for ASTM Grade 1.
 - b. 0.5 percent sulfur by weight for ASTM Grade 2.
5. The permittee shall minimize fugitive dust emission by:
 - a. Oiling, watering, or paving, or otherwise treating vehicular traffic areas of the plant site under the control of the permittee.
 - b. Soaking the ash from the incinerators with water prior to disposal in the landfill trench.

Plant Site Emission Limit (PSEL)

6. Emissions from the sources listed shall not exceed the following:

| <u>Source</u> | <u>Particulate</u> <u>lbs/hr</u> | <u>CO</u> <u>tons/yr</u> | <u>NO_x</u> <u>tons/yr</u> | <u>VOC</u> <u>tons/yr</u> | <u>SO_x</u> <u>tons/yr</u> |
|---------------|-------------------------------------|-----------------------------|---|------------------------------|---|
| Burner #1 | 10.2 | 11.8 | 59 | 2.6 | 4.2 |
| Burner #2 | 10.2 | 11.8 | 59 | 2.6 | 4.2 |
| Fugitives | Negligible | - | - | - | - |
| Totals | <u>20.4</u> | <u>23.7</u> | <u>118</u> | <u>5.1</u> | <u>8.5</u> |

Special Conditions

7. The permittee shall maintain minimum exhaust gas temperatures and residence times as follows:

- a. Prior to the initial charge of wastes and for the first 30 minutes of incineration of the initial charge, 1600° F for 1 second.
 - b. For the period beginning 30 minutes after the initial charge of wastes to the time of the final charge, 1800° F for 1 second or 1700° F for 2 seconds or a temperature and corresponding residence time linearly interpolated between the aforementioned two points.
 - c. For a 2 hour period after the final charge of waste, 1600° F for 1 second.
8. The permittee shall install, calibrate, maintain, and operate according to manufacturer's specifications a continuous recording pyrometer. The pyrometer shall be located at a point within the incinerator exhaust system which has been approved by the Department.
 9. The permittee shall not incinerate any materials which may emit potentially poisonous or toxic substances. Materials which are not to be incinerated should include any significant identifiable quantities of pesticides and herbicides, electrical switching gear, or heavy metals such as zinc, cadmium, lead and mercury.

Compliance Demonstration Schedule

10. The permittee shall provide for recording pyrometers as specified in Condition 8 in accordance with the following schedule:
 - a. By no later than 60 days after issuance of this permit, the permittee shall submit detailed plans and specifications, to the Department of Environmental Quality for review and approval.
 - b. By no later than 120 days after issuance of this permit, the permittee shall complete the installation of and place in operation the recording pyrometers.
 - c. Within seven (7) days after item b above is completed, the permittee shall inform the Department in writing that the item has been accomplished.

Monitoring and Reporting

11. The permittee shall effectively inspect and monitor the operation and maintenance of the plant and associated air contaminant control facilities. A record of all such data shall be maintained for a period of two years and be available at the plant site at all times for inspection by the authorized representatives of the Department. At least the following parameters shall be monitored and recorded at the indicated interval.

| <u>Parameter</u> | <u>Minimum Monitoring Frequency</u> |
|--|-------------------------------------|
| a. The amount of solid waste incinerated | Monthly |
| b. Fuel consumption (total) | Monthly |
| c. Secondary chamber temperature | Continuous |

12. The permittee shall report to the Department by January 15 of each year this permit is in effect the following information for the preceding calendar year:

- Quantity of solid waste incinerated on annual basis.
- Maximum quantity of solid waste incinerated per day (calculated or actual).
- Quantities and types of fuels used on annual basis.
- Maximum quantity of fuel used per day.

Fee Schedule

13. The Annual Compliance Determination Fee for this permit is due on January 1 of each year this permit is in effect. An invoice indicating the amount, as determined by Department regulations, will be mailed prior to the above date.

P08003.9

General Conditions and Disclaimers

- G1. The permittee shall allow Department of Environmental Quality representatives access to the plant site and pertinent records at all reasonable times for the purposes of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emission discharge records and otherwise conducting all necessary functions related to this permit.
- G2. The permittee is prohibited from conducting open burning except as may be allowed by OAR Chapter 340, Sections 23-025 through 23-115.
- G3. The permittee shall notify the Department in writing using a Departmental "Notice of Construction" form, or Permit Application Form, and obtain written approval before:
- a. Constructing or installing any new source of air contaminant emissions, including air pollution control equipment, or
 - b. Modifying or altering an existing source that may significantly affect the emission of air contaminants, or
 - c. Making any physical change which increases emissions, or
 - d. Changing the method of operation, the process, or the fuel use, or increasing the normal hours of operation to levels above those contained in the permit application and reflected in this permit and which result in increased emissions.
- G4. The permittee shall notify the Department at least 24 hours in advance of any planned shutdown of air pollution control equipment for scheduled maintenance that may cause a violation of applicable standards.
- G5. The permittee shall notify the Department by telephone or in person within one (1) hour of any malfunction of air pollution control equipment or other upset condition that may cause a violation of the applicable standards or within one (1) hour of the time the permittee knew or reasonably should have known of its occurrence. Such notice shall include the nature and quantity of the increased emissions that have occurred and the expected duration of the breakdown. The Departmental telephone numbers are:
- | | | | |
|----------|----------|-----------|----------|
| Portland | 229-5263 | Medford | 776-6010 |
| Salem | 378-8240 | Pendleton | 276-4063 |
| Bend | 388-6146 | | |
- G6. The permittee shall at all times conduct dust suppression measures to meet the requirements set forth in "Fugitive Emissions" and "Nuisance Conditions" in OAR Chapter 340, Sections 21-050 through 21-060.
- G7. Application for a modification of this permit must be submitted not less than 60 days prior to the source modification. A Filing Fee and an Application Processing Fee must be submitted with an application for the permit modification.
- G8. Application for renewal of this permit must be submitted not less than 60 days prior to the permit expiration date. A Filing Fee and an Annual Compliance Determination Fee must be submitted with the application for the permit renewal.
- G9. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.
- G10. This permit is subject to revocation for cause as provided by law.



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

October 4, 1983

Board of Commissioners
Curry County
Curry County Courthouse
Gold Beach, OR 97444

Re: Public Hearing on Proposed
Coastal Incinerator Rule

Gentlemen:

Enclosed is the announcement of a public hearing on a proposal by the Department of Environmental Quality to adjust its rules for small municipal waste incinerators operated on the coast of Oregon.

The hearing will be considered for authorization at the October 7, 1983 Environmental Quality Commission meeting to be held in Portland at 9:00 a.m. at 522 S.W. 5th, room 1400.

The hearing is set for November 21, 1983 at 12:00 noon, the Monday of Thanksgiving week, in the City Council Chambers at Seaside's City Hall, 851 Broadway. See ATTACHMENT B of the enclosed for details. If you desire to testify at Seaside after 2:00 p.m., please notify the undersigned so that the hearing will not be adjourned before you are able to testify.

Your interest is understood and your comments will be taken into consideration.

Sincerely,

Peter B. Bosserman
Senior Environmental Engineer
Air Quality Division

FBB:a
AA3885

Enclosure: Complete Proposed Rule Package
(Agenda Item D)

cc: Cross Bay Office



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

October 4, 1983

Pete Smart
Brookings Energy Facility
Box 1240
Brookings, OR 97415

Re: Public Hearing on Proposed
Coastal Incinerator Rule

Gentlemen:

Enclosed is the announcement of a public hearing on a proposal by the Department of Environmental Quality to adjust its rules for small municipal waste incinerators operated on the coast of Oregon.

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Your interest is understood and your comments will be taken into consideration.

Sincerely,

Peter B. Bosserman
Senior Environmental Engineer
Air Quality Division

PBB:a
AA3885

Enclosure: Complete Proposed Rule Package
(Agenda Item D)



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

June 22, 1984

Mr. Pete Smart, President
Brookings Energy Facility, Inc.
PO Box 1240
Brookings, OR 97444

Re: Air Contaminant Discharge
Permit 08-0039

Dear Mr. Smart:

I have reviewed your letter of June 9, 1984 regarding Air Contaminant Discharge Permit 08-0039 for the Brookings Energy Facility. The letter requested that an amendment or variance be made regarding the permit requirement for continuous temperature recorders.

As the Air Quality staff has informed you, under Oregon Administrative Rules (OAR) 340-14-025(5), a permittee can appeal the conditions or limitations of a permit by presenting to the Director a written request for a hearing. However, deletion of permit conditions 8 and 10 regarding recording pyrometers would be a violation of OAR 340-21-027(2), and is consequently beyond the authority of the Director. An exception from the rules would require a variance, which can only be granted by the Environmental Quality Commission.

The Commission considers specific variance requests in accordance with Oregon Regulatory Statute 468.345 (enclosed). A permittee must demonstrate that compliance with the rule being contested is inappropriate for one of the special circumstances listed in subsections (a) through (d) of the statute. If the variance request is being justified in part or in whole on financial grounds, cost information and other economic data must be provided.

Please note that variances may be limited in time. Historically, the Commission has granted variances only in cases where the permittee demonstrates a need for additional time to meet the permit conditions.

Condition 10 of permit 08-0039 contains a timetable for installation of the recording pyrometer. This condition is enforceable unless a request for a variance is pending before the Commission. Any request for a variance should be presented to the Commission, at the address given above, with the time frame required for submittal of pyrometer plans and specifications.

Sincerely,

Original Signed by
Fred Hansen

Fred Hansen
Director

JUN 28 1984

FH:s
AS173
Enclosure
cc: Air Quality Division
Southwest Regional Office

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

August 3, 1984

Mr. Pete Smart, President
Brookings Energy Facility
PO Box 1240
Brookings, OR 97415

Dear Mr. Smart:

Your request for a variance from certain conditions of Air Contaminant Discharge Permit 08-0039 has been received by the Department. The request will be submitted to the Environmental Quality Commission for the September 14, 1984 meeting in Bend. You will be given the opportunity to provide comments to the Commission at that time.

A report is enclosed which explains the process used by the Commission to evaluate a variance request. It also highlights the responsibilities of the applicant for providing supporting information. Pages 2 and 3 detail the information which should be submitted if the basis for the variance request is economic hardship. Note that Item 8 requires an explanation of the financial consequences of not obtaining the variance, i.e., the cost of obtaining and installing the required equipment. The letter of June 22, 1984 from Fred Hansen, Director of DEQ, to you mentioned that this information is required.

You have also cited 468.345 (1)(b) in the variance request. This subsection applies to "special physical conditions." It would be helpful if you could document precisely what special physical conditions exist at your facility. In other words, what is the space restriction or other physical problem which prevents installation of the required equipment?

The information just described must be available to the Commission if they are to make an informed decision on your request. Failure to submit the information would not seem to be to your benefit. Because of the scheduling deadlines involved, it is important that we receive any further input from you by August 15, 1984.

If you have any further questions, please contact Wendy Sims of the Air Quality Division at 229-5259 or Reuben Kretzschmar of the Coos Bay Branch Office at 269-2721.

Sincerely,

Lloyd Kostow, Manager
Program Operations
Air Quality Division

WS:s
AS351
Enclosure
cc: Coos Bay Branch Office
Southwest Region Office

County of Coos

HIGHWAY DEPARTMENT
 COOS COUNTY COURTHOUSE
 COQUILLE, OREGON 97423

November 2, 1983

Department of Environmental Quality
 Attn: Peter B. Bosserman
 Senior Environmental Engineer
 Air Quality Division
 522 S.W. Fifth Avenue
 Box 1760
 Portland OR 97207

STATE OF OREGON
 DEPARTMENT OF ENVIRONMENTAL QUALITY
 RECEIVED
 NOV 08 1983

AIR QUALITY CONTROL

RE: Proposed Amended Rule

Dear Mr. Bosserman:

The Coos County Solid Waste Department supports the proposed change in the emission limits and requirements. The increase to .2 grains per cubic foot will allow us to operate without a variance to the permit.

The proposed requirements regarding temperature and time should present no problems as we are currently operating at these levels. The units are now equipped with pyrometers but not recorders.

A requirement for continuous recording would necessitate purchasing and installing this extra equipment. While this is not a great cost (est. of \$500.00 per unit x 4) it along with the continuing service and maintenance, does add another cost to the facility. We would therefore propose a requirement for the plant operator to log the temperatures, each 1/2 hour on start up and shut down, each hour during continuous operation.

Sincerely,
 COOS COUNTY HWY DEPT.

J. R. Perkins
 J. R. Perkins,
 Public Works Director

JRP/de

c.c. County Counsel
 Board of Commissioners

Brookings Energy Facility
Post Office Box 1240
Brookings, OR 97415

August 13, 1984

Environmental Quality Commission
Post Office Box 1760
Portland, OR 97207

Dear Commissioners:

This letter is continuing our urgent request for a variance as described in our letter of July 14, 1984 (attached as Exhibit A).

Due to being allowed only a few days to submit certain information in preparation for your meeting September 14, 1984 in Bend (Exhibit K) we are forced to abbreviate this letter by referring to prior correspondence by "Exhibits." (copies all attached) We do this since we have no way to know that you have all the information we have sent previously.

Our request is being made on the basis of (1) Common sense, (2) ORS 468.345 subsections 1-4, and (3) Economic Hardship. These three items will be addressed individually although at certain points the discussion will overlap.

(1) Common sense: It is unreasonable to assume that the legislature meeting in air conditioned rooms in Salem or DEQ staff working in similar quarters can know more about the quality of the air in rural Curry County than the people who live, work, and breathe here every day. This facility has been in operation for five years yet no visitor to Brookings from anywhere has ever registered any complaint about pollution of the air. We see no need to change something that is working so well. (See Exhibits C and D). Also see page 2, Exhibit A, underlined in red. Please also note marked sections of Exhibit G. We repeat our statement of July 14, 1984 (borrowed from ORS 358.345); We believe that strict compliance to the rules of DEQ in this case to be unreasonable, burdensome, and impractical. . . "

(2) ORS 368.345: This statute gives authority to grant variances to OAR 340-21-027 to the Environmental Quality Commission if it finds strict compliance to be inappropriate. We believe subsection (1)(b) to apply particularly to Curry County's position and situation, with regard to both "common sense" and "economic hardship": see Exhibit B. Mr Kostow, in his letter (Exhibit K) interprets "physical" to mean "space restriction". We do not agree with that limited definition of "physical condition." It could also be applied to environmental conditions which are also physical. Subsection (4) has a bearing on Curry county's situation in that it obligates the body authorized to grant variances to give consideration to equities involved and to weigh advantages and disadvantages to residents of the area. At this point the discussion of ORS 368.345 certainly crosses into the economic situation.

DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 17 1984

AIR QUALITY CONTROL
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 17 1984
OFFICE OF THE DIRECTOR

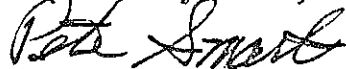
page 2

(5) Economic hardship: As Commissioner Mayea explains in his letter to D E Q (Exhibit C) the arrangement for solid waste disposal in Curry County is a cooperative effort of public and private entities. At present county funds pay about 70% of solid waste disposal costs, meaning that increased costs could affect costs by all residents of the county. The impending shut-down of one of the largest employers in Curry County will make increased costs in the future even harder to take. As now operating, the system is doing the job well, particularly when compared to the situation only a few years ago (see Exhibit I, page 1-red marked). Brookings Energy Facility has continually operated at a loss even with everyone involved "chipping in". Anyone who has closely observed the operation can testify that it is run using the least expense as possible. If A N Y expense is added, everyone - - Curry residents, Curry County Agencies, and operators of B E F will feel it. A negative margin of profit simply means that there is no room for any non-profit making expenditures. We know that the added equipment we are being asked to install and maintain and operate is not designed or expected to make any profit for anybody.

Since our time is limited (we work in solid waste disposal and do not have an office staff and secretaries), we will curtail our remarks here except to respectfully request that the commission carefully consider all the attached Exhibits. Our accountant is Jeff Kemp who may be reached at 247-7216 in Gold Beach. The County Commissioners can be reached in Gold Beach at 247-7011.

We will make every effort to be in attendance at your meeting in Bend although that could be difficult since we have no travel budget or replacement personnel for our everyday jobs. We have also asked county officials to attend.

Respectfully Yours,



Pete Smart, President
Brookings Energy Facility

LIST OF ATTACHED EXHIBITS

| | <u>Location in Staff Report</u> |
|---|---------------------------------|
| A. letter to EQC from BEF-7/14/84 | see Attachment A |
| B. ORS 468.345 | see Attachment A |
| C. letter to DEQ from Curry County Commissioners-5/14/84 | see Attachment A |
| D. letter to DEQ from City of Brookings-5/25/84 | see Attachment A |
| E. letter to BEF from DEQ-4/4/84 | see Attachment A |
| F. page 3 of Permit #08-0039 | Attachment B |
| G. letter to DEQ from BEF-5/14/84 | see Attachment A |
| H. letter to BEF from DEQ-5/25/84 | see Attachment A |
| I. letter to DEQ (Hansen) from BEF-6/2/84 | see Attachment A |
| J. letter from DEQ to BEF-6/22/84 | Attachment E |
| K. letter from DEQ to BEF-8/3/84 | Attachment F |
| L. Earnings statement for BEF 1983 | attached |
| M. Detail of cost of purchase, installation, and maintenance did not reach us intime--can be supplied later | |

* This column added by DEQ

Exhibit L

BROOKINGS ENERGY FACILITY
EARNINGS STATEMENT
1/ 1/83 TO 12/31/83

| | QUARTER | | YEAR-TO-DATE | |
|---------------------------------|---------------------|---------------|-----------------------|---------------|
| | \$ | % | \$ | % |
| REVENUE | | | | |
| COUNTY ADVANCES | \$ 57,179.57 | 63.3% | \$ 228,409.21 | 75.9% |
| TIPPING FEES | 32,396.66 | 35.9 | 71,450.78 | 23.7 |
| CARDBOARD SALVAGE | 790.32 | 0.9 | 1,104.08 | 0.4 |
| TOTAL REVENUE | \$ 90,366.55 | 100.0% | \$ 300,964.07 | 100.0% |
| OPERATING EXPENSES | | | | |
| WAGES & SALARIES EXP | \$ 16,147.13 | 17.9% | \$ 65,868.09 | 21.9% |
| PAYROLL TAXES EXP | 1,388.85 | 1.5 | 6,580.21 | 2.2 |
| SUPPLIES EXPENSE | 1,038.98 | 1.1 | 1,639.16 | 0.5 |
| REPAIRS-MAINTENANCE | 6,130.71 | 6.8 | 2,941.03 | 1.0 |
| ADVERTISING EXPENSE | 48.01 | 0.1 | 58.01 | 0.0 |
| UTILITIES EXPENSE | 926.02 | 1.0 | 3,527.90 | 1.2 |
| PROFESSIONAL FEES | 729.00 | 0.8 | 1,804.00 | 0.6 |
| VEHICLE EXPENSE | 24.85 | 0.0 | 241.25 | 0.1 |
| INSURANCE EXPENSE | 2,042.69 | 2.3 | 7,270.02 | 2.4 |
| TELEPHONE EXPENSE | 1,154.39 | 1.3 | 2,432.00 | 0.8 |
| DUES, LICENSES, FEES | 340.00 | 0.4 | 360.00 | 0.1 |
| PROPERTY TAXES EXP. | 178.20 | 0.2 | 178.20 | 0.1 |
| FACILITY LEASE \$1331 | 5,324.00 | 5.9 | 17,303.00 | 5.7 |
| OFFICE EXPENSE | 15.10 | 0.0 | 85.84 | 0.0 |
| TRAVEL EXPENSE | | | 235.00 | 0.1 |
| RENT EXPENSE | 750.00 | 0.8 | 750.00 | 0.2 |
| FUEL EXPENSE | | | 16.09 | 0.0 |
| PROPANE | 268.39 | 0.3 | 897.38 | 0.3 |
| EMPLOYEE BENEFITS | | | 600.00 | 0.2 |
| HOUSING | 750.00 | 0.8 | 2,970.00 | 1.0 |
| LAND LEASE | 1,350.00 | 1.5 | 5,400.00 | 1.8 |
| TIRES | 1,494.92 | 1.7 | 3,767.53 | 1.3 |
| ORGANIZATION EXPENSE | (134.00) | 0.1 | | |
| FREIGHT | | | 353.92 | 0.1 |
| TOTAL OPERATING EXPENSES | \$ 39,967.24 | 44.2% | \$ 125,278.63 | 41.6% |
| OPERATING PROFIT (LOSS) | \$ 50,399.31 | 55.8% | \$ 175,685.44 | 58.4% |
| OTHER INCOME | | | | |
| SAIF DIVIDEND | | | \$ 85.00 | 0.0% |
| W.C. DISPOSAL FEES | 2,145.50 | 2.4 | 9,855.19 | 3.3 |
| HORTON OVERCHARGE | 6,501.00 | 7.2 | 6,501.00 | 2.2 |
| TOTAL OTHER INCOME | \$ 8,646.50 | 9.6% | \$ 16,441.19 | 5.5% |
| OTHER EXPENSE | | | | |
| INTEREST EXPENSE | \$ 1,081.30 | 1.2% | \$ 56,636.96 | 18.8% |
| BEF HAULING ASH | 600.00 | 0.7 | 2,400.00 | 0.8 |
| STATE EXCISE TAX | 10.00 | 0.0 | 10.00 | 0.0 |
| W.C. HAULING | 1,525.00 | 1.7 | 6,100.00 | 2.0 |
| W.C. LABOR | 2,550.00 | 2.8 | 10,200.00 | 3.4 |
| W.C. CAT WORK | 1,625.00 | 1.8 | 6,500.00 | 2.2 |
| W.C. SUPERVISION | 675.00 | 0.7 | 2,700.00 | 0.9 |
| DEPRECIATION EXPENSE | 28,195.00 | 31.2 | 112,780.00 | 37.5 |
| ORGANIZATION EXP. | 272.00 | 0.3 | 540.00 | 0.2 |
| TOTAL OTHER EXPENSE | \$ 36,533.30 | 40.4% | \$ 197,866.96 | 65.7% |
| NET PROFIT (LOSS) | \$ 22,512.51 | 24.9% | \$ (5,740.33) | 1.9% |



Department of Environmental Quality
SOUTHWEST REGION — Coos Bay Branch Office

490 NORTH SECOND STREET, COOS BAY, OREGON 97420 PHONE (503) 269-2721

WLS
file
Attachment B

October 22, 1984

Pete Smart, President
Brookings Energy Facility
Post Office Box 1240
Brookings, Oregon 97415

RE: AQ-Curry County
Air Contaminant Discharge
Permit No. 08-0039

As you are aware, on September 14, 1984 the Environmental Quality Commission approved a modified variance for the Brookings Energy Facility. An addendum to the Air Contaminant Discharge Permit for the Facility will be issued shortly to reflect the variance conditions.

Alternative 2, as adopted by the Commission, allows for manual recording of incinerator temperatures for a period of one year. At the end of that year, the variance will be re-evaluated by the Commission. As described on Page 5 of Agenda Item J, September 14, 1984, the staff report regarding your variance, Alternative 2 requires that the temperatures be recorded at fifteen-minute intervals during combustion of waste, except during warm-up, when the recording interval is to be five minutes. Since the variance went into effect upon approval by the Commission, manual temperature recording should have commenced immediately and should now be in practice.

The enclosed form is to be used for the required temperature recordings. As noted on the form, a copy of each completed form must be maintained at the Brookings Energy Facility until further notice. These forms shall be available for inspection by authorized Department personnel at all times. The original copy of each completed form shall be sent to the Department by the fifth day of the following month. Directions for completing the form are included on the temperature record.

If you have questions on the conditions or requirements of the variance, please contact our office.

Ruben Kretzschmar
Branch Manager

RK:dmr
encls

cc: Air Quality
Southwest Region Office

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
OCT 24 1984

AIR QUALITY CONTROL

BROOKINGS ENERGY FACILITY
Box 1240
Brookings, OR 97415

file 06-0037

Attachment C

Lloyd Kostow
Dept. of Environmental Quality
Box 1760
Portland, OR 97207

November 9, 1984

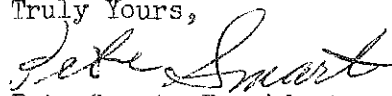
Dear Sir:

We have received your letter of October 25, 1984 with the proposed addendum to Air Contaminant Discharge Permit No. 08-0039. You stated that the addendum becomes effective 20 days from the date of the letter unless comments are received by the department.

We do have some comments to make concerning the addendum. We were appalled when we read the detail of the addendum. We were present at the E Q C meeting in Bend when the variance was granted. This addendum is not recognizable as what we thought was granted. We were not told of a lengthy staff report which included on Page 5 an "Alternative 2". We received a letter from the Coos Bay office telling us of this "alternative 2" and how that it described our variance. Why wasn't that information presented for our information at the meeting? If it had been we would have insisted that it be discussed then. We still do not know anything else of what is in the report. The requirements of recording temperatures at "5" and "15" minute intervals and for "2 hours" after the final charge of waste is loaded are unbelievable. These details successfully defeat the whole purpose of the requested variance. We had in mind something more like two recordings in the first hour and then a recording every 2 hours until the last waste is loaded. Anyone who really knows what is involved in operation of these incinerators could tell by a graph formed from those recordings what was going on.

We are hopeful that a compromise can be worked out with the staff. We can not even start to operate by those unworkable detailed rules.

Truly Yours,


Pete Smart, President
Brookings Energy Facility

PS:tvs
cc:Coos Bay Branch Office
Curry County Commissioners

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 15 1984
AIR QUALITY CONTROL

Permit Number: 08-0039
Expiration Date: 2-1-89
Page 1 of 2 Pages

AIR CONTAMINANT DISCHARGE PERMIT

Department of Environmental Quality
522 SW Fifth, Portland, OR 97204
Mailing Address: Box 1760, Portland, OR 97207
Telephone: (503) 229-5696

Issued in accordance with the provisions of ORS 468.310

ISSUED TO:

Brookings Energy Facility, Inc.
PO Box 1240
Brookings, OR 97415

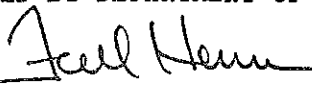
REFERENCE INFORMATION:

Environmental Quality Commission
action of September 14, 1984

PLANT SITE:

3/4 of a mile off of Highway 101
on Carpenterville Road,
Brookings, Oregon

ISSUED BY DEPARTMENT OF ENVIRONMENTAL QUALITY



Fred Hansen, Director

October 25, 1984
Date

ADDENDUM NO. 1

In accordance with OAR Chapter 340, Section 14-040, Air Contaminant Discharge Permit No. 08-0039, Conditions 8 and 10 now read as follows:

- 8. The permittee shall provide a record of the operating temperature of each unit as described below:
 - a. The permittee shall maintain a written record of the temperature in the secondary chamber of each unit during the combustion of waste, starting at the time when the initial charge is loaded and continuing until at least 2.0 hours have elapsed since the final charge was loaded. Temperatures must be recorded at each incinerator at five minute intervals during warm-up and at fifteen minute intervals during the combustion phase. The record shall be maintained on forms provided by the Department. The original copy of each completed form shall be sent to the Department by the 5th day of the following month. A copy of the original shall be maintained at the plant site until further notice and shall be available at all times for inspection by the authorized representatives of the Department.

Permit Number: 08-0039
Expiration Date: 2-1-89
Page 2 of 2 Pages

- b. At a meeting on or before its first meeting after September 14, 1985, the Environmental Quality Commission will review the performance of the permittee under Condition 8(a). At that time, the Commission may continue, alter, or revoke the variance from OAR 340-21-027(2), granted on September 14, 1984. A revocation of the variance would result in the permittee being required to install, calibrate, maintain and operate a continuous recording pyrometer for each incinerator.

10. Deleted.

P08003.9A



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

December 10, 1984

Mr. Pete Smart, President
Brookings Energy Facility
PO Box 1240
Brookings, OR 97415

Re: Air Contaminant Discharge
Permit No. 08-0039

Dear Mr. Smart:

Having reviewed your letter of November 9, 1984 to Mr. Lloyd Kostow, the Air Quality Division finds no reason to delay implementation of the addendum to Air Contaminant Discharge Permit (ACDP) 08-0039 issued on October 25, 1984. Failure to immediately implement the temperature recording requirements of the permit addendum will be considered to be a permit violation by the Department.

On January 6, 1984, after a public hearing was announced and conducted, the Environmental Quality Commission (EQC) adopted Oregon Administrative Rule (OAR) 340-21-027(2), which requires the installation and operation of a continuous temperature recorder and operation at specified temperatures for each municipal waste incinerator in a coastal county. On May 25, 1984, ACDP 08-0039 for the Brookings Energy Facility (BEF) was renewed with the requirements for maintaining minimum operating temperatures and installing temperature recorders. At your request, on September 14, 1984, the EQC granted BEF a temporary variance from the temperature recorder requirement provided that temperature recording be conducted manually at 5 minute intervals during warm-up and at 15 minute intervals during the combustion phase.

A draft permit addendum reflecting the variance approval by the EQC was sent to you on October 25, 1984. Your comments on the draft permit were received on November 15, 1984, and have been reviewed by the Air Quality Division. You acknowledge that you were present at the September 14, 1984 EQC meeting at which your variance request was considered. A partial transcription of the tape made during the EQC's consideration of that request is enclosed. It clearly shows that the variance approved by the EQC requires that temperatures be recorded at 5 minute intervals during warm-up and at 15 minute intervals during the combustion phase. A copy of the staff report describing Alternative 2 was provided for you. If you have not retained it for your files, an additional copy can be made available.

Mr. Pate Smart
December 4, 1984
Page 2

Mr. Ruben Kretzschmar of the Coos Bay office of DEQ will be in contact with you to verify the compliance status of the Brookings Energy Facility. Enforcement action will be initiated by the Department if the facility is not found to be in compliance. If you no longer wish to conduct manual temperature recording, you do have the option of installing the temperature recording equipment required under OAR 340-21-027(2).

Sincerely,

Fred Hansen
Director

Original Signed By
Fred Hansen

Dec 7 1984

FH:s

AS833

Enclosure

cc: Environmental Quality Commission
Curry County Commissioners
Coos Bay Branch Office, DEQ
Southwest Region Office, DEQ
Solid Waste Division, DEQ
Air Quality Division, DEQ



Department of Environmental Quality

SOUTHWEST REGION — Coos Bay Branch Office

490 NORTH SECOND STREET, COOS BAY, OREGON 97420 PHONE (503) 269-2721

July 23, 1985

CERTIFIED MAIL NO. P489681890
RETURN RECEIPT REQUESTED

Pete Smart, President
Brookings Energy Facility, Inc.
Post Office Box 1240
Brookings, Oregon 97415

John Mayea, Chairman
Curry County Commissioners
Post Office Box 746
Gold Beach, Oregon 97444

RE: AQ-Curry County
Brookings Energy Facility
Permit No. 08-0039
NOV-AQ-SWR/C-85-72

On June 19, 1985, the Department conducted an inspection of the modular incinerators serving Brookings Energy Facility, Inc. near Brookings, Oregon. The purpose of this visit was to assess the extent of compliance with the Air Contaminant Discharge Permit (ACDP) issued for this facility. The report prepared as a result of this visit is enclosed for your information and action.

At the time of this inspection the two modular incinerators were functioning in compliance with the visual opacity requirements contained in the Air Contaminant Discharge Permit. During this visit it was determined the facility was not operating in compliance with other permit requirements, specifically:

- 1) Upon inspecting the municipal garbage to be incinerated it was noted that medical laboratory waste was commingled with the refuse. These potentially pathogenic wastes are expressly prohibited in Schedule A(1) of the Solid Waste Disposal Permit (No. 321) issued for this facility, as well as ACDP Condition 9. We require that your company take the appropriate action to ensure these wastes are not disposed of at this site;
- 2) A review of the monitoring reports indicates initial start up temperatures are not being met pursuant to Special Condition 7(a). Initial start up temperatures prior to the initial charge of wastes and for the first 30 minutes of incineration are significantly less than the required 1600° F for 1 second in the secondary chamber.

In the past you have contended this permit condition cannot be met due to your method of operation and the physical limitations of incinerators. The Department has taken your position on this matter under advisement, and is currently evaluating the feasibility of this

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JUL 31 1985

AIR QUALITY CONTROL

Brookings Energy Facility, Inc.
Curry County Commissioners
July 23, 1985
Page 2

requirement. Until a final determination is made this permit condition remains in effect. Therefore, we require your company make every possible effort to comply with the condition;

- 3) At the time of this inspection the two consumat CS-1200 incinerators were functioning at the required temperature in the secondary chamber. We note, however, that a review of the facility's monitoring records reveals the facility is not in compliance with this requirement during the extended start-up phase of the burn.

ACDP Special Condition 7(G) states, "For the period beginning 30 minutes after the initial charge of wastes to the time of final charge, 1800^oF for 1 second or 1700^oF for 2 seconds. . ." Because of the extended start phase the required temperatures are not being met until three or four hours after the initial charge;

- 4) Special Condition 7(c) of your ACDP states, "For a 2 hour period after the final charge of waste, 1600^oF for 1 second." A review of the company's handwritten documented temperature recordings reveals that the last temperature recording is for the final charge of municipal garbage into the incinerator. After the final charge the temperature recordings stop. Therefore, it is not possible to assess compliance with this condition due to insufficient monitoring. In order to provide the necessary data to determine compliance with this condition additional monitoring is necessary. You are required to continue logging temperature recordings for two hours after the final charge to ensure compliance with this condition.

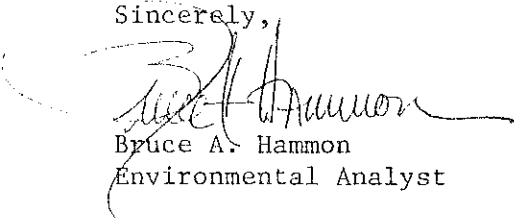
On September 14, 1984, the Environmental Quality Commission (EQC) granted your company a one-year variance from continuous recording pyrometer requirements contained in Condition 8 of the ACDP. We would like to take this opportunity to point out that the variance is a limited duration exception that expires September 14, 1985. During the regularly scheduled meeting of the Environmental Quality Commission to be held in Bend, Oregon, on September 27, 1985, the Commission will review the status of your variance. At that time, the EQC may continue, alter, or revoke the variance that was granted September 14, 1984. If you have questions or comments on the variance please contact Wendy Sims of our Air Quality Division in Portland. Written comments must be received by the Department prior to August 23, 1985, for inclusion in the staff report to the Commission.

A reinspection of the facility will be schedule within the next 30 to 60 days to assess the compliance status on the above items.

Brookings Energy Facility, Inc.
Curry County Commissioners
July 23, 1985
Page 2

In the event questions arise on the above, or the Air Contaminant Discharge Permit, please feel free to contact this office for assistance.

Sincerely,



Bruce A. Hammon
Environmental Analyst

BAH:dmr
encl
cc: Air Quality Division (Sims/Kostow)
Southwest Region (Gary Grimes)

DEPARTMENT OF ENVIRONMENTAL QUALITY

SOURCE INSPECTION FORM

PETTY SMART
469 2425

- VWC
- SW
- AQ
- NC

COUNTY: CURRY

SOURCE NAME: BROOKINGS ENERGY FACILITY

SOURCE ADDRESS: CARPENTERSVILLE ROAD
BROOKINGS

OFFICIAL CONTACTED: PETTY SMART
ENTIRE SOURCE

000

| TABLE A PARA | PREP. TIME | TRANS. TIME | INSPECTION TIME | PAPER TIME |
|--------------|------------|-------------|-----------------|------------|
| 444 | 4 | 30 | 20 | 5 |
| | | | | |
| | | | | |

| PERMIT NUMBER | | POINT | ACTION | | | DATE SCHEDULED | | | DATE ACHIEVED | | | RESULT | INSPEC. NO. |
|---------------|--------|-------|--------|------|----|----------------|-----|-----|---------------|-----|-----|--------|-------------|
| CO. | SOURCE | | NO. | TYPE | | MO. | DAY | YR. | MO. | DAY | YR. | | |
| 08 | 0039 | 000 | 27 | 7 | 07 | 05 | 01 | 85 | 06 | 19 | 85 | C | J110 |

- 8.1 LIKE FUSE, INDICATORS (CONSENT) (S1400) OPERATING IN COMPLIANCE WITH 4151
- 8.2 DIAL CAPACITY LIMITS (55% BOTH UNITS); FUEL LIMITS NOT IN COMPLIANCE WITH 1
- 8.3 STARTUP TEMPERATURE, KEYS, OR POST BURN MONITORING, REQUIREMENTS
- 8.4 IN COMPLIANCE WITH 18001 KEYS, IN COMPLIANCE WITH 18001 KEYS

| COMPLIANCE STATUS (RESULT CODE) | TREATMENT/PROCESS EQUIPMENT - ADDITIONAL REMARKS - OPERATING CONDITIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---------------------------------------|----------------------------|-------------|-----------------------|----------------------------|--|----------------------------|------------------------|----------------------------|----------------------------|----------------------------|--------------------|----------------------------|----------------------------|----------------------------|--------------------|----------------------------|---------------------------------------|----------------------------|------------------------|----------------------------|----------------------------|----------------------------|---------------------|----------------------------|----------------------------|----------------------------|-------------------|----------------------------|----------------------------|----------------------------|--------------------|----------------------------|----------------------------|----------------------------|-------|----------------------------|----------------------------|--|--|
| <table border="0"> <tr> <td></td> <td>IN COMP.</td> <td>NOT IN COMPLIANCE</td> <td>ON SCHEDULE</td> </tr> <tr> <td>All permit conditions</td> <td><input type="checkbox"/> Q</td> <td></td> <td><input type="checkbox"/> I</td> </tr> <tr> <td>Permit emission limits</td> <td><input type="checkbox"/> R</td> <td><input type="checkbox"/> A</td> <td><input type="checkbox"/> J</td> </tr> <tr> <td>Emission standards</td> <td><input type="checkbox"/> S</td> <td><input type="checkbox"/> B</td> <td><input type="checkbox"/> K</td> </tr> <tr> <td>Performance reqts.</td> <td><input type="checkbox"/> T</td> <td><input checked="" type="checkbox"/> X</td> <td><input type="checkbox"/> L</td> </tr> <tr> <td>Monitoring & Reporting</td> <td><input type="checkbox"/> U</td> <td><input type="checkbox"/> D</td> <td><input type="checkbox"/> M</td> </tr> <tr> <td>Open burning limits</td> <td><input type="checkbox"/> V</td> <td><input type="checkbox"/> E</td> <td><input type="checkbox"/> N</td> </tr> <tr> <td>Procedural Reqts.</td> <td><input type="checkbox"/> W</td> <td><input type="checkbox"/> F</td> <td><input type="checkbox"/> O</td> </tr> <tr> <td>Fugitive emissions</td> <td><input type="checkbox"/> X</td> <td><input type="checkbox"/> G</td> <td><input type="checkbox"/> P</td> </tr> <tr> <td>Other</td> <td><input type="checkbox"/> Y</td> <td><input type="checkbox"/> H</td> <td></td> </tr> </table> | | IN COMP. | NOT IN COMPLIANCE | ON SCHEDULE | All permit conditions | <input type="checkbox"/> Q | | <input type="checkbox"/> I | Permit emission limits | <input type="checkbox"/> R | <input type="checkbox"/> A | <input type="checkbox"/> J | Emission standards | <input type="checkbox"/> S | <input type="checkbox"/> B | <input type="checkbox"/> K | Performance reqts. | <input type="checkbox"/> T | <input checked="" type="checkbox"/> X | <input type="checkbox"/> L | Monitoring & Reporting | <input type="checkbox"/> U | <input type="checkbox"/> D | <input type="checkbox"/> M | Open burning limits | <input type="checkbox"/> V | <input type="checkbox"/> E | <input type="checkbox"/> N | Procedural Reqts. | <input type="checkbox"/> W | <input type="checkbox"/> F | <input type="checkbox"/> O | Fugitive emissions | <input type="checkbox"/> X | <input type="checkbox"/> G | <input type="checkbox"/> P | Other | <input type="checkbox"/> Y | <input type="checkbox"/> H | | <p>WITH WASTES IN BURNING IN FULL - OPERATOR NEEDS TO CONTACT DATA ANALYSTS AND REQUIRE STOPPAGE IF HEARING THESE WASTES IN WASTERS ETC.</p> <p>* 2 DIESEL 25-50" DIAMETER TANK - 22 TO 24 TONS PER DAY CAPACITY</p> <p>FURNING 5 HOURS * 60 TO 65 HR BLOWER / 52 WEEKS PER A SUMMER FLOW (WITH AIR) * UP TO 60 HR * 100% PER HOUR</p> |
| | IN COMP. | NOT IN COMPLIANCE | ON SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| All permit conditions | <input type="checkbox"/> Q | | <input type="checkbox"/> I | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Permit emission limits | <input type="checkbox"/> R | <input type="checkbox"/> A | <input type="checkbox"/> J | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emission standards | <input type="checkbox"/> S | <input type="checkbox"/> B | <input type="checkbox"/> K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Performance reqts. | <input type="checkbox"/> T | <input checked="" type="checkbox"/> X | <input type="checkbox"/> L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring & Reporting | <input type="checkbox"/> U | <input type="checkbox"/> D | <input type="checkbox"/> M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Open burning limits | <input type="checkbox"/> V | <input type="checkbox"/> E | <input type="checkbox"/> N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procedural Reqts. | <input type="checkbox"/> W | <input type="checkbox"/> F | <input type="checkbox"/> O | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fugitive emissions | <input type="checkbox"/> X | <input type="checkbox"/> G | <input type="checkbox"/> P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other | <input type="checkbox"/> Y | <input type="checkbox"/> H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| SOURCES IN VIOLATION & LIMITS VIOLATED | ADDITIONAL REMARKS |
|--|---|
| SPECIAL CONDITIONS (GAS TOLR) | LIMITS IN VIOLATION SOURCES IN COMPLIANCE WITH RESULT |
| 7.(a) | PERFORMANCE REQUIREMENTS (2)(c) NOT IN COMPLIANCE (CURRENTLY UNDER REVIEW BY DEQ) |
| 7.(c) FACILITY NOT MONITORING | CURRENTLY OPERATING @ 1800° 2° CHAMBER TEMPERATURE |
| 9. PITCH WASTES | SHAW COPY CONSULTANT LETTER TO DEQ |

[Signature]
SIGNATURE OF INSPECTOR AND DATE

[Signature]
SIGNATURE OF PERSON INTERVIEWED AND DATE

STATE OF OREGONDEPARTMENT OF ENVIRONMENTAL QUALITYINTEROFFICE MEMO

TO: File 08-0039

DATE: August 26, 1985

FROM: Wendy A. Sims

SUBJECT: Brookings Energy Facility Meeting

On August 12, 1985, Bruce Hammon (CBBO) and I met in Coos Bay with Pete Smart and T. V. Skinner of B.E.F., John Coutrakon, attorney for B.E.F., and Doug Horrie, an interested party attending on behalf of B.E.F. The meeting was arranged in response to a request by Mr. Coutrakon and to facilitate preparation of a staff report on the B.E.F. ACDP variance.

A N.O.V. was issued to B.E.F. on July 23, 1985. The violations cited dealt primarily with failures to operate at the required temperatures and to properly maintain the required temperature logs.

Three main topics were discussed at the meeting: the planned conversion of the incinerators to energy recovery and electricity production, the EQC review of the variance in September, and the justification for implications of OAR 340-21-027. Since B.E.F. personnel and Department staff had previously discussed the vast majority of what was discussed in this meeting, the primary benefit was the familiarization of Mr. Coutrakon with the issues.

On the planned energy conversion, Mr. Smart referred us to Tom Bradley. Mr. Bradley was hired by B.E.F. as a consultant on the energy recovery retrofit. While we had requested that Mr. Bradley be asked to attend, his participation apparently was not possible given the short notice on which the meeting was set up. In a July 17 discussion with me, Mr. Bradley stated that the power contract had been secured, temperature recorders were on order, and numerous maintenance deficiencies at the facility had been corrected. One problem he had detected and corrected was a burned-out pump in the fuel line for the secondary chamber of Unit #1. The length of time the unit had been operating without auxiliary fuel, which is essential under certain conditions for temperature control, was not determined. Mr. Bradley also traced the slagging problems in the ash removal rams to the method of operation of the incinerators.

The one-year variance to allow manual, rather than automatic, temperature recording is due to be discussed at the September 27 EQC meeting. Bruce and I strongly concur that the Department should recommend that the variance be terminated. Our position is based upon the reasons the Department originally recommended that the variance request be denied, compounded by the failure of the B.E.F. staff to meet the permit requirements under the variance.

Mr. Smart confirmed that temperature recorders had been ordered. However, he apparently does not intend to use the recorders in lieu of seeking further relief from the OAR 340-21-027. The recorders were ordered by Mr. Bradley as part of the energy recovery conversion, not to comply with the regulation.

The bulk of this 2 1/2 hour meeting was spent in discussions of OAR 340-21-027. Mr. Coutrakon and Mr. Horrie were interested in the technical basis for the rule. Discussion topics included the need for control of toxic organic emissions, the temperature required for control, the merit of allowing increased total particulate emissions at the required temperature in coastal areas instead of lower particulate emissions without temperature restrictions, the "trade-off" between toxics control and increased auxilliary fuel usage, and more. Mr. Coutrakon requested written documentation of the need for the 1800°F requirement. Very little of this information is contained in the staff report for the rule adopted on January 6, 1984. I invited Mr. Coutrakon to review the extensive collection of material we have in the Air Quality office. It is unfortunate that a review of the need and methods for toxics control was not prepared during the rulemaking process.

Mr. Smart and Mr. Skinner rehashed their complaints on the manner in which the rule and variance were adopted. However, B.E.F. was provided with the appropriate public notices and rulemaking packages. Both Mr. Smart and Mr. Skinner attended the EQC meeting at which the variance was granted and discussed the meaning of the variance afterwards with T. R. Bispham and myself. Any fault attributable to these complaints does not seem to lay with the Department.

Mr. Smart adamantly maintained that he should be allowed to operate under the provisions of the original ACDP issued for B.E.F. in 1979. In support of his position, he cited the improvement over the former practice of open burning Curry County's garbage and the Department's continued authorization of open burning elsewhere, particularly at Powers. Mr. Smart also reiterated his contention that his units are unable to achieve the 1800°F specification when burning the waterlogged garbage typical of the winter months. Repeating a suggestion made last year, we requested that Mr. Smart document this condition by presenting a record of the waste handled, auxilliary fuel use, and secondary chamber temperature during a low temperature burn.

Mr. Smart would like to raise these issues with the EQC with the apparent intention of obtaining permanent relief from any requirements to operate above 1600 F or record temperatures. However, the staff does not view the costs of complying with the regulation, principally increased expenditures for auxilliary fuel, as outweighing the benefits of compliance. Accordingly, it will be recommended in the forthcoming staff report that the current variance be revoked and that B.E.F. be required to comply with OAR 340-21-027. In addition, if B.E.F. does operate as planned as an energy recovery facility, the 1800°F temperature required by the rule will become essential for proper operation of the boiler.

WLS:s
AS1630

cc: B. A. Hammon, CBBO
T. R. Bispham, AQD
L. Kostow, AQD

JOHN R. COUTRAKON, P.C.
JOHN C. BABIN, P.C. *

COUTRAKON & BABIN
PROFESSIONAL CORPORATIONS
ATTORNEYS AT LAW

P.O. BOX 1600
(517 CHETCO AVENUE)
BROOKINGS, OREGON
97415-0600
TELEPHONE
(503) 469-5331

* ALSO LICENSED IN
CALIFORNIA

August 15, 1985

Fred Hansen, Director
Department of Environmental Quality
522 S.W. Fifth Avenue
P. O. Box 1760
Portland, OR 97207

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
AUG 19 1985
AIR QUALITY CONTROL

Re: Brookings Energy Facility

Dear Mr. Hansen:

As you are undoubtedly aware, as a result of our recent correspondence a meeting was held in Coos Bay on August 12, 1985. Those in attendance were Bruce Hammon, Wendy Sims, Pete Smart, T. V. Skinner, their employee Doug, and myself.

I felt the meeting was productive in learning of the concerns of your department as well as "honing-in" on issues which concerned my client. There were undoubtedly a few rough edges exposed in the meeting; however, as a whole, I was appreciative of your personnel taking the time to meet with us.

As indicated in my prior correspondence to you, my client wished to submit a list of statements and concerns for consideration of the Commission regarding suggested modifications of the present permit so that the operations of my client's facilities could realistically meet the rules and guidelines. Both Mr. Hammon and Ms. Sims felt that the only issue which should be presented to the Commission's meeting in September be that involved with the variance previously granted, and due to expire, in reference to the pyrometers.

My clients' are quite concerned with the requirements contained within OAR 340-21-027. Section 1 thereof pertains to both particulate emissions and minimum exhaust gas temperatures; and, Section 2 deals with pyrometers. Mr. Hammon and Ms. Sims felt that these were separate issues, which should be considered separately by the Commission; however, I and my client believe that the issues are interrelated and should be presented together.

Fred Hansen, Director
Department of Environmental Quality
August 15, 1985
Page 2

Therefore, my client would request that the consideration of the pyrometer variance which is set on the agenda at this upcoming Commission meeting be tabled and considered at a future Commission meeting when both my client and the DEQ can present a position on the particulate emission and gas temperature requirements. I believe it a fair statement that all parties felt that this latter issue could not be researched or prepared in time to be presented at the September Commission meeting.

By this letter, my client does desire to formally be put on the agenda of an upcoming Commission meeting to consider the nature and application of OAR 340-21-027, in general and in reference to the facility at Brookings Energy Facility in Brookings, Oregon. I am requesting some information from Ms. Sims which will help me in analyzing the contents of that rule and its inclusion in the present permit. The above referenced request for a set-over of the pyrometer requirement determination is not for the purpose of delay but simply to present in an all encompassing fashion all concerns which we have with the requirements under OAR 340-21-027.

Very truly yours,

COUTRAKON & BABIN, P.C.'s

John R. Coutrakon

JRC:alb
cc: Client
Bruce Hammon
✓ Wendy Sims

JOHN R. COUTRAKON, P.C.
JOHN C. BABIN, P.C.
* ALSO LICENSED IN
CALIFORNIA

COUTRAKON & BABIN
PROFESSIONAL CORPORATIONS
ATTORNEYS AT LAW

P.O. Box 1600
(517 CHETCO AVENUE)
BROOKINGS, OREGON
97415-0600
TELEPHONE
(503) 469-5331

August 15, 1985

Wendy L. Sims
Senior Environmental Engineer
Air Quality Division
Department of Environmental Quality
P. O. Box 1760
Portland, OR 97204

Re: Brookings Energy Facility/Air Contaminant
Discharge Permit

Dear Ms. Sims:

Thank you for meeting with us last Monday. Enclosed please find a copy of a letter to Mr. Hansen which I have this day written.

As we somewhat discussed at our meeting, I would be most appreciative if you could send me some information. Specifically, would you please forward the source documents and data in reference to provision number 6 of the permit (and as such pertains to the attached plant-site emissions detail sheet). I would like to review your reference material in formulation of this data, including what is stated thereon, being the 3/81 source test at Bandon and the A.P.-42.

Could you also forward to me any reference documentation detailing what standards or guidelines your department uses in setting forth permissible emission standards, whether in general or in particular in reference to the Brookings Energy Facility, indicating the standards for acceptable minimum levels of pollution emissions.

Any information you can send me on the background of the development and drafting of OAR 340-21-027 would be helpful and appreciated.

As indicated in my letter to Mr. Hansen, my client would desire to present to the Commission a proposal for either modification of the rule or a reasonable variance therefrom as befits the specific circumstances of the Brookings Energy Facility; however, we are certainly open to dialogue and, if at all possible, would like to see if this matter can be resolved between your

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 19 1985
AIR QUALITY CONTROL

Wendy L. Sims
Senior Environmental Engineer
Department of Environmental Quality
August 15, 1985
Page 2

office and my office to resolve the problems we are having,
which of course, would govern to a large degree what matters
would need to be presented to the Commission.

Very truly yours,

COUTRAKON & BABIN, P.C.'s


John R. Coutrakon

JRC:alb
cc: Client

August 22, 1985

Mr. John Coutrakon
Coutrakon & Babin
P. O. Box 1600
Brookings, OR 97415

Re: Air Contaminant Discharge
Permit No. 08-0039

Dear Mr. Coutrakon:

In response to your letter to me of August 15, 1985, I am enclosing some of the requested information. I am sending this now, rather than delaying a more detailed response, so as to facilitate your preparation for the September 27, 1985 EQC meeting.

Please find enclosed the following items:

1. Summary, March 1981 source test on Consumat CS-2000 incinerators at Bandon, Oregon.
2. AP-42 emission factors for refuse incinerations.
3. Relevant portions of OAR Chapter 340 (latest version).
4. Agenda Item No. P, October 7, 1983, EQC Meeting.
5. Agenda Item No. F, January 6, 1984, EQC Meeting.

The OAR are the primary standards the Department uses in setting emission limits. Authority for these rules is derived principally from ORS Chapter 468. In addition to the rule being questioned by Mr. Smart, two rules which are particularly applicable to B.E.F. are: OAR 340-20-001, Highest and Best Practicable Treatment and Control Required, and OAR 340-20-300 to -310, Plant Site Emission Limits. Ambient Air Quality standards are specified in Division 31.

In addition to sending a copy of the background documents on OAR 340-21-027, I will be referring your request to Mr. Pete Bosserman of the Planning and Development Section, Air Quality Division. He may be able to provide you with additional material.

As I stated at our meeting on August 12, the Department has an extensive amount of information regarding toxic organic emissions from municipal solid waste incineration and the need to maintain proper temperatures/gas residence times. This includes technical reports and test results on emissions from other incinerators, background information of polychlorinated dibenzo-p-dioxins and dibenzofurans, health effects reports, and EPA and other government agency reports on incinerator emission controls. Since it is not possible to provide all of this to you without incurring significant expenses for photocopying and staff time, I again urge that you or an associate review this material at our

Mr. John Coutrakon
August 22, 1985
Page 2

office in Portland. The single document which may be of greatest use to you is Air Pollution Control at Resource Recovery Facilities, published May 24, 1984 by the California Air Resources Board. CARB is sending a copy of this to you.

Before closing, I would like to remind you that the regulations clearly require prior Department approval before any modifications are commenced which could affect emissions. (See OAR 340-20-155(2) - 175(1)) From discussions with Mr. Tom Bradley, who is preparing the permit modification request, I am concerned that these rules have already been violated as part of the energy recovery retrofit. The exact current status of the construction should be clarified and the permit modification request submitted post haste.

Please contact me if you have any questions on these topics.

Sincerely,

Wendy L. Sims, P. E.
Senior Environmental Engineer
Program Operations
Air Quality Division

WLS:ahe
Attachments

cc: Mr. Pete Smart, B. E. F.
Hazardous & Solid Waste Division, DEQ
Coos Bay Branch, DEQ
Pete Bosserman, Air Quality Division, DEQ



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

August 30, 1985

Mr. John Coutrakon
Coutrakon & Babin
PO Box 1600
Brookings, OR 97415

Re: ACDP 08-0039

Dear Mr. Coutrakon:

The Department is preparing a staff report to the Environmental Quality Commission on Brookings Energy Facility. The report will discuss activity relating to the facility during the period from the variance authorization on September 14, 1984 to the present, including your letter to me of August 15, 1985. This report will be presented at the September 27, 1985 meeting of the Commission in Bend.

As Mr. Hammon and Ms. Sims informed you, the purpose of the Commission action would be to review the one year variance allowing manual temperature recording. In authorizing the variance, the Commission requested that the Department present a review of the variance at the end of the one year period. It would not be appropriate for the Department to defer the Commission review of the variance.

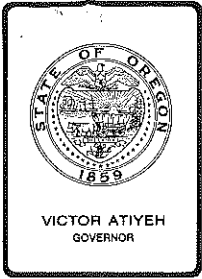
The Department intends to present information related to the operation of the facility to the extent that it is indicative of the facility operation during the variance period. At this time, the Department intends to recommend that the Commission consider only the questions concerning the variance and defer any reconsideration of the Coastal Incinerator rules (OAR 340-21-027) to a later meeting.

I understand that Ms. Sims has already responded to your request for information concerning the background for the Coastal Incinerator rules. A copy of the staff report for the September 27, 1985 Commission meeting will be sent to both you and the Brookings Energy Facility shortly.

Sincerely,

Fred Hansen
Director

FH:s
AS1668



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. N , September 27, 1985, EQC Meeting

Request by Lang and Gangnes Corporation, dba Medply, for a Variance from OAR 340-21-015 and OAR 340-21-020, Boiler Visible and Particulate Emissions, and OAR 340-25-315(1)(b), Veneer Dryer Emission Limits

Background

Lang & Gangnes Corporation, doing business as Medply, owns and operates a plywood manufacturing mill at White City. The operation includes two boilers and four veneer dryers. The mill is located within the Medford-Ashland Air Quality Maintenance Area. The Department issued the current Air Contaminant Discharge Permit to Medply in July 1979.

The company had maintained substantial compliance with the Department's regulations and the conditions and limitations of the Air Contaminant Discharge Permit until late 1983. Since that time there have been frequent violations of the regulations and permit conditions. The boiler stack visible emissions have been documented as exceeding the allowable 40 percent opacity limit on approximately 20 separate days during 1985. This is indicative of possible continuous noncompliance. A particulate source test on boiler no. 2 in March 1984 demonstrated noncompliance with the 0.2 gr/dscf emission limit.

There was a violation from the newly installed veneer dryer (no. 4) in 1984 and two recorded violations of the 20 percent maximum opacity limit from veneer dryer nos. 2 and 3 in August 1985. However, for the most part, the veneer dryer visible emissions have been in compliance with the standards. The company has historically been able to operate within the standards by the production practices of drying non-resinous veneers and proper dryer process control, such as temperature and drying time.

Several points need to be emphasized with respect to Medply. Air pollution from Medply has been and continues to be regulated under the Department's permit and enforcement authority. The emissions of concern at Medply, and for which the Department has taken enforcement action, are particulate matter, not carbon monoxide. The emissions from Medply do not have a measurable impact on Medford's carbon monoxide problem.

A summary of the violations and the enforcement actions taken by the Department follows: (Attachments I through IX are the complete enforcement documents.)

| <u>Date/Enforcement Action</u> | <u>Violation</u> |
|---|---|
| November 23, 1983 Notice of Violation | Installation of veneer dryer no. 4 without filing a Notice of Construction. |
| February 3, 1984 Notice of Violation | Continued installation of veneer dryer no. 4 without Department authorization. |
| April 9, 1984 Notice of Violation | Continued installation of veneer dryer no. 4 without Department authorization. |
| May 15, 1985 Notice of Violation | Boiler no. 2 source test failed to demonstrate compliance. |
| June 4, 1984 Notice of Violation and Intent to Assess Civil Penalty | Installation of veneer dryer no. 4 without filing a Notice of Construction. |
| October 12, 1984 Notice of Violation and Intent to Assess Civil Penalty | 1. Failure to submit a fugitive emission control plan and an operation and maintenance plan. 2. Operating veneer dryer No. 4 without emission controls and violation of opacity standards. |
| January 24, 1985 Notice of Violation and Intent to Assess Civil Penalty | Visible emissions from boilers exceeded 40 percent opacity (five separate days). |

| <u>Date/Enforcement Action</u> | <u>Violation</u> |
|-------------------------------------|--|
| March 4, 1985 Penalty Assessment | Penalty assessment of \$3,050, 18 violations: <ol style="list-style-type: none">1. Constructing a "cinder-ash collector modification without first filing a Notice to Construct.2. Operating veneer dryer No. 4 without emission controls in violation of opacity standards.3. Visible emissions from the boiler stack in excess of 40 percent opacity (eight separate days). |
| May 28, 1985 Penalty Assessment | Penalty assessment of \$5,000 for: <ol style="list-style-type: none">1. Visible emissions from the boiler stack in excess of 40 percent opacity (five separate days).2. Discharge of industrial wastewater to state waters without a permit. |

Lang and Gangnes Corporation has failed to either settle or appeal the penalty assessments.

By the civil penalty cover letter of May 28, 1985, the Director requested that the Company meet with the Department in early June and be prepared to commit to a firm plan for bringing the plant into compliance. The subject meeting was held on June 14, 1985. The Department indicated that it is prepared to pursue whatever enforcement action is necessary to attain compliance but preferred to establish a mutually agreeable schedule which would expedite compliance attainment. The company reported that the ultimate solution is the purchase of steam from the Biomass One energy recovery plant (currently under construction) which will allow for the shutting-down of the boilers. Medply reported that contracts had been signed to allow the action. However, the company further pointed out that it is in severe financial difficulty, and unable to expend further monies for interim equipment to eliminate the violations or at least reduce the level of noncompliance. In light of this economic factor, the company was advised that further operation in non-compliance due to economic reasons could only be authorized by the Commission.

Lang and Gangnes Corporation has filed for reorganization under Chapter 11 bankruptcy proceedings. It is expected that the Bankruptcy Court will review the disclosure statement possibly by December. The Department has requested the State Attorney General to file the Department's penalty assessments with the Bankruptcy Court.

By letter dated June 21, 1985, (Attachment X), Lang & Gangnes Corporation, dba Medply, requested a time limited variance to allow operation of the boilers in excess of emission limitations contained in the permit and Department rules. They also requested a variance to allow a delay of the requirement to install controls on the veneer dryers. The variance is being requested for the reason that "strict compliance would be extremely burdensome financially, and in all likelihood would result in closing down of the plant or substantial curtailment."

The Commission is authorized by ORS 468.345 to grant variances from Department rules if it finds that strict compliance would result in substantial curtailment or closing down of a business, plant or operation.

Discussion

Lang and Gangnes Corporation doing business as Medply continues to operate in violation of Department rules and permit limitations. The boilers continue to be in violation of the visible emissions (OAR 340-21-015) and particulate concentration rules (OAR 340-21-020) and the veneer dryers continue to have excursions in violation of the veneer dryer visible emissions rule (OAR 340-25-315). The exceedances are violations of the particulate standards.

The company has requested a variance for the boilers until December 15, 1985, at which time Medply would convert to a steam supply from the new Biomass One facility and the boilers would be permanently shutdown. The company has requested a variance from the veneer dryer visible emissions rule until March 31, 1986, at which time a scrubber would be installed on the veneer dryers. The need for the proposed variance is described in two letters from Douglas P. Cushing, attorney for Lang & Gangnes, dated June 21, 1985 (Attachment X) and August 20, 1985 (Attachment XI).

Mr. Cushing states that the variance is necessitated by delays in the completion of the Biomass One facility and that requiring immediate compliance would be extremely burdensome financially and in all likelihood would result in closing down or substantial curtailment of the operation, affecting over 200 jobs. Furthermore, the Lang and Gangnes Corporation has filed for reorganization under Chapter 11 of the U.S. Bankruptcy Code.

In the request for variance, Mr. Cushing stated that interim measures were being instituted to minimize emissions. These measures included the installation of a temporary scrubber on the boiler stacks and the shutting

down of veneer dryer 4. The Department has continued to observe the emissions from the facility, and, although emissions appear to be reduced on some occasions, emissions from the boilers generally continue at a high level with visible emissions frequently at the 80 to 100 percent opacity level (see photographs).

Alternatives

The Commission has the following alternatives:

Alternative 1

The Commission could grant a variance as requested by the Lang and Gangnes Corporation allowing the boilers to continue in operation with inadequate controls and in violation of emission standards until no later than December 15, 1985, and allowing the veneer dryers to continue in operation without controls and in violation of emission standards until no later than March 31, 1986.

Alternative 2

The Commission could grant a variance to the Lang and Gangnes Corporation allowing the boilers to continue in operation with inadequate controls and in violation of emission standards until no later than December 15, 1985, but deny a variance for the veneer dryers. By denying a variance for the veneer dryers, the Commission would be requiring the company to achieve and maintain compliance by process control methods including using non-resinous wood species and operating at lower drying temperatures.

Alternative 3

The Commission could deny the request for a variance by Lang and Gangnes Corporation and instruct the Department to take action to gain immediate compliance. Such action may include the assessment of further civil penalties and/or the shutting down of the facility.

If alternative 1 or 2 is adopted the Commission should require that interim control measures be implemented to reduce emissions as much as possible. These interim measures should include:

1. Requiring proper operation and maintenance of the boilers to minimize emissions.
2. Continuing to require operation of the temporary scrubber on the boiler stacks.
3. Continuing to require that veneer dryer 4 not be operated.

Summation

1. OAR 340-21-015 limits the visible emissions from fuel burning sources constructed prior to June 1, 1970, to no more than 40 percent opacity except for a period or periods aggregating less than three minutes in any one hour.
2. OAR 340-21-020 limits the emission of particulate matter from any fuel burning equipment constructed prior to June 1, 1970, to 0.2 grains per standard cubic foot.
3. OAR 340-25-315 limits the visible emissions from veneer dryers to a maximum of 20 percent opacity and an average of 10 percent opacity.
4. The Lang and Gangnes Corporation facility in White City, doing business under the name of Medply, has been and continues to operate in violation of the regulations cited in 1 and 2. These violations result in excess emissions of particulate matter.
5. Violations of the veneer dryer emission regulation, cited in 3 above, have been observed on some occasions. Compliance can be maintained by process control.
6. The Lang and Gangnes Corporation has applied for a variance for the two boilers from OAR 340-21-015 and OAR 340-21-020 until December 15, 1985, at which time steam would be received from the Biomass One facility and the boilers would be permanently shutdown. They have also applied for a variance for three veneer dryers until March 31, 1986, at which time a scrubber would be installed.
7. ORS 468.325 provides that the Commission may grant variances if it finds that strict compliance with the rule or standard is inappropriate because:
 - a. Conditions exist that are beyond the control of the persons granted such variance;
 - b. Special circumstances render strict compliance unreasonable, burdensome, or impractical due to special physical conditions or cause;
 - c. Strict compliance would result in substantial curtailment or closing down of a business, plant, or operation, or;
 - d. No other alternative facility or method of handling is yet available.

Director's Recommendation

Based on the findings in the Summation, it is recommended that the Commission grant a variance for the Lang and Gangnes Corporation facility

at White City, doing business under the name of Medply, from the boiler emission limitations for opacity (OAR 340-21-015) and particulate emission concentration (OAR 340-21-020).

It is further recommended that the Commission deny the request for a variance for the veneer dryers from OAR 340-25-315 and require that compliance be maintained by process control until scrubbers can be installed.

The variance for the boilers should be subject to the following conditions:

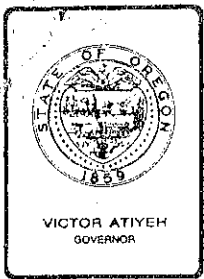
1. The two boilers must be permanently shutdown at the earliest possible date prior to December 15, 1985.
2. Interim control measures must be used to reduce boiler emissions to the greatest extent possible, including:
 - a. Proper operation and maintenance of the boilers to minimize emissions;
 - b. Continuing to operate and maintain the scrubber on the boiler stacks; and
 - c. Keeping veneer dryer 4 shutdown.



Fred Hansen

- Attachments:
- I. November 23, 1983, Notice of Violation
 - II. February 3, 1984, Notice of Violation
 - III. April 9, 1984, Notice of Violation
 - IV. May 15, 1984, Notice of Violation
 - V. June 4, 1984, Notice of Violation and Intent to Assess Civil Penalty
 - VI. October 12, 1984, Notice of Violation and Intent to Assess Civil Penalty
 - VII. January 24, 1985, Notice of Violation and Intent to Assess Civil Penalty
 - VIII. March 4, 1985, Notice of Assessment of Civil Penalty
 - IX. May 28, 1985, Notice of Assessment of Civil Penalty
 - X. June 21, 1985, Letter requesting variances, Cushing & Haberlack, Attorney's at Law
 - XI. August 20, 1985, Letter, variance information from Cushing & Haberlack

L. Kostow:s
AS1677
229-5186
September 12, 1985



Department of Environmental Quality
SOUTHWEST REGION

201 W. MAIN, SUITE 2-D, MEDFORD, OREGON 97501 PHONE (503) 776-6010

November 23, 1983

CERTIFIED MAIL
Return Receipt Requested

Clyde Lang
Lang and Gangnes Corp.
dba Medply
P.O. Box 2488
White City, OR 97503

RE: AQ - Jackson County
Medply
ACDP No. 15-0018
NOTICE OF VIOLATION
NOV-AQ-SWR/M-69-83

Dear Clyde:

As I explained to you on November 16, 1983, the new veneer dryer under construction west of the main building is being constructed in violation of your Air Contaminant Discharge Permit (ACDP). Your ACDP No. 15-0018 states under General Conditions:

G3. The permittee shall:

- a. Notify the Department in writing using a Departmental "Notice of Construction" form, and
- b. Obtain written approval.
before:
 - a. Constructing or installing any new source of air contaminant emissions, including air pollution control equipment, or
 - b. Modifying or altering an existing source that may significantly affect the emission of air contaminants.

Continued violation of your ACDP conditions after five days of the receipt of this letter will result in enforcement action by this Department. The penalty for violation of the Rules and Regulations of the Department may consist of civil penalty action. This action could result in penalties of from \$50 to \$10,000 for each day of violation.

A review of your plant emissions indicates that the Plantsite Emission Limit (PSEL) is given as 36.0 tons per year of particulate. As the existing plant emissions are unknown at this time, it is important that this be determined because of the proposed dryer.

Clyde Lang
dba Medply
November 23, 1983
Page Two

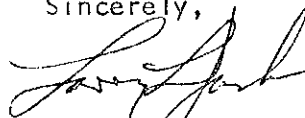
By not later than December 15, 1983, a source test program shall be developed and submitted to the Medford Office. This program shall include details of the source test, point sources to be tested, method and type of production controls to be used. Also, included in this testing shall be a minimum of the following sources:

- (3) Veneer Dryers
- (2) Wood-fired Boilers
- All Uncontrolled Cyclones

Final results of this proposed testing shall be submitted to the Medford DEQ Office not later than February 1, 1984. Included with the final test results shall be detailed plans for the proposed veneer dryer controls. This shall also include installation and final control dates.

If you have any questions, please feel free to contact this office.

Sincerely,



Larry V. Jack
Environmental Consultant

LJ:fs

cc: ~~Don~~ Neff, AQ Division
Fred Bolton, Regional Operations

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 25 1983
AIR QUALITY CONTROL

DEPARTMENT OF ENVIRONMENTAL QUALITY
SOURCE INSPECTION FORM

WQ
 SW
 AQ
 NC

COUNTY: JACKSON

SOURCE NAME: MEDPLY

SOURCE ADDRESS: 8250 AGATE WHITE CITY

OFFICIAL CONTACTED: CLYDE LING

| TABLE A PARA | PREP. TIME | TRANS. TIME | INSPECTION TIME | PAPER TIME |
|--------------|------------|-------------|-----------------|------------|
| 14B | | | 4 | 1 |
| | | | | |
| | | | | |
| | | | | |

lots of work

| PERMIT NUMBER | POINT | ACTION | | DATE SCHEDULED | | | DATE ACHIEVED | | | RESULT | INSPEC. NO. |
|---------------|-------|--------|-------|----------------|-----|-----|---------------|-----|-----|--------|-------------|
| | | NO. | TYPE | MO. | DAY | YR. | MO. | DAY | YR. | | |
| 15 | 0018 | 000 | 99712 | 11 | 16 | 83 | 11 | 16 | 83 | CX | J09 |

8.1.1 A FOURTH STEAM HEATED VENEER DRYER SIX TRAY IS BEING INSTALLED WEL
8.2 T of EXISTING DRYER BUILDING SWA-M TO SEND NOV
8.3
8.4

| COMPLIANCE STATUS (RESULT CODE) | | | |
|---------------------------------|----------------------------|----------------------------|----------------------------|
| | IN COMP. | NOT IN COMPLIANCE | ON SCHEDULE |
| All permit conditions | <input type="checkbox"/> Q | | |
| Permit emission limits | <input type="checkbox"/> R | <input type="checkbox"/> A | <input type="checkbox"/> I |
| Emission standards | <input type="checkbox"/> S | <input type="checkbox"/> B | <input type="checkbox"/> J |
| Performance reqts. | <input type="checkbox"/> T | <input type="checkbox"/> C | <input type="checkbox"/> K |
| Monitoring & Reporting | <input type="checkbox"/> U | <input type="checkbox"/> D | <input type="checkbox"/> L |
| Open burning limits | <input type="checkbox"/> V | <input type="checkbox"/> E | <input type="checkbox"/> M |
| Procedural Reqts. | <input type="checkbox"/> W | <input type="checkbox"/> F | <input type="checkbox"/> N |
| Fugitive emissions | <input type="checkbox"/> X | <input type="checkbox"/> G | <input type="checkbox"/> O |
| Other | <input type="checkbox"/> Y | <input type="checkbox"/> H | <input type="checkbox"/> P |

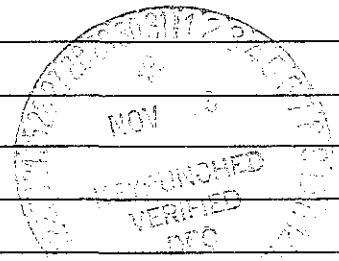
TREATMENT/PROCESS EQUIPMENT - ADDITIONAL REMARKS - OPERATING CONDITIONS

CLYDE LING STATES DRYER WILL BE CONNECTED TO NEW DRYER SCAMBERG PRIOR TO STARTUP

SOURCES IN VIOLATION & LIMITS VIOLATED

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| |

CP SIN 1

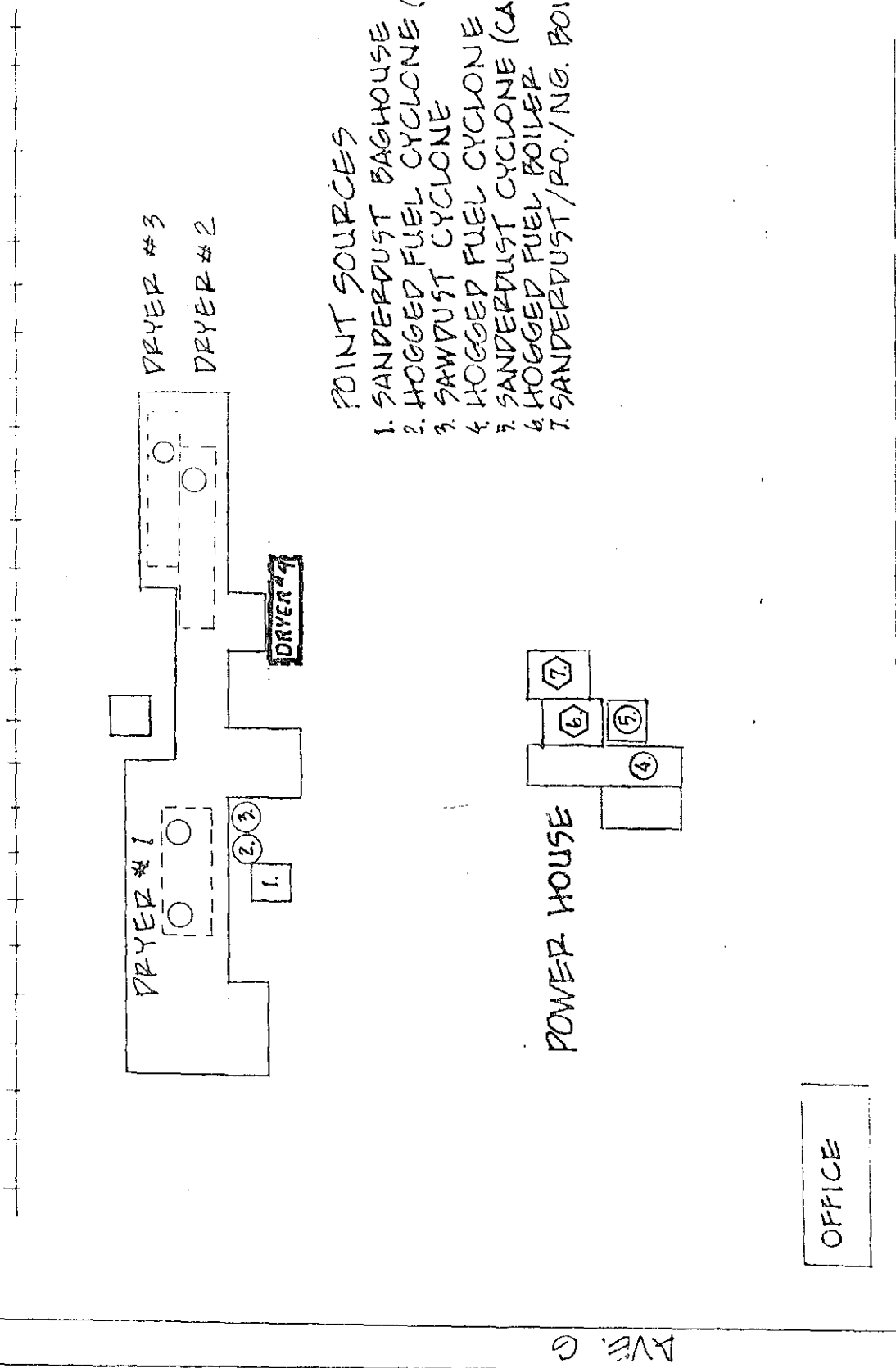


[Signature]
SIGNATURE OF INSPECTOR AND DATE

SIGNATURE OF PERSON INTERVIEWED AND DATE

MEDFORD PLYWOOD CORPORATION

Ata-Jackson
Medford
ADP-15-0018



POINT SOURCES

1. SANDERDUST BAGHOUSE
2. HOGGED FUEL CYCLONE (INOP.)
3. SAWDUST CYCLONE
4. HOGGED FUEL CYCLONE
5. SANDERDUST CYCLONE (CAPPED)
6. HOGGED FUEL BOILER
7. SANDERDUST/PO./NG. BOILER

UPDATE: 6/27/79
DRAWN: GCF
REVIEWER: MLH



Department of Environmental Quality
SOUTHWEST REGION

201 W. MAIN, SUITE 2-D, MEDFORD, OREGON 97501 PHONE (503) 776-6010

February 3, 1984

CERTIFIED MAIL
Return Receipt Requested

Clay Gangnes
Medply
P.O. Box 2488
White City, OR 97503

RE: AQ - Jackson County
Medply
ACDP No. 15-0018
NOV-AQ-SWR/M-69-83

Gentlemen:

On November 23, 1983 a "Notice of Violation" was sent to you for constructing a veneer dryer without first filing a "Notice of Intent to Construct". This "Notice of Violation" and later correspondence included a requirement to source test the two boilers and two cyclones. This was scheduled by you for January 23 and 24, 1984.

On January 20 you notified this office by telephone that the test was being postponed. This postponement was caused by failure to have the steamflow meters installed on the boilers as needed. During our conversation you indicated you would have a letter of explanation in this office the first part of the week of January 23, 1984. This letter was to include the following items:

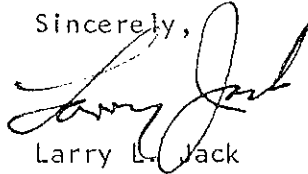
1. The reason for postponing the source test (i.e. steam meter parts did not arrive).
 - a. Date parts were ordered.
 - b. Parts ordered from _____.
 - c. Expected date of arrival.
 - d. Installation time at plant upon arrival.
2. Date of rescheduled source test.

This information must be received by the Southwest Region Office in Medford not later than February 10, 1984. Failure to submit the requested information by this date will result in enforcement action by this Department. As was previously indicated, no further construction may be done on either the new No. 4 veneer dryer or the scrubber until this matter is resolved.

Clay Gangnes
Medply
February 3, 1984
Page Two

If you have any questions, please contact this office.

Sincerely,



Larry L. Jack
Environmental Consultant

LLJ:fs

cc: Van Kollias, Regional Operations
~~Don Neff~~, AQ Division

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
FEB 7 1984
AIR QUALITY CONTROL



Department of Environmental Quality
SOUTHWEST REGION

201 W. MAIN, SUITE 2-D, MEDFORD, OREGON 97501 PHONE (503) 776-6010

Attachment III
Agenda Item No. N
September 27, 1985
EQC Meeting

April 9, 1984

Clayton Gangnes
General Manager
Medply
P.O. Box 2488
White City, OR 97503

RE: AQ - Jackson County
Medply
ACDP No. 15-0018
Notice of Violation
NOV-AQ-SWR/M-27-84

Dear Clay:

I received your letter of April 2, 1984 of explanation of problems experienced on source testing the boilers on March 29th and 30th. Your proposed schedule of not later than April 20, 1984 to complete the source testing of the sanderdust, natural gas boiler is approved. Please notify this office as soon as the exact date is determined.

During my visit to the plant on March 29 and 30 I observed construction work being done on dryer #4. This is in violation of the Notice of Violation sent you on February 3, 1984. Continued construction activity will result in enforcement action by this Department.

If you have any questions, please contact this office.

Sincerely,

Larry L. Jack
Environmental Consultant

LJ:fs

cc: ~~Don Jeff~~ and
Don Peters, AQ Division
Enforcement Section

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
APR 10 1984
AIR QUALITY CONTROL



Department of Environmental Quality
SOUTHWEST REGION

201 W. MAIN, SUITE 2-D, MEDFORD, OREGON 97501 PHONE (503) 776-6010

May 15, 1984

Clayton Gangnes
Medply
P.O. Box 2488
White City, OR 97503

RE: AQ - Jackson County
Medply
ACDP No. 15-0018
NOV-AQ-SWR/M-84-36

Dear Clay:

The following are highlights from our meeting held on May 10, 1984 at the Medford DEQ Office. Those in attendance were: Clay Gangnes, Medply; Gene Wellman and Ed Butchino, BWR and Associates; Dennis Belsky and Larry Jack, DEQ Medford.

A. Source Testing Results (as shown in BWR Report)


1. Boiler No. 1 Sanderdust-Natural Gas

0.104 gr/DSCF corrected to 12% mass emission of 5.02 lbs/hr at 35,000 lbs/hr steaming load. 3:1 fuel ratio - sanderdust to N.G. for 28.7 million BTU's. Test Report shows compliance with 0.1 grain rule of OAR 340-21-020.

2. Boiler No. 2 Hogged Fuel

0.5 gr/DSCF corrected to 12% at 26,000 lbs/hr steam load. Boiler burning plytrim, 80% of catch being salts from fuel. Boiler not in compliance with DEQ 0.2 rule.

BWR calculates that with removal of salts from fuel, emissions will be 0.169 gr/DSCF corrected to 12% with mass emission rate of 6.7 lbs/hr, similar to earlier source test.

The company will correct the fuel salt problem as soon as possible and then re-source test the hog fuel boiler #2 by not later than November 15, 1984 for compliance. 

3. Cyclone No. 2 Hammer Hog System

0.112 gr/DSCF at mass emission rate of 4.20 lbs/hr based on 2080 hrs/yr. Cyclone #2 is meeting the grain loading and mass emission rate.

Clayton Gangnes
Medply
May 15, 1984
Page Two

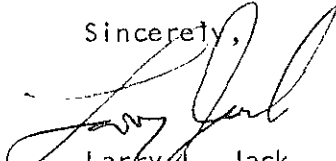
4. Cyclone No. 5 Sanderdust Bin System

0.063 gr/DSCF at mass emission rate of 0.36 lbs/hr.
In compliance with rules.

- B. Medply proposes to replace the existing veneer dryer #3 with new dryer being constructed. The old dryer will then be removed. This change will happen upon receiving Notice of Intent to Construct (NC) approval and after controls are installed on the new dryer.
- C. Medply will go ahead with their plans to install the Fuller scrubber upon receipt of the Notice of Intent to Construct.
- D. Medply will complete and submit an Operation and Maintenance Plan and fugitive plan by May 31, 1984 to comply with OAR 340-30-043 to 045.
- E. The Department of Environmental Quality will process the two Notices of Intent to Construct upon receipt of a completed Air Contaminant Discharge Permit Application for the plant. Refer to John Odisio's letter of May 1, 1984.
- F. The Department of Environmental Quality is now processing an Intent to Assess a Civil Penalty against Medply for continued construction of the veneer dryer after being notified to cease.
- G. As a result of this meeting, we are now considering you as the environmental contact for all related matters. This should eliminate reoccurrences of past lack of communication.

If you have any questions, please contact this office.

Sincerely,



Larry L. Jack
Environmental Consultant

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

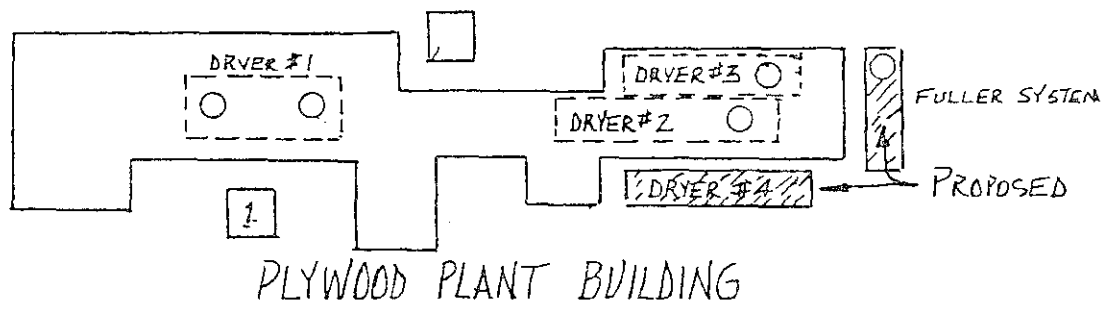
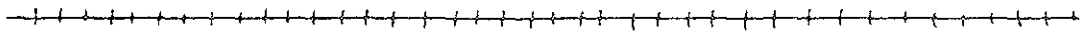
RECEIVED
MAY 17 1984

AIR QUALITY CONTROL

LJ:fs
attch. (1) Plot Plan

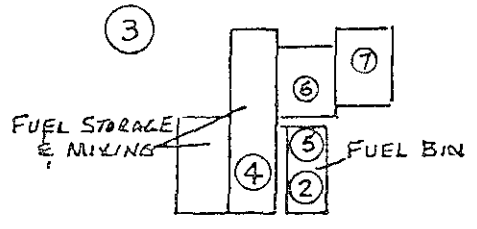
cc: Van Kollias, Regional Operations (w/attch.)
Don Peters thru Don Neff, AQ Division (w/attch.)
BWR and Associates

MED-PLY WHITE CITY, OR.



POINT SOURCES

1. SANDERDUST BAGHOUSE
2. HAMMER HDG CYCLONE
3. SAWDUST CYCLONE
4. HOGGED FUEL CYCLONE
5. SANDERDUST BIN CYCLONE
6. HOGGED FUEL BOILER
7. SANDERDUST/R.O./N.G. BOILER



POWER HOUSE

OFFICE

AGATE ROAD

AVENUE G.

5-17-84



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5606

June 4, 1984

CERTIFIED MAIL NO. P 292 622 567

* Lang & Gangnes Corporation
dba/Medply
c/o Clyde E. Lang, Registered Agent
8250 Agate Road
White City, OR 97501

Re: Notice of Violation and Intent
to Assess Civil Penalty
AQ-SWR-84-44
Jackson County

By letters dated November 23, 1983, December 22, 1983, January 6, 1984, February 3, 1984 and April 9, 1984, from the Department's Southwest Region to your company, the Department notified you of certain violations of Air Contaminant Discharge Permit No. 15-0018. General Condition G3 of that permit requires you to notify the Department in writing using a Department "Notice of Construction" form and obtaining written approval before constructing or installing any new source of air contaminant emissions, including air pollution control equipment, or modifying or altering an existing source.

In November, 1983, your company began constructing a new veneer dryer without first filing a "Notice of Construction" and obtaining written approval from the Department. After filing a "Notice of Construction," you continued to construct that veneer dryer before obtaining Department's written approval.

Because you violated the conditions of your permit, I am enclosing a notice warning you of the Department's intent to assess civil penalties should the violations cited therein continue or should any similar violation occur in the future. The air quality schedule of civil penalty provides a minimum penalty of \$50 to a maximum of \$10,000 for each day of each violation.

I encourage you to frequently review the requirements and limitations of your Air Contaminant Discharge Permit and diligently comply with all the conditions set forth therein.

Questions regarding this letter or the enclosed notice may be directed to Mr. Larry Jack of our Southwest Region office in Medford at 776-6010.

Sincerely,

Fred M. Bolton
Administrator
Northwest Region

FMB:b
GB3491.L
Enclosure(s)
cc: Southwest Region, Medford, DEQ
Air Quality Division, DEQ
Department of Justice
Environmental Protection Agency

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED
JUN 05 1984

AIR QUALITY CONTROL

1 III

2 A. On or before November 16, 1983, Respondent began constructing or
3 installing a new source of air contaminant emissions (veneer dryer)
4 including air pollution control equipment, before first notifying the
5 Department using a Departmental "Notice of Construction" form and obtaining
6 written approval, in violation of Permit General Condition G3 and OAR
7 340-20-030(1).

8 B. On or about March 29 and 30, 1984, after filing a "Notice of
9 Construction" but prior to obtaining written approval from the Department,
10 Respondent continued to construct or install the above-described new source
11 of air contaminant emissions, in violation of Permit General Condition G3.

12 IV

13 If five (5) or more days after Respondent receives this notice, the
14 one or more violations cited in Paragraph III of this notice continue,
15 or any similar violation occurs, the Department will impose upon Respondent
16 a civil penalty pursuant to Oregon statutes and OAR, Chapter 340, Divisions
17 11 and 12. In the event that a civil penalty is imposed upon Respondent,
18 it will be assessed by a subsequent written notice, pursuant to ORS
19 468.135(1) and (2), ORS 183.415(1) and (2), and OAR 340-11-100 and

20 ///

21 ///

22 ///

23 ///

24 ///

25 ///

26 ///

1 340-12-070. Respondent will be given an opportunity for a contested case
2 hearing to contest the allegations and penalty assessed in that notice,
3 pursuant to ORS 468.135(2) and (3), ORS 183, and OAR Chapter 340, Division
4 11. Respondent is not entitled to a contested case hearing at this time.

5
6 June 4, 1989
7 Date

Fred M. Bolton
Fred M. Bolton, Administrator
Regional Operations, DEQ

Certified Mail P 292 622 567



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

Attachment VI.
Agenda Item No. N
September 27, 1985
EQC Meeting

RECEIVED
OCT 13 1984

October 12, 1984

AIR QUALITY CONTROL

CERTIFIED MAIL NO. P 422 372 227

Lang & Gagnes Corporation
dba/Medply
c/o Clyde E. Lang, Registered Agent
8250 Agate Road
White City, OR 97501

150018

Re: Notice of Violation and Intent
to Assess Civil Penalty
AQ-SWR-84-103
Jackson County

Your company has committed a number of violations of the Department's specific air pollution control rules for the Medford-Ashland air quality maintenance area and your air contaminant discharge permit.

Those rules require veneer manufacturing plants to submit a fugitive emissions control plan to the Department by October 1, 1983. The rules also require all air contaminant discharge permittees to prepare and submit an operation and maintenance plan by October 1, 1983. Your company has failed to submit those plans.

Other violations resulted from your operation of veneer dryer #4 on August 27, 1984. You operated that dryer without first installing approved control equipment and demonstrating that the dryer can meet opacity standards.

Because of your violations, I have enclosed a formal notice warning you of the Department's intent to assess civil penalties if any of the cited violations continue or similar violations occur after 5 days from your receipt of this notice. The air quality schedule of civil penalties provides for a minimum penalty of \$50 to a maximum penalty of \$10,000 for each day of each violation. To avoid the assessment of civil penalties, you must cease operation of veneer dryer #4 until you meet the rule requirements and receive the Department's authorization. In addition, within the next five days you must submit the required fugitive emissions and operation and maintenance plans to our Southwest Region office in Medford, Oregon.

Questions regarding this notice should be directed to Mr. Larry Jack in Medford at 776-6010.

Sincerely,

Fred M. Bolton
Administrator
Regional Operations Division

VAK:b
GB3848.L

Enclosure(s)

cc: Southwest Region, DEQ
Air Quality Division, DEQ
Department of Justice
Environmental Protection Agency

1 Respondent. At all material times cited herein, the Permit was and is now
2 in effect.

3 III

4 A. From on or about October 1, 1983, through the present, Respondent
5 has violated OAR 340-30-043 and OAR 340-30-045 in that Respondent has
6 failed to submit a fugitive emissions control plan.

7 B. From on or about October 1, 1983 through the present, Respondent
8 has violated OAR 340-30-044 and OAR 340-30-045 in that Respondent has
9 failed to submit an operation and maintenance plan.

10 C. On or about August 27, 1984, Respondent operated veneer dryer #4
11 before Respondent equipped that dryer with an emission control system
12 approved in writing by the Department and capable of complying with OAR
13 340-30-020(1)(a), (b), and (c) and before Respondent demonstrated and
14 before the Department agreed in writing that dryer #4 was capable of being
15 operated and is operated in continuous compliance with OAR 340-30-020(1)(b)
16 and (c), in violation of OAR 340-30-020(2)(b) and (c).

17 D. On or about August 27, 1984, between the hours of 11:36 a.m. and
18 11:43 a.m., Respondent operated veneer dryer #4 such that the visible air
19 contaminants emitted from the dryer stack exceeded an average operating
20 opacity of 10 percent, in violation of OAR 340-30-020(1)(b) and Condition 7
21 of the Permit.

22 E. On or about August 27, 1984, between the hours of 11:36 a.m. and
23 11:43 a.m., Respondent operated veneer dryer #4 such that visible emissions
24 emitted from the roof vent located at the south end of the veneer dryer
25 building exceeded a maximum opacity of 20 percent, in violation of OAR
26 340-30-020(1)(c) and Condition 7 of the Permit.

IV

If five (5) or more days after Respondent receives this notice, the one or more violations cited in Paragraph III of this notice continue, or any similar violation occurs, the Department will impose upon Respondent a civil penalty pursuant to Oregon statutes and OAR, Chapter 340, Divisions 11 and 12. In the event that a civil penalty is imposed upon Respondent, it will be assessed by a subsequent written notice, pursuant to ORS 468.135(1) and (2), ORS 183.415(1) and (2), and OAR 340-11-100 and 340-12-070. Respondent will be given an opportunity for a contested case hearing to contest the allegations and penalty assessed in that notice, pursuant to ORS 468.135(2) and (3), ORS 183, and OAR Chapter 340, Division 11. Respondent is not entitled to a contested case hearing at this time.

10-12-84

Date



Fred M. Bolton, Administrator
Regional Operations, DEQ

Certified Mail P 422 372 227



Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

January 24, 1985

CERTIFIED MAIL NO. P 497 014 839

Lang & Gangnes Corporation
dba/Medply
c/o Clyde E. Lang, Registered Agent
8250 Agate Road
White City, OR 97501

Re: Notice of Violation and Intent
to Assess Civil Penalty
AQ-SWR-85-09
Jackson County
ACD Permit No. 15-0018

Gary Grimes and I met with Clayton Gangnes in mid-November to review Medply's compliance status with the conditions of its air contaminant discharge permit. By letter of November 26, 1984, Mr. Grimes summarized the issues discussed at that meeting. The Department had hoped that following the meeting, Medply would be making immediate and substantial efforts to comply with all permit conditions.

Unfortunately that is not the case. In late December and early January, the Department took various opacity readings on your boilers. The following results show that boilers #1 and #2 are operating in substantial noncompliance with the allowed emission limitations:

| <u>Date</u> | <u>Boiler ID</u> | <u>Minutes of Observation</u> | <u>Average Opacity (%)</u> |
|-------------|------------------|-------------------------------|----------------------------|
| 12-19-84 | #1, sanderdust | 13 | 50 |
| 1-4-85 | #1, sanderdust | 10 | 77 |
| 1-8-85 | #2, hogged fuel | 12 | 51 |
| 1-9-85 | #1, sanderdust | 15 | 67 |
| 1-11-85 | #1, sanderdust | 10 | 72 |
| 1-18-85 | #1, sanderdust | 12 | 81 |

The permit does not allow the maximum opacity of the boilers to exceed 40 percent for more than 3 minutes in any one hour. The above opacity readings show that your company is greatly exceeding its emission limitations.

A notice is enclosed warning you of the Department's intent to assess civil penalties should your boilers continue to exceed the emissions limits five (5) or more days after you receive this notice. You are liable for penalties of from \$50 to \$10,000 for each day of each violation.

Lang & Gangnes Corporation
Page 2

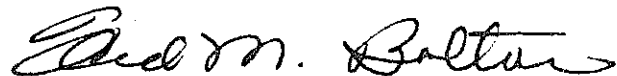
The Department observed all four veneer dryers in operation on January 18, 1985. It is possible that the extra steam demand created by the addition of the fourth dryer could be responsible for the excessive boiler emissions.

Your earlier operation of veneer dryer #4 without proper controls and the Department's approval was the subject of an earlier Notice of Violation and Intent to Assess a Civil Penalty. Therefore, the Department will soon be considering a civil penalty assessment for your unauthorized operation of veneer dryer #4 on January 18th.

Please realize that exceeding the boiler emission limits and the operation of veneer dryer #4 are separate violations, each subject to separate enforcement action including civil penalty assessments.

If you have any questions, please contact Gary Grimes at 776-6010 or myself, toll-free at 1-800-452-4011.

Sincerely,



Fred M. Bolton
Administrator
Regional Operations Division

VAK:b
GB4207.L
Enclosure(s)
cc: Fred Hansen, Director DEQ
Southwest Region, DEQ
Air Quality Division, DEQ
Department of Justice
Environmental Protection Agency

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JAN 25 1985
AIR QUALITY CONTROL

1 BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
2 OF THE STATE OF OREGON

3 DEPARTMENT OF ENVIRONMENTAL QUALITY,)
OF THE STATE OF OREGON,)
4 Department,)
5 v.)
6 LANG & GANGNES CORPORATION,)
DBA/MEDPLY,)
7 Respondent.)

9 I

10 This notice is being sent to Respondent, Lang & Gangnes Corporation
11 doing business as Medply, pursuant to Oregon Revised Statutes ("ORS")
12 468.125(1) and Oregon Administrative Rules ("OAR") Section 340-12-040(1)
13 and (2).

14 II

15 On or about July 30, 1979, the Department of Environmental Quality
16 ("Department") issued Air Contaminant Discharge Permit No. 15-0018
17 ("Permit") to Respondent. The Permit authorized Respondent to discharge
18 exhaust gases containing air contaminants including emissions from those
19 processes and activities directly related or associated with a plywood
20 manufacturing operation of less than 25,000 square feet per hour and fuel
21 burning equipment located at 8250 Agate Road, White City, Oregon, in
22 accordance with the requirements, limitations and conditions set forth in
23 the Permit. The Permit expired on April 1, 1984. On May 24, 1984,
24 Department received an application for renewal of the Permit from
25 Respondent. The previously issued permit continues in effect under
26 Department rules until the Department acts to approve or deny the renewal

1 application. At all material times cited herein, the Permit was and is now
2 in effect.

3 III

4 A. On or about December 19, 1984, January 4, 9, 11, and 18, 1985,
5 Respondent caused, suffered, allowed or permitted the emission of air
6 contaminants, which were equal to or greater than 40 percent opacity for a
7 period aggregating more than 3 minutes in any one hour, into the atmosphere
8 from Respondent's sanderdust boiler, in violation of Condition 4 of the
9 Permit, OAR 340-21-015(3)(b) and ORS 468.315(2).

10 B. On or about January 8, 1985, Respondent caused, suffered, allowed
11 or permitted the emission of air contaminants, which were equal to or
12 greater than 40 percent opacity for a period aggregating more than 3
13 minutes in any one hour, into the atmosphere from Respondent's hogged fuel
14 boiler, in violation of Condition 4 of the Permit, OAR 340-21-015(3)(b) and
15 ORS 468.315(2).

16 IV

17 If five (5) or more days after Respondent receives this notice, the
18 one or more violations cited in Paragraph III of this notice continue,
19 or any similar violation occurs, the Department will impose upon Respondent
20 a civil penalty pursuant to Oregon statutes and OAR, Chapter 340, Divisions
21 11 and 12. In the event that a civil penalty is imposed upon Respondent,
22 it will be assessed by a subsequent written notice, pursuant to ORS
23 468.135(1) and (2), ORS 183.415(1) and (2), and OAR 340-11-100 and
24 340-12-070. Respondent will be given an opportunity for a contested case

25 ///

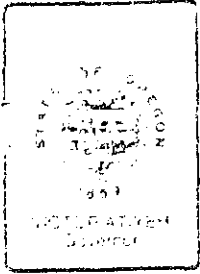
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1 hearing to contest the allegations and penalty assessed in that notice,
2 pursuant to ORS 468.135(2) and (3), ORS Chapter 183, and OAR Chapter 340,
3 Division 11. Respondent is not entitled to a contested case hearing at
4 this time.

5
6 1-24-85
Date

Fred M. Bolton
Fred M. Bolton, Administrator
Regional Operations, DEQ

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10 Certified Mail P 497 014 839
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Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

MAR 4 1985

CERTIFIED MAIL NO. P 610 638 521

Lang and Gangnes Corporation
dba/Medply
c/o Clyde Lang,
Registered Agent
8250 Agate Road
White City, OR 97501

Re: Notice of Assessment
of Civil Penalty
AQ-SWR-85-15
Jackson County

Lang and Gangnes Corporation has operated a plywood manufacturing facility in White City, Oregon under permit from this Department since 1979. Operation of your plant under this Department's permit proceeded with few, if any, violations until 1984. Before 1984 you operated three veneer dryers. In 1984 you purchased a fourth veneer dryer (#4) and proceeded to install it without prior permission of the Department.

The air pollution control strategy that you had been operating under precluded the drying of resinous species of wood, including Douglas fir. It appears that you have accelerated your use of Douglas fir veneer in your operation, without regard to the change in emissions that would develop and the subsequent need to add on external pollution controls.

The Department approved your application to operate veneer dryer #4 on June 5, 1984 contingent upon discontinued use of veneer dryer #3, and compliance with all applicable laws, regulations, and permit conditions. By separate letter dated June 5, 1984, the Department also approved the installation of veneer dryer pollution control equipment. This equipment has not been installed to date. Department rules require emission offsets for any new emission increase over 5 tons/year in the Medford-Ashland non-attainment area. Your failure to discontinue your use of veneer dryer #3, while using veneer dryer #4 has violated the offset requirement and worsened the Medford-White City area's ambient air quality situation.

Consequently, during the past nine months, this Department has been forced to issue Lang and Gangnes Corporation three Notices of Violation and Intent to Assess Civil Penalty for violations of your air contaminant discharge permit and Oregon regulations for the Medford-Ashland Air Quality Maintenance Area. These Notices were AQ-SWR-84-44, issued on June 4, 1984; AQ-SWR-84-103, issued on October 12, 1984; and AQ-SWR-85-09, issued on January 24, 1985. Each informed you that you would be assessed a civil penalty if violations similar to those cited continued.

Notice No. AQ-SWR-84-44 informed you that construction or installation of new sources of air contaminant emissions, including air pollution control equipment, requires prior approval by the Department. Your March 1984 installation of veneer dryer #4, lacking such approval, violated Condition G3 of your air contaminant discharge permit. On February 5, 1985, your construction of a "cinder-ash collector" was observed at the plant; this similarly lacked prior Departmental approval. This also is a

violation of Condition G3 of your permit. For this violation, I have assessed a civil penalty of \$150 in the attached Notice.

Notice No. AQ-SWR-84-103 informed you that your August 1984 operation of veneer dryer #4 before equipping it with an emission control system approved in writing by the Department and capable of complying with Oregon Administrative Rule (OAR) 340-30-020(1)(a),(b) and (c), and before demonstrating and before the Department agrees in writing that it is capable of being operated and is operated in continuous compliance with OAR 340-30-020(1)(b) and (c), was a violation of OAR 340-30-020(2)(b) and (c).

Though you still have not equipped veneer dryer #4 with an approved emission control system or demonstrated its ability to continuously comply with applicable rules, veneer dryer #4 was observed in operation on January 4, January 18, January 30, February 8, February 12, February 13, February 14, February 15, and February 19, 1985. This is a violation of OAR 340-30-020(2)(b) and (c). Two of these violations, those of January 4 and January 18, 1985, occurred during air stagnation advisory periods called by the National Weather Service for the Medford-White City area. You have on several occasions operated all of your veneer dryers, #1, #2, #3, and #4, without any controls whatsoever, a blatant violation of Departmental rules. For each observed day of your operation of veneer dryer #4, I have assessed a civil penalty of \$100 for a total of \$900.

Notice No. AQ-SWR-85-09 informed you that December 1984 and January 1985 opacity measurements from your boilers showed emissions exceeding those allowed by Permit Condition #4. Permit Condition #4 prohibits opacity levels from exceeding 40% for more than three minutes in any hour. That Notice listed six separate violations of Permit Condition #4. Three of the six excessive boiler emission violations occurred during air stagnation advisory periods called by the National Weather Service for the Medford-White City area. This Department could not assess a penalty for these violations because of the five-day advance written notice requirement of Oregon law.

Since your receipt of that Notice, however, our staff has observed violations of Permit Condition #4 on eight separate occasions. Specifically, you violated your permit by having sanderdust boiler opacity levels of 76% on February 5, 72% on February 6, 96% on February 8, 60% on February 12, 58% on February 13, 57% on February 14, 72% on February 15, and 62% on February 19, 1985. For each observed day of violation of the opacity standard, I have assessed a civil penalty of \$250 for a total of \$2,000. I also note that you have failed to show that boiler #2 can be operated in compliance with applicable rules, through having failed to re-source test it since the source testing of March 29-30, 1984. This requires your immediate attention.

Each of the eighteen violations cited in the enclosed Notice is subject to a civil penalty of from \$50 to a maximum of \$10,000 under the Department's civil penalty schedule. In determining the amount of your civil penalty, which totals \$3,050, I have considered the mitigating and aggravating factors listed in OAR 340-12-045. The blatantness of your continuing violations, after your having received a number of prior notices of violation, is particularly aggravating.

The penalty is due and payable. Payment should be made to the address on this letterhead. Appeal procedures are outlined within Paragraph VIII of the Notice. If you fail to either pay the penalty or appeal the action within 20 days, a Default Order and Judgment will be entered against you.

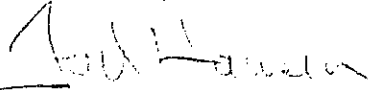
Numerous complaints have been received about air pollution from your plant. I have been informed that at least several of your neighbors consider your plant, and its excessive pollution, a nuisance. These neighbors comply with relevant laws but are now alleging property damage as a result of pollution from your plant. This pollution has caused an unacceptable increase in emissions in the Medford area which has not been offset as required (OAR 340-20-240).

In our efforts to bring the area into compliance with federal standards, and still allow economic growth, cooperation from all sources of air pollution is necessary. Your plant must fully comply with applicable laws, regulations, and permit conditions if we are to achieve this goal. It is inequitable for this Department to have required other industries in your area, including your competitors, to incur costs to maintain compliance with environmental standards and then allow Medply to continue to operate in violation without penalty.

Highest priority should be given to correcting the sources of past violations, as well as preventing future violations. We have assessed civil penalties in this Notice only for violations through February 19, 1985. Please be advised that surveillance of your plant is ongoing and violations are being documented. Additional violations will result in additional, and potentially larger, civil penalties. We hope escalated enforcement will not be necessary. The presence or absence of future violations will also be a factor in the Department's consideration of your application for a renewal of your air contaminant discharge permit.

Questions regarding this letter or the enclosed Notice should be directed to Mr. Gary Grimes, Manager of the Department's Southwest Region at 776-6010 or Mr. Fred M. Bolton, Administrator of the Department's Regional Operations Division, Portland at 1-800-452-4011, toll-free in Oregon.

Sincerely,



Fred Hansen
Director

LC:b
GB4273

Enclosure(s)

cc: Southwest Region, DEQ
Air Quality Division, DEQ
Department of Justice
Environmental Protection Agency
Governor's Office

1 BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

2 OF THE STATE OF OREGON

3 DEPARTMENT OF ENVIRONMENTAL QUALITY,) NOTICE OF ASSESSMENT
4 OF THE STATE OF OREGON,) OF CIVIL PENALTY
5 Department,) No. AQ-SWR-85-15
6) JACKSON COUNTY

7 v.)

8 LANG AND GANGNES CORPORATION,)
9 an Oregon corporation,)
10 DBA/MEDPLY,)

11 Respondent.)

12 I

13 This Notice is being sent to Respondent, Lang and Gangnes Corporation,
14 an Oregon corporation, doing business as Medply, pursuant to Oregon Revised
15 Statutes ("ORS") 468.125(1) and Oregon Administrative Rules ("OAR")
16 Section 340-12-040(1) and (2).

17 II

18 On or about July 30, 1979, the Department of Environmental Quality
19 ("Department") issued Air Contaminant Discharge Permit No. 15-0018
20 ("Permit") to Respondent. The Permit authorized Respondent to discharge
21 exhaust gases containing air contaminants including emissions from those
22 processes and activities directly related or associated with a plywood
23 manufacturing operation of less than 25,000 square feet per hour and fuel
24 burning equipment, located at 8250 Agate Road, White City, Oregon, in
25 accordance with the requirements, limitations and conditions set forth in
26 the Permit. The Permit expired on April 8, 1984. On May 24, 1984, the

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1 Department received an application for renewal of the Permit from
2 Respondent. At all material times cited herein, the Permit was and is now
3 in effect.

4 III

5 Notices of Violation and Intent to Assess Civil Penalty Nos.
6 AQ-SWR-84-44 dated June 4, 1984, AQ-SWR-84-103 dated October 12, 1984, and
7 AQ-SWR-85-09 dated January 24, 1985, from Fred M. Bolton to Respondent, are
8 on file with the Environmental Quality Commission in this case and are
9 incorporated herein by this reference. By those Notices, the Department
10 notified the Respondent that Respondent had committed one or more
11 violations and that a civil penalty would be assessed if any of those
12 violations continued or if any similar violation occurred five (5) or more
13 days after receipt of those Notices.

14 IV

15 A. On or about February 5, 1985 Respondent was constructing a
16 "cinder-ash collector" modification to the sanderdust boiler stack, before
17 having notified the Department using a Departmental "Notice of
18 Construction" form and obtaining written approval, in violation of Permit
19 General Condition G3 and OAR 340-20-030(1), a violation similar to that
20 cited in Notice of Violation and Intent to Assess Civil Penalty
21 No. AQ-SWR-84-44.

22 B. On or about January 4, January 18, January 30, February 8,
23 February 12, February 13, February 14, February 15, and February 19, 1985,
24 Respondent operated veneer dryer #4 before Respondent equipped that dryer
25 with an emission control system approved in writing by the Department and
26 capable of complying with OAR 340-30-020(1)(a), (b), and (c), and before

1 Respondent demonstrated and before the Department agreed in writing that
2 dryer #4 is capable of being operated and is operated in continuous
3 compliance with OAR 340-30-020(1)(b) and (c), in violation of OAR 340-30-
4 020(2)(b) and (c), violations identical to those cited in Notice of
5 Violation and Intent to Assess Civil Penalty No. AQ-SWR-84-103.

6 C. On or about February 5, February 6, February 8, February 12,
7 February 13, February 14, February 15, and February 19, 1985, Respondent
8 caused or permitted the emission of air contaminants which were equal to or
9 greater than 40% opacity for a period aggregating more than 3 minutes in
10 any one hour, into the atmosphere from Respondent's sanderdust boiler, in
11 violation of Condition 4 of the Permit, OAR 340-21-015(3)(b) and ORS
12 468.315(2), violations similar to those cited in Notice of Violation and
13 Intent to Assess Civil Penalty No. AQ-SWR-85-09.

14 V

15 The Director hereby imposes upon the Respondent a civil penalty of
16 \$150 for the violation alleged in Paragraph IVA, a civil penalty of \$100
17 for each day of the violation alleged in Paragraph IVB, and a civil penalty
18 of \$250 for each day of the violation cited in Paragraph IVC, for a total
19 civil penalty of \$3,050.

20 VI

21 The one or more violations alleged in Paragraph IV involve
22 aggravating factors which support the assessment of a civil penalty larger
23 than the minimum civil penalty which may be assessed pursuant to the

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1 schedule of civil penalties contained in OAR 340-12-050(2). The mitigating
2 and aggravating factors considered by the Director in establishing the
3 amount of the penalty are attached hereto and incorporated herein by this
4 reference.

5 VII

6 This penalty is due and payable immediately upon receipt of this
7 notice. Respondent's check or money order in the amount of \$3,050 should
8 be made payable to "State Treasurer, State of Oregon" and should be sent to
9 the Director of the Department of Environmental Quality.

10 VIII

11 Respondent has the right, if Respondent so requests, to have a formal
12 contested case hearing before the Environmental Quality Commission or its
13 hearing officer regarding the matters set out above pursuant to ORS Chapter
14 183, ORS 468.135(2) and (3), and OAR Chapter 340, Division 11 at which time
15 Respondent may be represented by an attorney and subpoena and cross-examine
16 witnesses. That request must be made in writing to the Director, must be
17 received by the Director within twenty (20) days from the date of mailing
18 of this notice (or if not mailed, the date of personal service), and must
19 be accompanied by a written "Answer" to the charges contained in this
20 notice, and in Notices of Violation and Intent to Assess Civil Penalty Nos.
21 AQ-SWR-84-44 dated June 4, 1984, AQ-SWR-84-103 dated October 12, 1984, and
22 AQ-SWR-85-09 dated January 24, 1985. In the written "Answer," Respondent
23 shall admit or deny each allegation of fact contained in this Notice and in
24 Notices of Violation and Intent to Assess Civil Penalty Nos. AQ-SWR-84-44
25 dated June 4, 1984, AQ-SWR-84-103 dated October 12, 1984, and AQ-SWR-85-09
26 dated January 24, 1985, and Respondent shall affirmatively allege any and

1 all affirmative claims or defenses to the assessment of this civil penalty
2 that Respondent may have and the reasoning in support thereof. Except for
3 good cause shown:

4 A. Factual matters not controverted shall be presumed admitted;

5 B. Failure to raise a claim or defense shall be presumed to be a
6 waiver of such claim or defense;

7 C. Evidence shall not be taken on any issue not raised in the notice
8 and the "Answer."

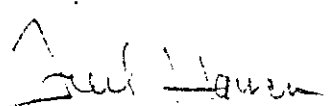
9 If Respondent fails to file a timely "Answer" or request for hearing
10 or fails to appear at a scheduled hearing, the Director on behalf of the
11 Environmental Quality Commission may issue a default order and judgment,
12 based upon a prima facie case made on the record, for the relief sought
13 in this notice. Following receipt of a request for hearing and an
14 "Answer," Respondent will be notified of the date, time and place of the
15 hearing.

16 IX

17 If the violations set forth in Paragraph IV, continue, or if any
18 similar violation occurs, the Director will impose an additional civil
19 penalty upon the Respondent.

20 MAR 4 1985

21 _____
22 Date

23 
24 _____
25 Fred Hansen, Director
26 Department of Environmental Quality

27 Certified Mail No. P 610 638 521

CIVIL PENALTY: MITIGATING AND AGGRAVATING FACTORS
(OAR 340-12-045(1))

RESPONDENT: Lang and Gangnes Corporation, dba/Medply

COUNTY: Jackson

CASE NUMBER: AQ-SWR-85-15

TYPE OF VIOLATION: Air Contaminant Discharge Permit Conditions and Oregon Administrative Rules

PENALTY LIMITS: Minimum \$50 Maximum \$10,000
(each violation or day of violation)

1. Prior violations:

Notice of Violation sent by Larry Jack, Southwest Region, to Medply, November 23, 1983 regarding construction of veneer dryer #4 without having filed Notice of Construction form and received written approval from the Department.

Notice of Violation sent by Larry Jack, Southwest Region, to Medply, April 9, 1984 regarding construction of veneer dryer #4.

Notice of Violation sent by Dennis Belsky, Southwest Region, to Medply, July 10, 1984 regarding failure to submit fugitive emissions control plan or operation and maintenance plan.

Notice of Violation and Intent to Assess Civil Penalty dated June 4, 1984 was issued for construction of veneer dryer #4 without prior written approval.

Notice of Violation and Intent to Assess Civil Penalty dated October 12, 1984 was issued for: failure to submit fugitive emissions control plan or operation and maintenance plan; operating veneer dryer #4 before equipping it with an emission control system approved in writing by the Department and capable of complying with Oregon Administrative Rule (OAR) 340-30-020(1)(a), (b), and (c), and before demonstrating and before the Department agrees in writing that it is capable of being operated and is operated in continuous compliance with OAR 340-30-020(1)(b) and (c); and having veneer dryer opacity levels higher than those allowed by Condition #7 of the permit.

Notice of Violation and Intent to Assess Civil Penalty dated January 24, 1985 was issued because Respondent exceeded the maximum allowable boiler opacity standards on December 19, 1984 and January 4, January 8, January 9, January 11, and January 18, 1985.

2. History of Respondent in taking all feasible steps or procedures necessary or appropriate to correct any violation:

Respondent failed to heed any of the Notices of Violation issued by Southwest Regional office. Respondent to date has taken no action to either equip veneer dryer #4 with an approved emission control system or to demonstrate that it can continuously comply with OAR 340-30-020(2)(b) and (c), though having been informed by the Notice of Violation and Intent to Assess Civil Penalty dated October 12, 1984 that these are requirements for operation of this dryer. Respondent

has failed to take significant action to halt the excessive sanderdust boiler emissions, believing that cleaning boiler portions as time permits (weekends, etc.) and installing the "cinder-ash collector" is sufficient.

Respondent did submit a Notice to Construct for veneer dryer #4 soon after receiving the Notice of Violation and Intent to Assess Civil Penalty dated June 4, 1984. Respondent also submitted fugitive emission control and operation and maintenance plans after receiving the Notice of Violation and Intent to Assess Civil Penalty dated October 12, 1984.

3. The economic and financial condition of the Respondent:

Respondent infers that meeting all environmental standards would cause economic hardship, and possibly the need to either file for protection under Chapter 11 or to close down the plant.

However, there is also economic gain to Respondent, and therefore improvement in Respondent's financial condition, from operating in noncompliance without penalty while other, similar plants operate in compliance with applicable environmental rules and standards.

4. The gravity and magnitude of the violation:

Respondent has repeatedly ignored correspondence informing Respondent of required actions. Opacity readings from the sanderdust boiler show average opacities that on several occasions were greater than twice the levels allowed by Respondent's permit.

The Department has received numerous complaints about air pollution from Respondent's plant from both the general public and the regulated community. Several of Respondent's neighbors have suffered property damage as a result of ash fall-out from Respondent's plant.

Several of the veneer dryer #4 operation violations occurred during an air stagnation advisory called by the National Weather Service for the Medford-White City area.

5. Whether the violation was repeated or continuous:

The operation of veneer dryer #4 without an approved emission control system violation was repeated at least nine times since the October 12, 1984 Notice of Violation; the higher than allowable boiler opacity level violation has occurred at least eight times since the January 24, 1985 Notice of Violation.

6. Whether a cause of the violation was an unavoidable accident, or negligence or an intentional act of the Respondent:

Operation of veneer dryer #4 is intentional. Respondent acknowledges this is a violation but chooses to proceed anyway. Also, Respondent has on several occasions operated both veneer dryers #3 and #4, although the operation of veneer dryer #4 was made contingent on discontinued use of veneer dryer #3. Likewise, operation of the boilers has been intentional, despite knowledge of prior violations and the likelihood that they would continue.

7. The opportunity and degree of difficulty to correct the violation:

Violation for failure to notify Department before constructing the "cinder-ash collector": could have been easily avoided by submission of a form.

Violation for operation of veneer dryer #4 without either an approved emission control system or prior demonstration that it can continuously comply with OAR 340-30-020(1)(b) and (c): Respondent has had five months since first being notified of the violation to meet the Department's rules.

Violation for exceeding allowable opacity levels: requires adjustment to or modification or replacement of the sanderdust boiler. Respondent has had seven weeks to remedy the situation. Respondent's installation of the "cinder-ash collector" has not brought the boiler into compliance with the opacity standards listed in the permit.

8. Respondent's cooperativeness and efforts to correct the violation:

Respondent has not been cooperative in that Respondent has continued to operate veneer dryer #4 without meeting the Department's requirements.

Respondent has tried unsuccessfully to correct the sanderdust boiler operational problems through installation of the "cinder-ash collector." Respondent's installation of that collector was done without notice to and approval of the Department.

The Respondent seems to believe that the violations are not significant. Respondent intends to operate the boiler as is until the October 1985 startup of the Bio-Mass One plant that will provide Medply with steam. Respondent has inferred that Respondent would prefer to file for Chapter 11 protection than willingly meet environmental rules and the conditions of the permit.

9. The cost to the Department of investigation and correction of the violation prior to the time the Department receives Respondent's answer to the written notice of assessment of civil penalty:

In excess of 100 staff hours.

10. Any other relevant factor:

Respondent has failed to satisfy the offset requirement, through having operated both veneer dryers #3 and #4 on a number of occasions.

Respondent appears to have accelerated the use of Douglas fir, a resinous species of wood, in Respondent's operation without regard to the change in emissions that would develop and the subsequent need to add on external pollution controls. The drying of resinous species of wood had been precluded by Respondent's air pollution strategy.

Respondent has failed to show that boiler #2 can be operated in compliance with applicable rules, through having failed to re-source test it since the source testing of March 29-30, 1984.

In establishing the amount of Respondent's civil penalty, I considered the above factors. The major aggravating factors were: that the Respondent has known for some time that Respondent's operation is in violation, yet Respondent intentionally continues to operate in the same manner; Respondent's prior history; the blatantness of the violations; and the economic advantage to Respondent from operating in non-compliance without penalty. There were no major mitigating factors.

MAR 4 1985

Date

Fred Hansen
Director



Department of Environmental Quality

Attachment IX
Agenda Item No. N
September 27, 1985
EQC Meeting

MAY 28 1985

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5636

AIR QUALITY CONTROL

MAY 28 1985

CERTIFIED MAIL NO. P 610 638 537

Lang and Ganges Corporation
dba/Medply
c/o Clyde Lang,
Registered Agent
8250 Agate Road
White City, OR 97501

Re: Notice of Assessment of
Civil Penalty
AQ-SWR-85-33
Jackson County

On March 6, 1985 you received Notice of Assessment of Civil Penalty No. AQ-SWR-85-15. In that Notice, I assessed you civil penalties for eighteen violations of your air contaminant discharge permit and Oregon Administrative Rules resulting from operation of your plywood manufacturing plant in White City, Oregon. I informed you in that Notice that additional civil penalties would be imposed for continued violation.

In the enclosed Notice I have assessed you civil penalties totalling \$5,000 for violations of the boiler opacity standard listed in your permit that were observed at your plant between March 11 and April 8, 1985. In determining the amount of the penalty, I considered Oregon Administrative Rule (OAR) 340-12-045. Surveillance of your plant is ongoing. You are liable for additional civil penalties for any additional violations documented.

The penalty is due and payable. Payment should be made to the address on this letterhead. Appeal procedures are outlined within Paragraph IX of the notice. If you fail to either pay the penalty or appeal the action within 20 days, a Default Order and Judgment will be entered against you.

Staff of the Department visited your plant on April 30, 1985. They learned that you have experienced problems with the clarifier and water circulation system beneath the Fuller scrubber system you connected to the boilers without prior approval of the Department in March 1985. The problems have caused you on at least three occasions to discharge contaminated cooling water into a roadside ditch adjacent to your property. Drainage in this ditch flows to the Rogue River; the ditch is considered waters of the state. Your discharges thus violated Oregon Revised Statute (ORS) 468.740, which prohibits the discharge of wastes into waters of the state from any industrial establishment without a permit. You should halt such discharge immediately. The violation is cited in the enclosed Notice; future violation will result in the assessment of civil penalties.

I urge you to ensure that your future operation of your plant will be in full compliance with applicable laws, rules, and permit conditions. I am encouraged to learn that your plant superintendent, Roy Uray, on May 1, 1985 informed our Southwest Regional office that veneer dryer #4 would no longer be operated until equipped with an emission control system approved

in writing by the Department. Because of this decision, I have decided not to assess you civil penalties for your operation of veneer dryer number 4 without first meeting the requirements of OAR 340-30-020(2) as observed on 7 different days between February 25, and April 16, 1985.

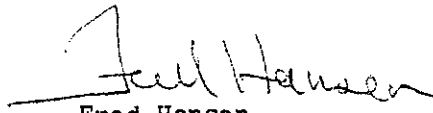
Even though you shut down veneer dryer number 4, your continued violation of other permit conditions and Oregon law remains a serious problem. This needs to be resolved. Consequently, I ask that both Mr. Clyde Lang and Mr. Clayton Gangnes meet with members of the Department's staff, including representatives of the Department's Air Quality Division, on either June 6 or June 7, 1985. Please call Mr. Gary Grimes, the Department's Southwest Regional Manager, at 776-6010, upon your receipt of this letter, to set up an appropriate time, on the date of your preference, for this meeting.

At this meeting, you should be prepared to commit to a firm plan for bringing your plant into compliance which includes specific increments of progress. I am prepared to later consider mitigating up to half of the \$5,000 civil penalty assessed in the enclosed Notice if staff informs me that substantial progress is made at this meeting and that plans agreed to at the meeting are implemented on schedule. I am not prepared to mitigate more than half of this amount, however, because of your delays to-date in bringing your plant into compliance and the economic advantage you have enjoyed over your competitors by operating your plant in non-compliance.

I consider the meeting very important. Your cooperation or lack thereof will be considered in future enforcement decisions concerning your plant.

Questions regarding the enclosed notice should be directed to Mr. Larry Cwik of the Department's Enforcement Section in Portland, at 1-503-229-5152, or toll-free at 1-800-452-4011 (if calling within Oregon).

Sincerely,


Fred Hansen
Director

LC:b
GB4631.L
Enclosure(s)
cc: Southwest Region, DEQ
Air Quality Division, DEQ
Water Quality Division, DEQ
Department of Justice
Environmental Protection Agency
Governor's Office

1 Written comments on the proposed permit are being accepted until June 15,
2 1985. At all material times herein, Permit 15-0018 was and is now in
3 effect.

4 III

5 The following Notices are on file with the Environmental Quality
6 Commission in this case and are incorporated herein by this reference:

7 Notice of Violation and Intent to Assess Civil Penalty No. AQ-SWR-84-44
8 issued on June 4, 1984.

9 Notice of Violation and Intent to Assess Civil Penalty No. AQ-SWR-84-103
10 issued on October 12, 1984.

11 Notice of Violation and Intent to Assess Civil Penalty No. AQ-SWR-85-09
12 issued on January 24, 1985.

13 Notice of Assessment of Civil Penalty No. AQ-SWR-85-15 issued on March 4,
14 1985.

15 Respondent has received the above notices. In the notices, the Department
16 notified the Respondent that Respondent had committed one or more violations and
17 that a civil penalty would be assessed or additional penalties imposed should
18 any of the cited violations continue or any similar violations occur.

19 IV

20 A. On or about March 11, 1985 Respondent caused or permitted the emission
21 of air contaminants which were equal to or greater than 40% opacity for a period
22 aggregating more than 3 minutes in any one hour into the atmosphere from
23 Respondent's sanderdust boiler, in violation of Condition 4 of the Permit, OAR
24 340-21-015(3)(b), and ORS 468.315(2), violations similar to those cited in
25 Notice of Violation and Intent to Assess Civil Penalty No. AQ-SWR-85-09.

26 ///

1 B. On or about March 14, April 2, April 5, and April 8, 1985 Respondent
2 caused or permitted the emission of air contaminants which were equal to or
3 greater than 40% opacity for a period aggregating more than 3 minutes in any one
4 hour into the atmosphere from the stack from the Fuller scrubber attached to
5 Respondent's boilers, in violation of Condition 4 of the Permit, OAR 340-21-
6 015(3)(b), and ORS 468.315(2), violations similar to those cited in Notice of
7 Violation and Intent to Assess Civil Penalty No. AQ-SWR-85-09.

8 V

9 On or about March 11, March 14, and April 30, 1985 Respondent caused or
10 allowed the discharge of wastewater from Respondent's plant, an industrial
11 establishment, to waters of the state without a permit, a violation of ORS
12 468.740(1).

13 VI

14 The Director hereby imposes upon the Respondent a civil penalty of \$1,000
15 for each observed day of each violation alleged in Paragraph IV for a total
16 civil penalty of \$5,000.

17 VII

18 The violations alleged in Paragraph IV involve aggravating factors which
19 support the assessment of a civil penalty larger than the minimum civil penalty
20 which may be assessed pursuant to the schedule of civil penalties contained in
21 OAR 340-12-050(2). The mitigating and aggravating factors considered by the
22 Director in establishing the amount of the penalty are attached hereto and
23 incorporated herein by this reference.

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26 ///

VIII

The \$5,000 penalty is due and payable immediately upon receipt of this notice. Respondent's check or money order in the amount of \$5,000 should be made payable to "State Treasurer, State of Oregon" and should be sent to the Director of the Department of Environmental Quality.

IX

Respondent has the right, if Respondent so requests, to have a formal contested case hearing before the Environmental Quality Commission or its hearing officer regarding the matters set out above pursuant to ORS Chapter 183, ORS 468.135(2) and (3), and OAR Chapter 340, Division 11, at which time Respondent may be represented by an attorney and subpoena and cross-examine witnesses. That request must be made in writing to the Director, must be received by the Director within twenty (20) days from the date of mailing of this notice (or if not mailed, the date of personal service), and must be accompanied by a written "Answer" to the charges contained in this Notice and in Notices of Violation and Intent to Assess Civil Penalty Nos. AQ-SWR-84-44 dated June 4, 1984, AQ-SWR-84-103 dated October 12, 1984, and AQ-SWR-85-09 dated January 24, 1985. In the written "Answer," Respondent shall admit or deny each allegation of fact contained in this Notice and in Notices of Violation and Intent to Assess Civil Penalty Nos. AQ-SWR-84-44 dated June 4, 1984, AQ-SWR-84-103 dated October 12, 1984, and AQ-SWR-85-09 dated January 24, 1985, and Respondent shall affirmatively allege any and all affirmative claims or defenses to the assessment of this civil penalty that Respondent may have and the reasoning in support thereof. Except for good cause shown:

A. Factual matters not controverted shall be presumed admitted;

///

1 B. Failure to raise a claim or defense shall be presumed to be a
2 waiver of such claim or defense;

3 C. Evidence shall not be taken on any issue not raised in the notice
4 and the "Answer."

5 If Respondent fails to file a timely "Answer" or request for hearing
6 or fails to appear at a scheduled hearing, the Director on behalf of the
7 Environmental Quality Commission may issue a default order and judgment,
8 based upon a prima facie case made on the record, for the relief sought
9 in this notice. Following receipt of a request for hearing and an
10 "Answer," Respondent will be notified of the date, time and place of the
11 hearing.

12 X

13 If the violations set forth in Paragraph IV continue, or if any similar
14 violation occurs, the Director will impose an additional civil penalty upon the
15 Respondent. If five (5) or more days after Respondent receives this Notice, the
16 one or more violations cited in Paragraph V of this Notice continue, or any
17 similar violation occurs, the Department will impose upon Respondent a civil
18 penalty pursuant to Oregon statutes and OAR Chapter 340, Divisions 11 and 12.
19 In the event that a civil penalty is imposed upon Respondent for any continued
20 or similar violation, it will be assessed by a subsequent written notice
21 pursuant to ORS 468.135(1) and (2), and OAR 340-11-100 and 340-12-070.

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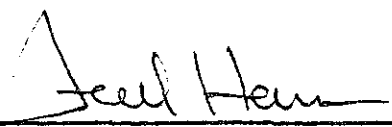
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1 Respondent will be given an opportunity for a contested case hearing to contest
2 the allegations and penalty assessed in that Notice, pursuant to ORS 468.,135(2)
3 and (3), ORS 183 and OAR Chapter 340, Division 11.

4
5 MAY 28 1985

6 Date


Fred Hansen, Director
Department of Environmental Quality

9 Certified Mail P 610 638 537

CIVIL PENALTY: MITIGATING AND AGGRAVATING FACTORS

(OAR 340-12-045(1))

RESPONDENT: Lang and Gangnes Corporation, dba/Medply

COUNTY: Jackson

CASE NUMBER: AQ-SWR-85-33

TYPE OF VIOLATION: Air Contaminant Discharge Permit Conditions and Oregon Administrative Rules

PENALTY LIMITS: Minimum \$50 Maximum \$10,000
(each violation or day of violation)

1. Prior violations:

Notice of Violation sent by Larry Jack, Southwest Region, to Medply, November 23, 1983 regarding construction of veneer dryer #4 without first having filed a Notice of Construction form and received written approval from the Department.

Notice of Violation sent by Larry Jack, Southwest Region, to Medply, April 9, 1984 regarding construction of veneer dryer #4.

Notice of Violation sent by Dennis Belsky, Southwest Region, to Medply, July 10, 1984 regarding failure to submit fugitive emissions control plan or operation and maintenance plan.

Notice of Violation and Intent to Assess Civil Penalty dated June 4, 1984 was issued for construction of veneer dryer #4 without prior written approval.

Notice of Violation and Intent to Assess Civil Penalty dated October 12, 1984 was issued for: failure to submit fugitive emissions control plan or operation and maintenance plan; operating veneer dryer #4 before meeting the requirements of Oregon Administrative Rule (OAR) 340-30-020(2); and having veneer dryer opacity levels higher than those allowed by Condition #7 of the permit.

Notice of Violation and Intent to Assess Civil Penalty dated January 24, 1985 was issued because Respondent exceeded the maximum allowable boiler opacity standards on December 19, 1984 and January 4, 8, 9, 11, and 18, 1985.

Notice of Assessment of Civil Penalty dated March 4, 1985 was issued for: operating veneer dryer #4 before meeting the requirements of OAR 340-30-020(2); exceeding maximum allowable boiler opacity standards; and constructing a "cinder-ash collector" before having filed a Notice of Construction form and received written approval from the Department.

2. History of Respondent in taking all feasible steps or procedures necessary or appropriate to correct any violation:

Respondent failed to heed any of the Notices of Violation issued by Southwest Regional office.

Respondent to date has neither equipped veneer dryer #4 with an approved emission control system nor demonstrated that it can continuously comply with OAR 340-30-020(2)(b) and (c), though having been informed by the Notice of Violation and Intent to Assess Civil Penalty dated October 12, 1984 that these are requirements for operation of this dryer. On May 1, 1985 the plant superintendent for Respondent called the Department's Southwest Regional office and stated Respondent would halt further operation of veneer dryer #4 until it had been fitted with a pollution control system approved by the Department.

Respondent has failed to halt the excessive boiler emissions. Respondent's connection of the Fuller scrubber to Respondent's boilers has not reduced emissions significantly. This connection, done without prior approval of the Department, has led to the discharge of contaminated cooling water to a roadside ditch adjacent to Respondent's property, in violation of Oregon law.

3. The economic and financial condition of the Respondent:

Respondent has filed for protection under Chapter 11. Respondent stated in March 1985 that economic and cash flow conditions were the reason for the lack of substantial progress in moving toward full compliance with environmental regulations and permit conditions.

However, there is also economic gain to Respondent, and therefore improvement in Respondent's financial condition, from operating in noncompliance without penalty while other, similar plants operate in compliance with applicable environmental rules and standards.

4. The gravity and magnitude of the violation:

Respondent has repeatedly ignored correspondence informing Respondent of required actions. Opacity readings from the boilers have ranged up to levels greater than twice the levels allowed by Respondent's permit.

The Department has received numerous complaints about air pollution from Respondent's plant from both the general public and the regulated community.

5. Whether the violation was repeated or continuous:

Repeated.

6. Whether a cause of the violation was an unavoidable accident, or negligence or an intentional act of the Respondent:

Operation of the boilers has been intentional, with knowledge of prior violations and the likelihood that violations would continue.

7. The opportunity and degree of difficulty to correct the violation:

Violation for exceeding allowable boiler opacity levels: requires adjustment to or modification of the boilers. Respondent has had several months to remedy the situation. Respondent's connection of the Fuller scrubber to the boilers has not brought the boilers into compliance with the opacity standards listed in the permit.

8. Respondent's cooperativeness and efforts to correct the violation:

Respondent has tried unsuccessfully to correct the boiler operational problems through connection of the Fuller scrubber to the boilers. This action was taken without prior notice to and approval of the Department.

Respondent stated in March 1985 that Respondent is working toward compliance. A compliance schedule proposed by Respondent has been incorporated into the draft of Respondent's renewed permit.

9. The cost to the Department of investigation and correction of the violation prior to the time the Department receives Respondent's answer to the written notice of assessment of civil penalty:

In excess of 100 staff hours.

10. Any other relevant factor:

Respondent has failed to satisfy the offset requirement, through having operated both veneer dryers #3 and #4 on a number of occasions.

Respondent appears to have accelerated the use of Douglas fir, a resinous species of wood, in Respondent's operation without regard to the change in emissions that would develop and the subsequent need to add on external pollution controls. The drying of resinous species of wood had been precluded by Respondent's air pollution strategy.

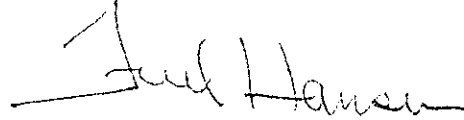
Respondent has failed to show that boiler #2 can be operated in compliance with applicable rules, through having failed to re-source test it since the source testing of March 29-30, 1984.

In establishing the amount of Respondent's civil penalty, I considered the above factors. The major aggravating factors were: that the Respondent has known for some time that Respondent's operation is in violation, yet Respondent intentionally continues to operate in the same manner; Respondent's prior history; the blatantness of the violations; and the economic advantage to Respondent from operating in

non-compliance without penalty. A moderate mitigating factor was the incorporation of a compliance schedule into Respondent's renewed permit.

MAY 28 1985

Date



Fred Hansen
Director

DOUGLAS P. CUSHING
WILLIAM P. HABERLACH

CUSHING & HABERLACH
ATTORNEYS AT LAW
31 NEWTOWN
MEDFORD, OREGON 97501

Attachment X
Agenda Item No. N
September 27, 1985
EQC Meeting
(503) 773-7477

June 21, 1985

Department of Environmental Quality
522 SW Fifth Avenue
P. O. Box 1760
Portland, OR 97207

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JUN 21 1985

Re: Lang & Gangnes Corporation dba MedPly
ACD Permit No. 15-0018

Gentlemen:

On behalf of Lang and Gangnes Corporation which is doing business as MedPly, we hereby request pursuant to ORS 468.345 a variance to allow operation of the MedPly facility which may not be in compliance with the emission standards and limitations set forth in statute, regulations and the permit, to extend to December 15, 1985 the time in which the operation of applicant's boiler shall be in compliance. This time is necessary to allow installation, connection and demonstration of compliance for the supply of steam to MedPly's dryers from the ERG Biomas One facility. Upon such connection the permittee's boilers will be shut down from further operation.

We further request an additional variance to March 31, 1986 for the transfer of the scrubber presently installed on permittee's boilers to be tied in to the operation of three dryers, as was previously conditionally approved.

The application for the variance is necessitated by virtue of the fact that Biomas One has not been able to complete installation of their facility and provide the steam for Lang & Gangnes Corporation as the attached contract reflects. Upon installation of the steam line, MedPly will no longer have the need to operate its boilers and they will be shut down. Lang & Gangnes has not been able to control the speed at which ERG has gone forward to complete its facility, but they do face significant financial penalties in the event the plan is not operable by January 1, 1986 and as of this date completion within the time line of this request is anticipated.

The applicant further requests approval of the variance for the reason that strict compliance would be extremely burdensome financially, and in all likelihood would result in a closing down of the applicant's plant or substantial curtailment, affecting over 200 jobs. The applicant has within the past 60 days been forced to file for protection under Chapter 11 of the United States Bankruptcy Code. The schedules of

Department of Environmental Quality
Page 2
June 21, 1985

debt, copies of which are attached hereto, reflect the priority debt for taxes of nearly \$300,000.00, secured debt of approximately \$1,700,000.00 and unsecured debt of approximately \$1,000,000.00. The cash flow of the applicant has been significantly affected prior to the filing of Chapter 11 for the reason that Security Pacific Business Credit, its primary lender, had in the fall of 1984 terminated financing of its inventory, and in the spring of 1985 indicated it wished to terminate financing of its accounts receivable. MedPly is presently operating under Chapter 11 and believes it will be able to operate successfully but it does not at this time have cash available to finance additional improvements. In order to borrow funds for such requirements as might be necessitated, it would be necessary to give notice to all creditors, to allow opportunity for objection within the Chapter 11 proceeding, and to obtain approval of the court. It is anticipated that all creditors would oppose any financing requests for the reason that installation of any additional equipment would at this time be for an extremely limited period of time, perhaps less than three months. It is possible that equipment would not even be available prior to the time of connection of the ERG steam line.

In attempting to work toward full compliance with the statutes and permit, the applicant did install the scrubber previously approved for the dryers on its boiler, the most obnoxious source, and the level of discharge has been significantly improved. The applicant has further shut down operation of its dryer number 4 and that will remain shut down until such time as the connection to the ERG steam lines has been completed, the scrubber has been reinstalled in connection with the dryers and the applicant can determine the level of discharge. During the period requested for the variance, the applicant will increase the frequency of plant clean ups to reduce dust and will remove piles of material presently sitting in the yard, will attempt to reduce the amount of water sitting in the dryers, and shall work with the staff of the Department of Environmental Quality to determine other temporary steps which may be achieved. The number 4 dryer will remain shut down throughout this period of time.

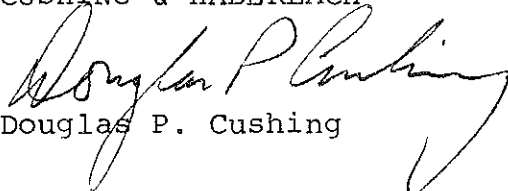
Finally the applicant does anticipate that the agreement with Biomas will improve its cash flow position and increase its productivity. The applicant will identify those changes, and the necessary costs entailed in connecting the scrubber to the dryers and tying together their venting system at that time as that will be a necessary component of applicant's Chapter 11 proposed plan of reorganization which will ultimately be submitted to its creditors for approval.

Department of Environmental Quality
Page 3
June 21, 1985

The prompt attention which the Department's staff has indicated they will give to this request is appreciated by the applicant. Additional information as may be requested will be provided as soon as it can be prepared and we would request that at such time as this matter is before the commission for consideration, that we be allowed the opportunity to be present at that time.

Yours very truly,

CUSHING & HABERLACH


Douglas P. Cushing

DPC:jlb

cc: Department of Environmental Quality/Medford
Lang & Gangnes Corporation

A G R E E M E N T

THIS AGREEMENT, made and entered into this 9th day of May, 1983, between CLYDE LANG and CLAYTON GANGNES and LANG & GANGNES CORPORATION, hereinafter referred to as "L & G", and LEE WEISEL, MARC RAPPAPORT and D. SAM SCHEELE, dba ENERGY RELIANCE GROUP, hereinafter referred to as "ERG", and VALLEY WOOD PRODUCTS, INC., hereinafter referred to as "Valley Wood";

WHEREAS, Lang and Gangnes are the owners of L & G and Valley Wood; and

WHEREAS, L & G operates a veneer plant in White City, Oregon, and it produces quantities of wood residues, and L & G requires a supply of steam for its manufacturing process, and L & G wishes to construct a veneer, sawmill, chipping, hog-fuel operation; and

WHEREAS, ERG is installing a woodfired electric power plant, and ERG wishes to purchase L & G's wood residues, and ERG wishes to sell L & G the steam it requires; and

WHEREAS, the owners of L & G also own Valley Wood and that the loans from ERG to L & G and Valley Wood are necessary to allow those corporations to complete improvements that will in turn result in them being able to supply ERG with a portion of its fuel requirement.

NOW, THEREFORE, in consideration of the mutual promises, covenants, and agreements herein contained, the parties hereto agree:

1. STEAM. ERG shall provide steam to L & G for its White City operation at a rate of up to 60,000 pounds per hour at a pressure of 300 pounds per square inch ("PSI"), this to be on a twenty-four (24) hour per day seven (7) days per week basis.
2. EQUIPMENT AND CONSTRUCTION. ERG will fabricate, procure, and install at its own expense, the generation and transportation equipment necessary to furnish steam at the above rate to L & G at 8250 Agate Road, White City, Oregon 97501. This equipment is to be integrated into the existing steam drying system of L & G at the location of the current L & G dryers. This integration to be according to plans and specifications which shall be subject to L & G's approval which shall not be unreasonably withheld. A license for the installation and maintenance of the pipelines and any related equipment necessary to accomplish the transportation of the steam shall be provided by L & G over L & G's property. Said license shall be for the duration of this Contract. ERG shall maintain and repair the pipelines and any related equipment on L & G's property at ERG's own expense. However, L & G shall be liable for any damage thereto caused by the negligence or intentional acts of its employees or agents.

3. CONSIDERATION. As consideration for the steam, L & G shall:

(a) Pay to ERG the sum of FORTY-TWO THOUSAND SEVEN HUNDRED FIFTY DOLLARS (\$42,750.00) per month for the first sixty (60) months of this Agreement; FORTY-SEVEN THOUSAND DOLLARS (\$47,000.00) per month for the second sixty (60) months of this Agreement; FIFTY-TWO THOUSAND DOLLARS (\$52,000.00) per month for the third sixty (60) months of this Agreement; FIFTY-SEVEN THOUSAND DOLLARS (\$57,000.00) per month for the fourth sixty (60) months of this Agreement; SIXTY-THREE THOUSAND DOLLARS (\$63,000.00) per month for the fifth sixty (60) months of this Agreement; and SIXTY-NINE THOUSAND DOLLARS (\$69,000.00) per month for the last sixty (60) months of this Agreement. Said payments to be reduced for any time in which steam is not available for supply to L & G, the reduction to be proportionate to the total amount of operating time L & G would have expended during the month in which the steam was not available.

(b) Provide ERG with a minimum of 120,000 tons per year of wood fiber residue as follows:

- (1) All wood waste and trimmings, sander dust, bark or wood fiber residue of any kind generated through L & G's plywood operation with a moisture content not to exceed 10%, as set forth below. L & G may except such bark grade that may be sold as landscape bark provided L & G provides a minimum of 18,000 tons of 10% moisture wood fiber residue.
- (2) All wood waste and trimmings, sander dust, bark or wood fiber residue of any kind generated through L & G's other operations and Valley Wood's operations.

4. CONSIDERATION FOR WOOD FIBER. As consideration for the wood fiber residue, ERG shall pay to L & G SEVEN and 50/100 DOLLARS (\$7.50) per ton F.O.B. the L & G plant, during the first sixty (60) months of this agreement; EIGHT and 25/100 DOLLARS (\$8.25) per ton for the second sixty (60) months; NINE and 10/100 DOLLARS (\$9.10) per ton for the third sixty (60) months; TEN DOLLARS (\$10.00) per ton for the fourth sixty (60) months; ELEVEN DOLLARS (\$11.00) per ton for the fifth sixty (60) months; and TWELVE and 10/100 DOLLARS (\$12.10) per ton for the last sixty (60) months. If, however, during the third, fourth, fifth or last sixty month period, L & G can ~~convincingly demonstrate~~ ^{show} it is suffering a net operating loss (~~not including depreciation~~) by providing the wood fiber residue described in Paragraph 3 (b) (2) above, ERG and L & G agree

Handwritten signatures and initials:
J. J. [unclear]
C. C.
D. D.
D. D.

to renegotiate the price per ton for the periods or, if they are unable to agree on a price, ERG may elect to have L & G custom chip an equivalent quantity of wood fiber residue pursuant to the terms of Paragraph 10 of this Agreement. All payments hereunder shall be reduced if the moisture content of the wood fiber residue exceeds fifty percent (50%). The reduction shall be only with respect to the amount that its water content exceeds fifty percent (50%). Thus, if there is wood fiber residue with fifty-one percent (51%) water content, the price reduction would be one percent (1%).

5. DEFAULT. ERG or L & G shall be deemed in default in performance of its obligations hereunder for any failure or delay in performance for any reason except as provided herein. This shall not include causes not within ERG's or L & G's control whether due to strikes, lockouts, concerted acts of workmen or other industrial disturbances, fires, explosions, floods, acts of God, delays of contractors or vendors, sufferance or voluntary compliance with acts of government and government regulations whether or not valid.

6. DAMAGES. ERG's responsibility for damages shall be for all direct losses that accrue to L & G and for which ERG is legally responsible. In addition, liquidated damages shall be set in the amount of ONE THOUSAND DOLLARS (\$1,000.00) per day or any fraction thereof that steam is not supplied to L & G's property. Liquidated damages are set due to the fact that the parties realize that in the event L & G's requirements are not met as contemplated by this agreement, it may be very difficult to ascertain exact and missed opportunities for additional business among other things. Therefore, the parties have negotiated in good faith to set the listed per diem figure. This figure is not designed to act as a penalty but rather as a negotiated forecast of actual damages.

7. INSURANCE. It is recognized that L & G's continued operation is dependent upon ERG's compliance with its promises herein. Therefore, it is agreed that insurance in the amount of THREE HUNDRED THOUSAND DOLLARS (\$300,000.00) shall be obtained providing indemnification against disruption of L & G's steam source to cover the damages as specified above. L & G and ERG will cooperate to determine which entity can obtain the insurance at the lower cost. However, ERG will be responsible for paying the full cost of the steam interruption insurance. If such insurance is inadequate to cover L & G's losses and damages, then it is agreed that L & G may deduct its damages from any payments that it owes to ERG by reason of agreements mentioned herein.

8. SERVICING. It is recognized that a reasonable amount of down time not to exceed three (3) weeks per year will be required for normal maintenance of the steam generation units. Notwithstanding any other provision contained herein, ERG will not be liable for loss of production during routine maintenance so long as L & G is provided with a schedule of maintenance ninety (90) days in advance.

9. INITIAL TERM. The term of this contract shall be for thirty (30) years from the date of commercial operation of ERG's power plant. However, if such power plant is not in full operation and fully supplying the steam needs of L & G by July 1, 1985, then L & G has the right to terminate this Agreement.

10. CUSTOM CHIPPING. L & G understands ERG requires at least 180,000 tons of wood fiber residue per year. L & G agrees at ERG's request to provide its facilities to custom chip ERG's raw material at the following price:

- (a) ONE DOLLAR (\$1.00) per ton for processing into hog fuel, i.e., "hogging."
- (b) TWO DOLLARS and 50/100 (\$2.50) per ton for classifying and processing into pulp chips and hog fuel, i.e., "chipping."

These prices shall be adjusted annually to reflect L & G's increased direct costs of production.

11. INTEREST IN ERG. ERG agrees to grant and to give for no additional consideration to L & G conditioned on L & G's fulfillment of the terms and conditions of this Agreement one percent (1%) of ERG's interest in Biomass-I Operating Company or whatever other name the company is given with the company being the one that is to operate the woodfired electric power plant. At the option of L & G the interest shall be given to whosoever it shall designate and if the interest is not given within two (2) years from the date of this Agreement, then L & G has the right to terminate this Agreement.

12. TRANSFERABILITY OF RIGHTS. Except as otherwise provided herein, no portion of the rights or duties of either party herein shall be assigned or otherwise transferred by operation of law or otherwise without the written consent of the other party first had and obtained. However, such consent shall not be unreasonably withheld.

13. BINDING EFFECT. This Agreement shall be binding upon and inure to the benefit of the parties hereto, their respective heirs, successors in interest, personal representatives, assigns, and subsequent purchasers of

the corporations or facilities owned by the corporations or individuals. All performance hereunder shall be personally guaranteed by the principals of L & G and ERG.

MR
May 11, 1983
JAN
DR
BSY

14. ERG'S LOANS TO LANG AND GANGNES. On or before June 1, 1983, ERG agrees to loan to Clyde Lang and Clayton Gangnes personally, \$80,000.00 repayable to ERG at \$5,000.00 per month starting thirty (30) days after loan and \$5,000.00 on like day of each month thereafter until the entire amount of principal and interest is paid in full. This loan shall be secured by a first lien on 3 Coe Veneer Dryers and such other collateral as the parties may agree. It shall also be guaranteed by their spouses and the corporations.

On or before September 1, 1983, ERG agrees to loan \$300,000.00 to Lang and Gangnes personally to be repaid to ERG in equal monthly payments starting thirty (30) days after the loan and amortized over seven (7) years. This loan will be secured by a first lien on collateral to be agreed upon, a second lien on the L & G plywood mill, a second lien on eight (8) acres of land owned by L & G and guaranteed by their spouses and the corporations.

All loans by ERG to be repayable without any prepayment penalties.

Failure by ERG to loan the sums to Lang and Gangnes will give L & G the option of not supplying wood waste from Valley Wood to ERG or to declare this contract null and void.

15. ERG'S LOAN TO LANG AND GANGNES. By March 1, 1985, ERG agrees to loan to Clyde Lang and Clay Gangnes \$280,000.00 or to guarantee said loan, to be used by them to purchase the Tolo Road mill site upon which they presently have an Option. The loan to be secured by a first mortgage on said mill site and to be payable in equal monthly installments amortized over ten (10) years. The loan to be made at a time chosen by mutual agreement and to be repaid starting thirty (30) days after the making of the loan.

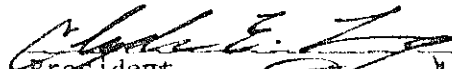
16. PERSONAL GUARANTEES. Clay Gangnes and Donna L. Gangnes and Clyde Lang and Laura Arlene Lang jointly and severally guarantee the repayment to ERG of all loans made by it pursuant to this Agreement and to either L & G or Valley Wood. Such repayment and guarantees shall survive the termination of this Agreement.

17. INTEREST RATES. The interest rate to be paid by L & G, Valley Wood, and Clay Gangnes and Clyde Lang on their loans from ERG shall be two (2) points over First Interstate Bank's prime rate used by it for computing interest rates on commercial loans and that is in effect seven (7) days prior to the date of the loan from ERG to L & G, Valley Wood, or Clay Gangnes and Clyde Lang.

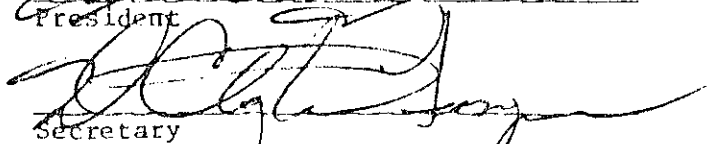
18. ATTORNEYS' FEES. In the event suit, action, or other proceedings are instituted by either party against the other to enforce any of the provisions of this Agreement or for the breach thereof, the prevailing party in such suit or action shall be entitled to recover, in addition to the costs and disbursements provided by statute, such sum as attorneys' fees in such suit, action, or proceeding as the court may adjudge reasonable, and also on appeal.

IN WITNESS WHEREOF, the parties hereunto set their hands and seals the date hereinabove set forth.

LANG & GANGNES CORPORATION

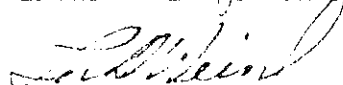


President




Secretary

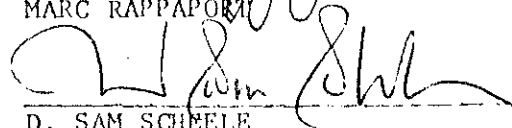
ENERGY RELIANCE GROUP



LEE D. WEISEL

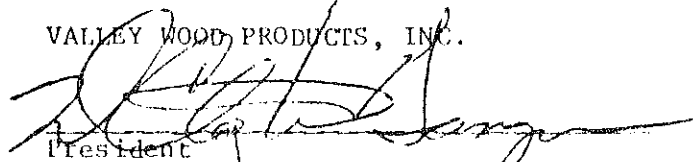


MARC RAPPAPORT

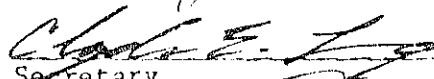


D. SAM SCHEELE

VALLEY WOOD PRODUCTS, INC.



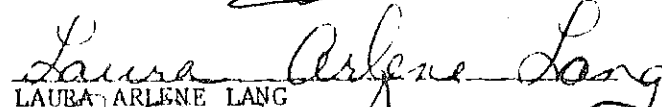
President



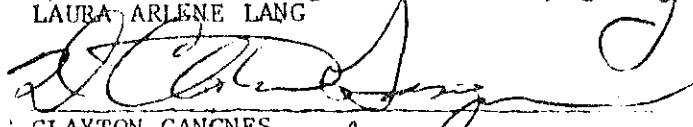
Secretary



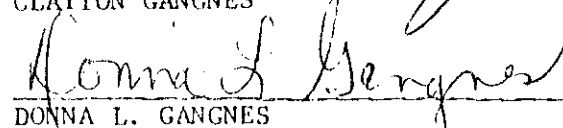
CLYDE LANG



LAURA ARLENE LANG



CLAYTON GANGNES



DONNA L. GANGNES

SCHEDULES OF ASSETS AND LIABILITIES

Form No. 6, August 1, 1983

United States Bankruptcy Court for the _____ District of OREGON

In re LANG & GANGNES CORPORATION dba
MED. PLY.

Case No. 685-07634

DEBTOR(S) [INCLUDE HERE ALL NAMES USED BY DEBTOR(S) WITHIN
 LAST 6 YEARS]

SCHEDULE A.—STATEMENT OF ALL LIABILITIES OF DEBTOR(S)

Schedules A-1, A-2, and A-3 must include all the claims against the debtor (s) or debtor's property as of the date of the filing of the petition by or against debtor (s).

SCHEDULE A-1.—CREDITORS HAVING PRIORITY

| Nature of claim | Name of creditor and complete mailing address including zip code (if unknown, so state) | Specify when claim was incurred and the consideration therefor; when claim is subject to setoff, evidenced by a judgment, negotiable instrument, or other writing; or incurred as partner or joint contractor, so indicate; specify name of any partner or joint contractor on any debt | Indicate if claim is contingent, unliquidated or disputed | Amount of claim |
|--|---|---|---|---|
| a. Wages, salary and commissions, including vacation, severance and sick leave pay owing to employees not exceeding \$2000 to each, earned within 90 days before filing of petition or cessation of business, if earlier (specify date). | | | | \$ -0- |
| b. Contributions to employee benefit plans for services rendered within 180 days before filing of petition or cessation of business, if earlier (specify date). | | | | -0- |
| c. Deposits by individuals, not exceeding \$900 for each for purchase, lease, or rental of property or services for personal, family, or household use that were not delivered or provided. | | | | -0- |
| d. Taxes owing (itemize by type of tax and taxing authority): (1) To the United States (2) To any State (3) To any other taxing authority | | IRS Dept. of Employment Dept. of Revenue Jackson County (Property taxes) | | \$210,383.07 32,267.28 20,000.00 19,436.92 |
| | | | Total | 282,087.27 |

SCHEDULE A-2 — CREDITORS HOLDING SECURITY

| Name of creditor and complete mailing address including zip code | Description of security and date when obtained by creditor | Specify when claim was incurred and the consideration therefor; when claim is subject to setoff, evidenced by a judgment, negotiable instrument, or other writing, or incurred as partner or joint contractor, so indicate; specify name of any partner or joint contractor on any debt | Indicate if claim is contingent, unliquidated or disputed | Market value | Amount of claim without deduction of value of security |
|---|---|---|---|-----------------|--|
| Biomax One Suite 200 1722 Westwood Blvd. Los Angeles, CA 90024 | real property of corporation | 1984 | | \$ 1,200,000.00 | \$ 359,400.00 |
| +Security Pacific Business Credit +c/o Dennis Talbott Severson, Werson et al +One Embarcadero Center San Francisco, CA 94111 | real property, all equipment, inventory and accounts receivable | 1984 | | 4,295,000.00 | 1,306,738.00 |
| Treesource Inc. c/o Robert Rieke Attorney at Law P. O. Box 886 Philomath, OR 97370 | inventory and proceeds thereof | | | 675,000.00 | 24,866.00 |
| Total | | | | 4,295,000.00 | 1,691,004.00 |

SCHEDULE A-3.—CREDITORS HAVING UNSECURED CLAIMS WITHOUT PRIORITY

| Name of creditor (including last known holder of any negotiable instrument) and complete mailing address including zip code | Specify when claim was incurred and the consideration therefor; when claim is contingent, unliquidated, disputed, subject to set-off, evidenced by a judgment, negotiable instrument, or other writing, or incurred as partner or joint contractor, so indicate; specify name of any partner or joint contractor or any debt | Indicate if claim is contingent, unliquidated, or disputed | Amount of claim |
|---|--|--|-------------------|
| Alpine Veneers, Inc. P. O. Box 4500-2 Portland, OR 97208 | | | \$ 93,169.45 |
| Boise Cascade Corp. P. O. Box 3373 Portland, OR 97208 | | | 1,886.62 |
| Douglas County Lumber Co. P. O. Box 1490 Roseburg, OR 97470 | | | 1,003.44 |
| Gregory Timber Resources, Inc. 4800 SW Griffith Drive Beaverton, OR 97005 | | | -0- |
| Medford Corporation P. O. Box 4000-81 Portland, OR 97208 | | | 54,110.37 |
| The Murphy Company P. O. Box 2810 Eugene, OR 97402 | | | 14,762.33 |
| Pope & Talbot, Inc. P. O. Box 4100-32 Portland, OR 97208 | | | 35,363.43 |
| Nordic Plywood, Inc. P. O. Box 2249 Roseburg, OR 97470 | | | 47,562.40 |
| Octagon Veneer, Inc. P. O. Box 794 Forest Grove, OR 97116 | | | 45,761.31 |
| McDougal Sales, Inc. P. O. Box 87 Dexter, OR 97431 | | | 10,500.17 |
| Miller Redwood Company P. O. Box 247 Crescent City, CA 95531 | | | 3,457.28 |
| Total | | | 986,320.77 |

SCHEDULE A-3
 HAS A TOTAL OF
 17 PAGES
 NOT INCLUDED
 WITH EGC
 REPORT
 16

DOUGLAS P. CUSHING
WILLIAM P. HABERLACH

CUSHING & HABERLACH
ATTORNEYS AT LAW
31 NEWTOWN
MEDFORD, OREGON 97501

Attachment XI
Agenda Item No. N
September 27, 1985
EQC Meeting
(503) 773-7477

August 20, 1985

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

AUG 22 1985

Department of Environmental Quality
P. O. Box 1760
Portland, OR 97207

WATER QUALITY CONTROL
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

AUG 20 1985

Re: Lang & Gangnes Corporation

Gentlemen:

AIR QUALITY CONTROL

In response to your letter of July 8, 1985 requesting additional information necessary for consideration of the variance request on behalf of Lang & Gangnes Corporation, I am pleased to enclose that information at this time.

Dealing with your questions in reverse order, the proposed schedule for our reorganization calls for preparation of a disclosure statement prior to the 1st of November at the latest date. We have felt the need to operate for three to four months in order to be certain of our ability to project future revenues sufficient to present a plan that would be susceptible of being completely performed. If filed by the 1st of November, I would expect review by the Bankruptcy Court, modification, and consideration for approval of a disclosure statement by December. That would hopefully then call for balloting by the creditors in early 1986 at the latest.

In terms of interim measures to be taken during the period of the variance, the corporation has been attempting to mix its fuel, in an attempt to eliminate those sources which present the most critical problem. While it has not been operating perfectly, the scrubber has been maintained on the boiler stack, the fourth veneer dryer has been shut down, and efforts are under way to minimize the general dust problem. The company is also attempting to engage an engineer on a part-time consulting basis to provide regular evaluation and assistance on resolution of its pollution problems.

There are enclosed copies of the engineering drawings showing the steam line to be run from the Biomass plant, and the general route of that steam line to Med Ply's property. If satisfactory, it is assumed the existing scrubber will be moved from the boiler to the dryer without any change in the plans previously submitted.

Operation of the plant during the months of May and June, the first two months following the filing of the Chapter 11 plan, showed an operating profit of \$49,793.00.

Department of Environmental
Quality
Page 2
August 20, 1985

That did reflect depreciation deduction of \$47,302.00, but does not reflect reduction in principal on long-term debt. Those would total \$46,000.00 for those two months, leaving the cash flow at approximately \$50,000.00 for that two month period of time. For the month of July, the final figures are not complete but it is estimated at \$41,000.00 positive cash flow. Projecting no change in the price of plywood, nor the other costs of operation except for quantity produced, we project a cash flow ranging between \$41,000.00 and \$56,000.00 for the following months. The difference largely results from the difference in the number of days of production. We are making no adjustment to reflect anticipated cost savings once the steam is provided, as it is uncertain how quickly those benefits shall be seen.

The cost of installing the steam line to Lang & Gangnes Corporation will be borne almost entirely by Biomass in accordance with the agreement of May 9, 1983, a portion of which is attached. The additional cost of removing the scrubber, constructing the necessary material at the dryer site, and ultimately installing the scrubber, is estimated at \$67,000.00. The work to be done would be done in four stages.

In stage one the construction of the concrete slab and necessary steel forms for the actual scrubber is estimated to require materials of approximately \$3,000.00, personnel costs of \$9,000.00 and would take a month to six weeks and is based on current projections.

Stage two would involve the disconnection of the scrubber and removal and its being placed on the new frame. This would take approximately one month and is estimated to require approximately \$16,000.00 in personnel, equipment rental and materials.

Stage three, the actual installation of ancillary equipment which would require approximately two weeks time, is estimated to require \$16,000.00 in personnel and materials.

The final stage of connecting the dryers to the scrubber would be done by contract with outside parties and a bid has been received of \$17,500.00. There is an additional estimated requirement of \$5,000.00 for insulation of certain parts of the system. The total of \$67,000.00 would be spread

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Quality
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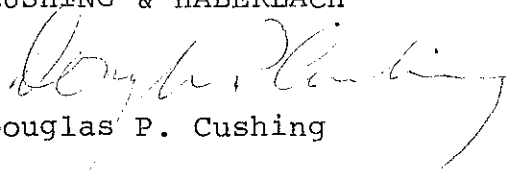
over a period of time from October through March and would readily be serviced from the operating cash flow.

We are also reviewing an estimate from Vince Marci & Associates, the contracting firm who would complete stage four, for modifications of the hog cyclone that would, we believe, would minimize the dust problem as well.

Hopefully this information will have provided all of the material that we were required to provide. If additional items are necessary, please give me a call.

Yours very truly,

CUSHING & HABERLACH



Douglas P. Cushing

DPC:jlb
Enclosures
cc: DEQ/Medford Office
Lang & Gangnes Corporation

A G R E E M E N T

THIS AGREEMENT, made and entered into this 9th day of May, 1983, between CLYDE LANG and CLAYTON GANGNES and LANG & GANGNES CORPORATION, hereinafter referred to as "L & G", and LEE WEISEL, MARG RAPPAPORT and D. SAM SCHEELE, dba ENERGY RELIANCE GROUP, hereinafter referred to as "ERG", and VALLEY WOOD PRODUCTS, INC., hereinafter referred to as "Valley Wood";

WHEREAS, Lang and Gangnes are the owners of L & G and Valley Wood; and

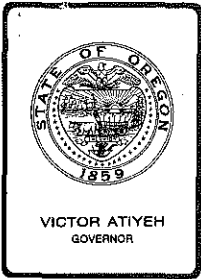
WHEREAS, L & G operates a veneer plant in White City, Oregon, and it produces quantities of wood residues, and L & G requires a supply of steam for its manufacturing process, and L & G wishes to construct a veneer, sawmill, chipping, hog-fuel operation; and

WHEREAS, ERG is installing a woodfired electric power plant, and ERG wishes to purchase L & G's wood residues, and ERG wishes to sell L & G the steam it requires; and

WHEREAS, the owners of L & G also own Valley Wood and that the loans from ERG to L & G and Valley Wood are necessary to allow those corporations to complete improvements that will in turn result in them being able to supply ERG with a portion of its fuel requirement.

NOW, THEREFORE, in consideration of the mutual promises, covenants, and agreements herein contained, the parties hereto agree:

1. STEAM. ERG shall provide steam to L & G for its White City operation at a rate of up to 60,000 pounds per hour at a pressure of 300 pounds per square inch ("PSI"), this to be on a twenty-four (24) hour per day seven (7) days per week basis.
2. EQUIPMENT AND CONSTRUCTION. ERG will fabricate, procure, and install at its own expense, the generation and transportation equipment necessary to furnish steam at the above rate to L & G at 8250 Agate Road, White City, Oregon, 97501. This equipment is to be integrated into the existing steam drying system of L & G at the location of the current L & G dryers. This integration to be according to plans and specifications which shall be subject to L & G's approval which shall not be unreasonably withheld. A license for the installation and maintenance of the pipelines and any related equipment necessary to accomplish the transportation of the steam shall be provided by L & G over L & G's property. Said license shall be for the duration of this Contract. ERG shall maintain and repair the pipelines and any related equipment on L & G's property at ERG's own expense. However, L & G shall be liable for any damage thereto caused by the negligence or intentional acts of its employees or agents.



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. 0, September 27, 1985, EQC Meeting

Informational Item: Status Of Marion County Solid Waste Program And Proposed Extension On Closure of Brown's Island Landfill Until The Marion County/Ogden Martin Waste-To-Energy Facility Becomes Operational.

Background

On April 8, 1983, the Environmental Quality Commission approved a request for the extended operation of the Brown's Island Landfill until May 29, 1986 (copy attached - Attachment 1). The following conditions were attached to the extension:

1. The Department may favorably respond to a request from either Marion County or Brown's Island, Inc., to amend the current Solid Waste Disposal Permit to allow continued disposal of municipal solid waste at Brown's Island until a replacement facility is available or May 29, 1986, whichever comes first, provided current lease agreements at Brown's Island are obtained.
2. After May 29, 1986, demolition waste and other approved materials may be accepted at Brown's Island subject to appropriate environmental conditions and until grades prescribed in Department approved site operation and closure plans are achieved. This action neither prohibits nor allows energy facility ash residues at the site.
3. Approvable engineering plans to assure continuing protection against flood hazards and repair of resulting erosion shall be submitted by not later than September 1983, for Department review.
4. A modified site operation and closure plan shall be submitted for Department review and approval by no later than six (6) months before municipal solid waste is delivered to facilities other than Brown's Island.

5. Marion County is to continue submittal of annual progress reports on August 1 of each year which shows progress toward replacement of Brown's Island and development of a long-range solid waste management program.

The May 29, 1986 date was established based on the rate of filling at the site and the Department's understanding of the Resource Conservation and Recovery Act requirement that all "open dumps" be upgraded or closed by that date. (It was later determined that the RCRA date was September 13, 1984). Federal enforcement of this provision of RCRA is thru the mechanism of citizen suit, rather than direct enforcement by EPA.

The purpose of the 1983 extension was to allow Marion County additional time to phase out the Brown's Island Landfill as a municipal waste disposal site. Efforts to site a replacement facility at that time were hampered by pending land use and court appeals. The extension also provided for the conversion of the Brown's Island Landfill after May 29, 1986, to a demolition landfill to attain final closure elevations and grades. Marion County has made productive use of the 1983 extension granted by the Commission. All of the conditions of the extension request were met. Accomplishments include:

1. Establishment of a flow control ordinance and franchise ordinance which allows them to direct waste flows originating within the County to any facility of their choice. They also have control of gate operations at all landfills either publicly or privately owned. This allows them to regulate volume flows to their facilities and screening of loads.
2. A regional solid waste-to-energy incineration facility has been sited near Brooks which can accommodate all municipal waste volumes being landfilled within the County. Contracts have been signed with PGE to purchase electricity generated by the facility, and Ogden Martin Corporation has signed contracts to construct and operate the facility. All required DEQ permits have been issued and the facility is under active construction. The facility is projected to be completed by June 1986, for start-up and test operations. Full operational status is expected in early 1987, or before, depending on what, if any, operational modifications may be needed.
3. The Woodburn Landfill is being converted to a major transfer station and is proposed as the ash disposal site for the Ogden Martin incineration facility. Provisions are also being made to accommodate bypass materials and emergency needs should the incineration facility need down time for maintenance. Further investigation by the county and evaluation by the Department is underway to determine whether this will be an acceptable use of the Woodburn site over the long term.

4. A new regional transfer/recycling facility has been sited on the eastern city limits of Salem to complement the replacement of the Brown's Island Landfill. The new incineration facility will not provide access to public haulers in order to control traffic congestion, blowing litter, and incoming waste flows. To meet public needs, this new transfer/recycling facility is being designed to accommodate waste flows of up to 200 tons per day.
5. In regard to public recycling opportunities, Marion County now has curbside collection available in every city having populations greater than 4,000. Public recycling depots will be available at all County franchised facilities. Marion County also has a full time recycling position within their Solid Waste Department to promote public education and information on recycling opportunities throughout the County.
6. Final closure plans, including a long term erosion control program, have been approved for the Brown's Island Landfill. Issuance of the final closure permit is pending, awaiting Commission action on this request.

On May 17, 1985, and June 4, 1985, Marion County in cooperation with Brown's Island, Inc., submitted applications for a final closure permit for the Brown's Island Landfill. The applications requested approval for continued use of the Brown's Island Landfill until the Marion County/Ogden Martin Waste-to-Energy Facility now under construction becomes operational, sometime between October 1986 and April 1987. (June 4, 1985 letter from Marion County/Brown's Island, Inc., attached - Attachment 2). After that time the county has proposed that the municipal landfill be closed and the facility be converted to a demolition landfill taking only land clearing debris and inert materials. This facility would continue under a new Solid Waste Disposal Permit until final grades are reached.

Evaluation

There are two alternatives available to the Department:

Alternative 1: Grant Marion County's request to continue municipal landfilling at the Brown's Island Landfill until the Ogden Martin incineration facility becomes fully operational.

Marion County's request is based on economic and hardship concerns. Should Brown's Island be closed to municipal landfilling prior to the Ogden Martin facility coming on-line, the County would be forced to divert all their waste volumes to the Woodburn Landfill or attempt to locate an out-of-county landfill to accommodate their wastes.

The county does not wish to use the Woodburn Landfill because it is being converted to a transfer station and is proposed as the ash disposal site for the Ogden Martin incinerator. The County also wants to close the Woodburn Landfill due to odor problems associated with its close proximity to the I-5 freeway. The odor problems would significantly increase if all Marion County waste flows were diverted to this site. The County also believes the access roads are inadequate to handle the projected increased traffic loads.

Hauling all wastes to an out-of-county facility would cause lengthy administrative and political negotiations to address a short-term need. The county also cites significant logistical modifications and rate increases that would be needed by commercial haulers. Lastly, they believe there would be a substantial increase in promiscuous dumping if no local disposal site were available.

The Department cannot fault the practicality of Marion County's request for a short-term extension of municipal waste disposal at the Brown's Island landfill. It is also the staff's opinion that the short term extension will not significantly increase the current environmental impact on the groundwater.

Alternative 2: Deny Marion County's request to continue municipal landfilling at the Brown's Island Landfill after May 29, 1986, and direct the County to locate and use an alternative approved landfill until the Ogden Martin incineration facility becomes operational.

The/factors that support this alternative are:

1. There remains potential for a citizen suit being filed under RCRA to enforce the September 13, 1984 date for closure or upgrade of open dumps. The Department is not aware of any proposed Citizen Suit Action at this time.
2. Brown's Island Landfill is in violation of Department Rules regarding groundwater contamination, OAR 340-61-040(4)(B), impairment of a recognized beneficial use beyond the solid waste boundary of the landfill. Specifically, the federal secondary drinking water standards, designed to protect the aesthetics of drinking water, are being exceeded between the landfill and the Willamette River. However, the primary federal drinking water standards, designed to protect public health, are not being violated. The primary party impacted by this violation is the landowner who leases the property for landfilling purposes. It is doubtful whether the owner is being substantially harmed by the violation, since the land is floodplain used exclusively for agricultural purposes.

3. Additional waste loads that would contribute to current pollutant discharges to the groundwater below and beyond the landfill would be eliminated. However, the impact of the garbage that would be eliminated during the requested short-term extension of operation of the landfill would not significantly affect the levels of groundwater contamination that already exist.

The Department is proposing to issue an extension to the existing permit past the May 29, 1986 date until such time as the new facility is completely operational. At the time of issuance of the closure permit on the facility, the groundwater contamination violation will be addressed by the Department. Further evaluation is needed to determine the method of handling the violation in the closure permit.

Director's Recommendation

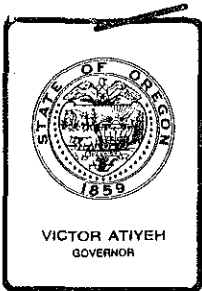
Commission action is not required on this item.



Fred Hansen
Director

- Attachments 1. Agenda Item Q, April 8, 1983 EQC meeting.
- Attachments 2. June 4, 1985, letter from Marion County/Brown's Island, Inc., requesting the extension of municipal landfilling at the Brown's Island Landfill until the Ogden Martin waste-to-energy facility becomes operational.

Gary Messer.f
378-8240
ZF224
August 29, 1985



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207
522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

TO: Environmental Quality Commission

FROM: Director

SUBJECT: Agenda Item Q, April 8, 1983 Environmental Quality Commission Meeting.
Status Of Marion County Solid Waste Program and Request For Extension On Closure Of Brown's Island Landfill.

Marion County has requested a time extension for closure of the Brown's Island Landfill. The issue before you is whether to extend the closure date beyond July 1, 1983, and if so:

1. For how long?
2. For what types of waste?
3. Subject to what conditions?

The Background section of the report provides historical information regarding the County's solid waste management program. Additional facts are introduced and analyzed in the Alternatives and Evaluation section.

Background

The Brown's Island Sanitary Landfill is the major regional site serving the waste disposal needs of most Marion County residents, eastern Polk County, and some portions of Linn County. The permittee is Brown's Island, Inc., of Salem, Oregon.

Marion County has been on notice to locate a new regional landfill since January, 1974, when portions of Brown's Island washed out and when monitoring data started to show ground water degradation was occurring beyond the fill boundaries. At that time, Marion County had already commenced an engineering study which proposed to burn refuse and sell steam to Salem industries. In order to allow for completion of the study, authorization to expand Brown's Island onto 21 acres of adjacent county-owned land was granted.

While the study looked promising during the planning stages, it later failed to identify a steam plant location, and no one expressed an interest in contracting for steam purchase. When these findings came to light, the Marion County Commissioners immediately launched an active program to site a new



landfill. In 1976, they appointed a special "Site Search Committee" comprised of representatives from USDA Soil Conservation Service, State Water Resources Department, private landfill operators, Marion County, and DEQ Solid Waste staff.

Based on soil, geology, and groundwater maps of the county, this Committee field reviewed over 30 potential disposal sites. The "Site Search Committee" list was screened by the County Solid Waste Committee, and the top three sites were listed for the County Commissioners. The Commissioners directed a public meeting be held on these sites to assist them in making a final selection. Public turnout was heavy, with estimates ranging from 900-1200 persons. Strong opposition was voiced because in-depth studies were not completed on each site, the land owners in question (and their neighbors) were strongly opposed to forced condemnation of property, and alternative methods for handling solid waste in Marion County had not been adequately researched.

In the face of such strong opposition, local interest in siting a new landfill died, and the matter was brought before the Environmental Quality Commission at their May, 1978, meeting. Marion County initially wanted authorization for a 10 year expansion area at Brown's Island.

The EQC authorized a 5 year expansion instead of the requested 10 years, since Army Corps of Engineers river models predicted upstream flooding impacts and landfill site erosion from any filling activities in the floodway approaching the size of the 10 year expansion. The Commission's reasoning for allowing the 5 year extension was:

1. To provide Marion County ample time to phase out Brown's Island and find a replacement landfill in an orderly way, and
2. To allow time to plan for and implement a long-range solid waste management program.

As a condition for granting the 5 year extension, the Commission directed Marion County to submit annual reports to the Department so progress could be monitored.

Subsequent to the Commission's action, Brown's Island was inventoried in accordance with criteria pursuant to the federal Resource Conservation and Recovery Act of 1976 (RCRA). The site was found unsuitable for continued operation as a sanitary landfill based on monitoring well data which confirmed ground water degradation was occurring beyond the fill boundaries. Accordingly, the site was classified as an "open dump", and a July 1, 1983 closure date was established to complement previous Commission action.

On May 29, 1981, Brown's Island was listed in the Federal Register, Volume 46, No. 103, page 29117 as an "open dump". Section 4005 of RCRA establishes

time periods for upgrading "open dumps" (including closure as an acceptable upgrade action). Said time periods can be as much as 5 years after listing in the Federal Register. If applied to Brown's Island, the legal extension for accepting municipal waste could be until May 29, 1986. Even if this had been known during the previous Commission deliberations, staff would not have recommended an expansion this large for reasons stated above.

Following the 1978 Commission action, Marion County took significant steps to change and upgrade their solid waste program. These included:

1. Hiring a full time Solid Waste Director, Larry Trumbull.
2. Creating a Solid Waste Department and staffing it with four full time positions.
3. Formation of the Marion County Solid Waste Advisory Council (SWAC) in June, 1979.
4. Hiring qualified consulting firms (4) to develop programs and plans recommended by SWAC.
5. Appointment of a Technical Advisory Group (TAG) to review and assist in development of proposals submitted by SWAC.

The above groups were very active, and citizen participation involved over 250 persons during various planning stages. By September, 1980, SWAC published their first report, "Putting The Pieces Together".

This document recommended goals for Marion County and suggested methods for attaining them. After acceptance of this report, Marion County spent the remainder of 1980 and the first half of 1981 working with engineering and consulting firms to develop implementation plans that would reflect SWAC's recommendations.

As recommended by SWAC, considerable time and emphasis were placed on development of a densified refuse derived fuel (dRDF) facility that would produce pelletized fuel for sale to State institutions in Salem. During negotiations with the State and private industry, many technical and administrative problems arose. To partially address these, Oregon legislative action was required.

Accordingly, Marion County authored and obtained passage of SB479, in the 1981 regular session of the legislature. This law basically sets the framework for Marion County to:

1. Enter into longterm contracts with the State for sales of alternative fuels. (The state can contract with anyone for this purpose.)

2. Maintain and direct solid waste flow control.
3. Establish franchises and control fees.

After passage of SB479, the consulting firms of Merrill Lynch (finance) and Brown and Caldwell (engineering) completed their research to determine if the proposed dRDF project would be feasible and cost effective for Marion County.

Their final report concluded the project would not be economically competitive with conventional landfilling operations for at least another eight to ten years. As such, they recommended postponing the project until the economic climate is more favorable and additional fuel markets are developed. In the interim, they advised Marion County to obtain a new landfill as soon as possible. As it happens, another energy project was pursued, but that will be discussed immediately following the New Landfill Site section below.

New Landfill Site

Though disappointed with the findings on the energy recovery option, Marion County had completed sufficient planning by this time to implement siting of a new landfill.

Unlike the 1976 "Site Search Committee" effort, the 1979-80 effort had extensive public involvement through the SWAC efforts. Of twenty potential sites evaluated by SWAC and the Marion County Solid Waste Department, the selection process finally narrowed to one site located south of Salem known as the I-5 Site. This selection process was characterized by a unique feature known as "willing seller" --i.e., unwilling sellers were screened from further consideration.

The I-5 Site is a 467 acre parcel, and private industry (Brown's Island, Inc.) has obtained a long-term lease-option for it. The site received extensive review by DEQ:

1. Preliminary approval granted by DEQ December 29, 1980 (Attachment B).
2. Solid Waste Permit Application received but judged incomplete and put on pending status January 28, 1982 (Attachment C).

In December, 1982, the Marion County Board of Commissioners granted a franchise to Brown's Island, Inc., for construction and operation of the I-5 Site. The I-5 Site is currently before the Court of Appeals on land use issues. Whether and when construction might begin and the site placed into operation will depend on the Court of Appeals decision and whether that decision is appealed to the Oregon State Supreme Court.

In conjunction with the landfill option, SWAC recommended establishment

of a central receiving facility so only large transfer vehicles would be allowed access to the new landfill. Private industry does not concur with this recommendation. Their proposal calls for establishment of a smaller transfer station to serve the public, while private and commercial haulers would be allowed direct access to the landfill. Locations have been identified for these facilities; however, the County has not committed to either recommendation at this time. Of the possible combinations, DEQ staff is on record in support of limiting public access to either a regional landfill or energy facility.

Garbage-To-Energy Project

Shortly after the demise of the pelletized garbage or dRDF project, passage of the federal "Pacific Northwest Electric Power Planning and Conservation Act", more commonly known as the Northwest Power Bill, rekindled interest in energy production.

The SWAC work was re-examined, and Marion County concluded that a more favorable environment for energy markets had been created by the Northwest Power Bill. About that time, Marion County hired a new Solid Waste Director, Walt Kluser.

The process moved quickly. Mass burning (as contrasted to refuse processing a la dRDF) was determined to be the most appropriate technology to pursue. Requests for proposals were advertised, and three responders were interviewed by the County. Of the three, Trans Energy Systems of Bellevue, Washington, was selected. Trans Energy had been the consultant on the abandoned dRDF study for Marion County.

Several sites were screened for the mass burn facility. A 10 acre parcel north of Chemawa Road and east of I-5 was selected and approved by Marion County. At this writing, however, the site is before the Court of Appeals regarding land use issues. As a backup, Marion County and Brooks community are discussing an alternative location in the Brooks area in the event the Chemawa site becomes unavailable due to pending litigation.

In February, 1983, Trans Energy and Marion County signed a contract to design, construct and operate the mass burn plant. In addition to the land use issues, the chief item of business outstanding is an energy contract between Portland General Electric and Trans Energy, which may be available by the April 8, 1983 EQC meeting. A draft energy contract is included in the March 11, 1983 Marion County Annual Progress Report (Attachment A).

The County's best estimates of schedules for energy and landfill development activities are shown in their March 11, 1983 Annual Progress Report (Attachment A).

Other Developments

1. On July 22, 1981, SWAC presented their final report and recommendations to the Marion County Board of Commissioners and indicated they had completed all of their assigned tasks. As such, SWAC recommended the Board accept their report and officially disband SWAC. All actions toward implementation of SWAC's recommendations are now vested with the Board.
2. The Woodburn Landfill operation was approved in 1974 and consisted of four modules. The site is currently completing module #2. Excavation of module #3 has begun, and will be complete in summer, 1983. Based on current waste volumes, site life through module #4 might be as much as 8 to 10 years. If the entire Marion County waste flow (i.e., including that currently directed to Brown's Island) were directed to Woodburn, the site life (without expansion) would be reduced to about 2 years.

Preliminary evaluations have been made for a potential major expansion at Woodburn between the old site, which was closed in 1974, and the current operational area. There is insufficient data to estimate what capacity or site life the expansion would represent, but it would be long-term.

3. The Brown's Island expansion area authorized at the May, 1978, EQC hearing will not be full by July 1, 1983. The expansion was approved with a five year estimate in mind, but a sizable hole remains for one or more of the following reasons:
 - a. Reduced waste volumes due to current economic conditions;
 - b. Inaccurate waste volume data upon which to base the five year projection;
 - c. An "over design" safety factor.
4. Some serious flood erosion problems have shown up at Brown's Island. The County and Brown's Island, Inc., have arranged to make the critical repairs as early in the construction season (summer 1983) as possible in order to get a vegetive cover established before next flood season. The nature of the erosion is such that it will need to be monitored for several years to come.

Marion County Requests The EQC To Extend Closure of Brown's Island

On March 11, 1983, Marion County requested an extension for use of Brown's Island beyond the scheduled July 1, 1983 closure date. They propose, once the I-5 landfill becomes operational, that Brown's Island be converted to a demolition site until the present excavated area is full.

For details and specific wording, see Attachment A.

Alternatives and Evaluation

As a matter of policy, the Department does not encourage development of landfills in flood plains for obvious reasons. But the decision to allow the five year expansion was made for reasons described in the Background section of this report. Because of the flood plain location, it was necessary to construct the diking for the entire 5 year expansion at the beginning. In other words, the entire five year "hole" was created the first season. This allowed year-round disposal by keeping flood waters away from the garbage activities.

At current waste volumes, staff estimates the Brown's Island Landfill could last well into 1986. Since this would involve filling an existing hole, there would be no further encroachment in the floodway than now exists.

Given the preceding information and assuming it is undesirable to leave an open "hole" remaining at Brown's Island, the Commission has at least the following possible alternatives:

Alternative 1: Close Brown's Island on July 1, 1983 as currently scheduled.

This would involve covering the refuse as it would exist by July, 1983, tearing down the dikes remaining around the unfilled areas, riprapping unprotected surfaces exposed to the river, and grading and seeding a final surface.

There are major disadvantages with this option:

1. The flood plain flow regime would be significantly altered. Currently, the dikes are constructed in such a way to allow "streamline" flow of flood waters. An irregular shape in the dike system could generate potentially damaging eddies which could in turn erode the site and adversely impact downstream properties.
2. Neither the I-5 Landfill nor the energy facility is ready to receive waste due to pending land use litigation. Woodburn Landfill is available, but diversion of the total County waste stream there would rapidly consume the remaining space, and such use was not intended.
3. The least costly option (filling the existing hole) would be eliminated, thus costs to the users would be proportionately increased.

In addition, this alternative is not responsive to Marion County's request.

Alternative 2: Convert Brown's Island from municipal waste to demolition only once the I-5 landfill becomes operational.

Marion County projects the I-5 Landfill may be accepting solid waste as early as October 1, 1984 (Attachment A). Assuming this is possible, the proposal would involve continued filling of municipal solid waste until October, 1984, then use as a demolition site until the hole was filled. Since demolition rates are very low, Brown's Island could be open for demolition well into the 1990's.

Factors to consider if the scheduled closure is extended to October 1, 1984:

1. The I-5 site is currently before the Court of Appeals on land use issues. It is not possible to predict when a decision will be made or what the decision will be. Even if the decision is favorable to Marion County, it may still be further appealed, effectively making the site unavailable.

Accordingly, the Commission might be confronted with either another extension request (based on similar facts as this request) or with a SB 925 (ORS 459.047 -.057) siting request to meet the October 1984 date.

2. Conversely, the federal Resource Conservation and Recovery Act (RCRA) of 1976 will not permit continued use of Brown's Island because of its flood plain location and ground water contamination after May 29, 1986, for municipal solid waste. Therefore, it does not appear that litigation or any other reason could justify an indefinite extension of Brown's Island for municipal solid waste.

Alternative 3: Allow municipal solid waste until May 29, 1986 and only demolition and other approved materials after May 29, 1986 until Brown's Island is full.

This would allow use of Brown's Island for municipal solid waste until the I-5 site or energy facility was operational or May 29, 1986, whichever comes first. After May 29, 1986, demolition and possibly ash wastes could be accepted until the hole was filled.

This action would:

1. Eliminate connecting Commission site closure schedules with unpredictable court decisions, while at the same time giving Marion County some flexibility to make appropriate timing decisions.
2. Reduce the likelihood of having to confront the SB 925 siting process in Marion County.

3. Allow filling of the remaining hole at Brown's Island.
4. Comply with the RCRA mandate to terminate acceptance of municipal solid waste by no later than May 29, 1986.
5. Be responsive to Marion County's request for extension.

Conditions are needed for approval of this option, including:

1. Engineering plans by September, 1983, for continuing protection against flood and erosion hazards.
2. A modified operational and site closure plan no later than six months before municipal solid waste is delivered to location(s) other than Brown's Island.

Summation

1. Marion County has been on notice to locate a new regional landfill to replace Brown's Island since January, 1974.
2. The Environmental Quality Commission at its May 26, 1978 meeting ordered a closure by no later than July 1, 1983, and required annual reports to monitor progress.
3. The Marion County reports reflect considerable effort and progress. While the outcome is not yet certain, staff is satisfied that remedies can now be identified, and that Marion County is moving as rapidly as possible.
4. Strict compliance with the July, 1983 closure mandate for Brown's Island would actually injure Marion County's solid waste management program, with no accompanying environmental gain. There are no apparent increased environmental problems from filling the hole as originally planned. An extension would provide time for the solid waste program to come together.
5. Concurrence with Marion County's request to extend the life of Brown's Island exactly as stated by the County could cause certain timing and legal difficulties.
6. Listing Brown's Island as an "open dump" in the Federal Register as of May 29, 1981, permits the Commission to extend the closure date for municipal waste until May 29, 1986.
7. Accordingly, the Commission should approve a modified version of their request to allow municipal solid waste at Brown's Island until the I-5 landfill is available or the energy facility is available or May 29,

1986, whichever comes first. After May 29, 1986, allow only demolition and possibly burner ash until Brown's Island is full.

8. The Commission should condition the approval to require that engineering plans for protection against erosion and for modified site operation and closure be submitted to the Department for review and approval.

Director's Recommendation

Based on the Summation, it is recommended that the Commission approve Marion County's March 11, 1983 extension request, modified as follows:

1. The Department may favorably respond to a request from either Marion County or Brown's Island, Inc., to amend the current Solid Waste Disposal Permit to allow continued disposal of municipal solid waste at Brown's Island until a replacement facility is available or May 29, 1986, whichever comes first, provided current lease agreements at Brown's Island are obtained.
2. After May 29, 1986, demolition waste and other approved materials may be accepted at Brown's Island subject to appropriate environmental conditions and until grades prescribed in Department approved site operation and closure plans are achieved. This action neither prohibits nor allows energy facility ash residues at the site.
3. Approvable engineering plans to assure continuing protection against flood hazards and repair of resulting erosion shall be submitted by not later than September, 1983, for Department review.
4. A modified site operation and closure plan shall be submitted for Department review and approval by no later than six (6) months before municipal solid waste is delivered to facilities other than Brown's Island.

It is further recommended that Marion County continue to submit annual progress reports on August 1 of each year which show progress toward replacement of Brown's Island and development of a long-range solid waste management program. If at any time it is deemed by the Director that sufficient progress is not being made by the County, the Director should bring it to the immediate attention of the Commission.

Bill

William H. Young,
Director



Attachment II
Agenda Item No.
September 27, 1985 EQC Meeting

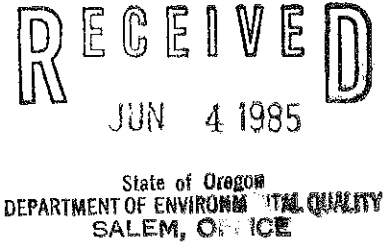
ROBERT J. HANSEN, DIRECTOR
ENGINEERING 588-5036
INSPECTION & SURVEYING
588-5325

DEPARTMENT OF PUBLIC WORKS

300 Senator Building, 220 High St. N.E. Salem, Oregon 97301

June 4, 1985

Mr. Ernest A. Schmidt
Department of Environmental Quality
522 Southwest Fifth Avenue
Post Office Box 1760
Portland, OR 97207



Dear Mr. Schmidt;

Marion County, in cooperation with Brown's Island, Inc., submits this letter as part of the application for a Closure Permit for the Brown's Island Landfill.

The County has been successful in siting and beginning construction on the solid waste-to-energy facility, located in Brooks. This facility will incinerate most of the county's waste, and thus eliminate the need for a solid waste landfill other than for cannery, demolition, and by-pass waste.

The waste-to-energy facility is due to be completely operational sometime between October 1, 1986 and April 1, 1987. We are hereby, requesting the extension of Brown's Island Landfill until the waste-to-energy facility comes on line, or April 1, 1987, whichever comes first, and the indefinite use of Brown's Island Landfill as an inert demolition site.

Extension

The Brown's Island Landfill is an integral part of the Marion County Solid Waste Program, as it handles two-thirds of all waste generated in Marion County. The only available alternative to Brown's Island Landfill between the current May 29, 1986 closure date and the opening of the mass burn (expected Fall of 1986) would be the Woodburn Landfill in north Marion County. If waste was required to go to Woodburn, it would greatly deplete the use of this landfill as the County's long-term ash disposal site and backup landfill, as well as drastically increase cost to the franchised collectors to haul waste. In addition, we feel that the public complaints of odor and visual nuisance would vastly increase, due to the Woodburn Landfill's closeness to I-5.

Letter to Mr. Ernest A. Schmidt
From Robert J. Hansen
June 4, 1985

Page 2

Continuing the use of Brown's Island Landfill would allow waste to fill the large space behind the dike, projected to be available after May 29, 1986, using current volume and fill rates. Filling this space would help to eliminate ponding of water and insure the integrity of the existing dike.

Demolition Site

The County is in need of a long-term inert demolition site, as the waste-to-energy facility will not handle this type of material. It is therefore the County's proposal to also continue the use of Brown's Island Landfill as an inert demolition site to satisfy this need as well as fill the available space at Brown's Island. This would be performed over an indefinite time in areas to be approved by the DEQ and would not require a 5-foot liner.

The current closure plans, as submitted, do not reflect the extension or demolition site as requested, by the current May, 1986 date. If concurrence with the extension and demolition site is obtained, the plans submitted under this application would be updated to reflect these changes. The timing of several critical elements to the Marion County Solid Waste program is contingent upon your decision, thus we appreciate your consideration in this matter, as soon as possible.



Bill Schlitt, President
Brown's Island, Inc.

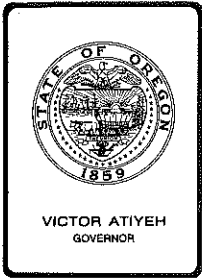


Robert J. Hansen, Director
Marion County Department of
Public Works

JVS:RJH:al

cc: Board of Commissioners
Gary Messer, DEQ

0603easdeq.jvs



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission
From: Director
Subject: Agenda Item No. P, September 27, 1985 EQC Meeting

Informational Report: Proposed Enforcement Guidelines and Procedures for the Hazardous Waste Program.

Summary

The Department of Environmental Quality (DEQ) has developed proposed Enforcement Guidelines and Procedures (Attachment I) for its hazardous waste program. The guidelines are intended to ensure that DEQ enforcement actions are appropriate to the gravity and magnitude of violations, taken in a timely manner, and consistent statewide.

The Department intends to distribute these guidelines as widely as practicable to provide for an awareness by potentially affected parties of how DEQ will enforce hazardous waste program requirements (Attachment II). Comments by the public, as well as policy direction from the Environmental Quality Commission, are requested and will be considered prior to finalizing the guidelines.

DEQ plans to present final enforcement guidelines to the Commission for concurrence at the scheduled November 22, 1985 meeting.

Background

The Department has submitted an application to the Environmental Protection Agency (EPA) to receive Final Authorization for the state's hazardous waste program. Once authorized, the state hazardous waste program will operate in lieu of the federal RCRA program in Oregon.

As a requirement for final authorization, RCRA requires state programs to be fully equivalent to the federal program and to provide for adequate enforcement. States must provide a comprehensive description of the state enforcement program in the Final Authorization application.

EPA's requirements for the substance and descriptions of state enforcement programs are contained in the following guidance documents:

1. Interim National Criteria for a Quality Hazardous Waste Management Program under RCRA; May 1984; and
2. Compliance/Enforcement Program Descriptions in Final Authorization Application and State Compliance/Enforcement Strategies; June, 1984.

Additionally, EPA's present enforcement policies are contained in:

1. Enforcement Response Policy; December 1984, and
2. Final RCRA Civil Penalty Policy; May 1984.

Discussion

The attached proposed enforcement guidelines provide a description of DEQ's enforcement program. The guidelines: (1) Categorize violations into three classes; (2) Identify appropriate enforcement actions for the various violation categories; (3) Establish timeframes for DEQ actions; (4) Provide for escalated enforcement actions when compliance is not achieved; and (5) Describe the considerations involved in determining the amount of a civil penalty.

The proposed guidelines, when finalized and effective, will replace the Department's present Enforcement Response Policy for the hazardous waste program. (The existing DEQ policy is based upon an earlier EPA enforcement policy. Since the EPA enforcement response policy has been revised, EPA expects similar revisions to the state's enforcement guidelines.)

A major change from the existing DEQ policy is the mandatory assessment of civil penalties for "Class I" violations. The proposed guidelines would require the assessment of a civil penalty by DEQ for violations which:

- create a likelihood for harm or for significant environmental damage, or have caused actual harm or environmental damage;
- involve the unauthorized disposal of hazardous waste; or
- result in the failure to assure that groundwater will be protected or that proper closure and post-closure activities will be undertaken.

Class II and III violations generally would receive a Notice of Violation as the initial enforcement response. If compliance is not achieved according to established compliance schedules, a subsequent and escalated enforcement action would be taken.

The proposed guidelines also contain timeframes for DEQ enforcement actions. These timeframes are established to ensure that violators receive timely notification of their noncompliance and are expeditiously placed on compliance schedules.

Finally, the proposed guidelines discuss the factors to be considered when determining the amount of a civil penalty. The guidelines contain a matrix to be used for calculating the "seriousness and magnitude" component of the penalty. This gravity-based penalty may then be adjusted according to the factors in OAR 340-12-045, including consideration of the economic benefit of noncompliance.

The Department proposes to proceed with the following schedule of activities in order to develop final enforcement guidelines:

- September 13 - Proposed guidelines submitted to EPA - Region 10 for review.

- September 27 - EQC receives testimony.
- September 30 - Mailing of Notice of Opportunity to Comment to Department's mailing lists.
- October 14 - Comment period closes.
- October 30 - Final guidelines prepared.
- November 22 - Request for EQC concurrence with final guidelines.
- January 1, 1986 - Effective date for use of final enforcement guidelines.

Director's Recommendation

It is recommended that the Commission: (1) concur with the Department's proposed schedule for development of final guidelines; (2) provide policy direction and comments on the proposed enforcement guidelines to Department staff; and (3) receive testimony from interested persons at this meeting.



Fred Hansen

- Attachments: I. Proposed Enforcement Guidelines and Procedures for the Hazardous Waste Program
II. Draft Notice of Opportunity for Public Comment

Alan Goodman:b
229-5254
September 3, 1985
ZB5028

Attachment I
Agenda Item No. P
September 27, 1985
EQC Meeting

D R A F T

ENFORCEMENT GUIDELINES AND PROCEDURES

HAZARDOUS WASTE PROGRAM

DEPARTMENT OF ENVIRONMENTAL QUALITY

SEPTEMBER 1985

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SECTION 1

INTRODUCTION

Purpose and Scope

The Enforcement Guidelines and Procedures (hereafter "enforcement guidelines") presents a framework for enforcement of the Oregon Department of Environmental Quality's (DEQ) Hazardous Waste Program. This document sets forth DEQ's approach to responding to documented instances of noncompliance with program requirements as contained in: (1) Oregon Revised Statutes (ORS) 459.410 to 459.450 and 459.460 to 459.690; (2) Oregon Administrative Rules (OAR), Chapter 340, Divisions 100-106; (3) permits (licenses) issued pursuant to applicable OAR and ORS; and, (4) orders of the Department and Commission.

The goal of enforcement is to obtain expeditious resolution of hazardous waste program violations and correction of environmental or public health impacts resulting from noncompliance.

The purpose of this document is to provide guidelines to ensure effective state enforcement of hazardous waste requirements. The enforcement guidelines identify the state's enforcement authorities and contain procedures for determining categories of violations and associated timely and appropriate enforcement responses.

Priorities are established to ensure that those violations which cause or have the potential to cause serious environmental harm or public health hazards are addressed by the Department with higher priority than

violations of an administrative nature. Timelines are also established for initial and subsequent escalated enforcement responses to provide for resolution of noncompliance in the shortest practicable time period.

When administrative civil penalties are assessed by the DEQ Director, the guidelines in this document will be used to ensure that: (1) penalties are assessed fairly and consistently; (2) penalties are appropriate to the gravity of the violation; and (3) economic incentives for noncompliance are reduced as much as possible.

Use

The enforcement guidelines are intended for use only by Department personnel involved with administering DEQ's Hazardous Waste Program. The guidelines are based upon authority granted by and procedures and considerations contained in Oregon Revised Statutes and Oregon Administrative Rules. This document is not intended to limit in any way the state's enforcement authorities or practices. The Department may initiate any action or seek any relief, as provided for in Oregon statutes and rules, that is deemed appropriate or necessary.

These guidelines are not intended and should not be relied upon to create rights, substantive or procedural, which are enforceable by any party contesting or appealing a Department action.

The enforcement guidelines will be used by the Department beginning January 1, 1986. In general, enforcement actions initiated by DEQ after January 1, 1986, in response to hazardous waste violations detected after

this date, are intended to be guided by this document. Violations which are detected prior to January 1, 1986, and for which an enforcement action is taken after January 1, 1986, may, but are not necessarily required to, be addressed by these guidelines.

SECTION 2

GENERAL PRINCIPLES

Enforcement of the Department's hazardous waste program will be guided by the following general principles:

1. The objective of enforcement is to attain and maintain compliance with hazardous waste statutes and rules administered by DEQ.
2. Responsibility for compliance rests with those persons conducting activities covered by these statutes and rules and with permits and orders issued pursuant thereto.
3. DEQ enforcement actions will be appropriate to the gravity of the violation, pursued to resolution in a timely manner, and applied consistently statewide.
4. Enforcement actions will be escalated to an appropriate level when violators fail to comply with established compliance schedules.

5. DEQ will endeavor, by conference, conciliation and persuasion, to solicit compliance prior to and following issuance of enforcement action.
6. All enforcement actions will clearly identify each and every documented violation, establish compliance schedules if appropriate and require the violator's certification that compliance is achieved.
7. Compliance schedules established will be for the shortest practicable time and may include interim mitigating measures to minimize adverse effects of noncompliance.
8. Resolution of violations shall be documented through an appropriate means.

SECTION 3

VIOLATION CATEGORIES

Each documented violation of a statutory requirement, particular rule, or condition of an order or permit will be categorized according to the seriousness of the violation and other relevant factors identified in this section. Each instance of noncompliance is considered a separate violation and should be classified separately. Using the guidelines in Section 4, a single enforcement response, which addresses all of the violations, should be selected.

Violations will be classified into one of three categories as described more fully below:

Class I Violation - A violation which:

- creates a likelihood for harm or for significant environmental damage, or has caused actual harm or environmental damage;
- involves the unauthorized disposal of hazardous waste; or
- results in the failure to assure that groundwater will be protected or that proper closure and post-closure activities will be undertaken.

Class II Violation - A violation which:

- results in a release or creates a threat of release of hazardous waste to the environment but does not create a likelihood for harm or environmental damage; or,
- involves the failure to ensure hazardous wastes are destined for and delivered to a permitted, interim status or designated facility.

Class III Violation - Any other violation of hazardous waste rules, permits or orders.

While there are some hazardous waste requirements whose violation would, in almost all situations regardless of the circumstances, clearly be categorized as either Class I, II or III, it is generally not appropriate to classify violations in the abstract. Rather, each violation should be evaluated individually and with consideration of other relevant factors prior to determining the appropriate category. These additional factors include, but are not limited to, the following:

- the type and duration of the violation;
- the degree of deviation from the requirement;
- precautions, actions or measures taken by the violator which would mitigate potential adverse impacts of the violation;
- the hazard characteristics and quantity of the hazardous waste; and
- specific characteristics of the site where the violation occurred.

SECTION 4

TIMELY AND APPROPRIATE ENFORCEMENT RESPONSE

This section identifies the options for appropriate enforcement actions in response to violations. A more detailed discussion of these actions is contained in Section 5.

Timeframes for DEQ enforcement actions are also included. The timeframes described herein are considered the maximum allowable -- enforcement actions should proceed more quickly if possible. Where timeframes begin with the date of violation discovery, this shall be interpreted as the date that the Department inspector determines through review of the inspection report and/or data (e.g., laboratory reports) that a violation has occurred.

In general, initial DEQ enforcement actions for Class II and III violations will be at the lowest level and subsequently escalated if violators fail to achieve compliance or meet established compliance schedules. There are exceptions, however to this rule, as noted below.

A. INITIAL ENFORCEMENT RESPONSES

CLASS I VIOLATIONS

Appropriate Enforcement Response: The Department will generally respond to Class I violations with a combination of two enforcement actions. The first is issuance of a Notice of Intent to Assess Civil Penalty (hereinafter "Notice of Intent"). If correction of the Class I violations will require an extended period of time and substantial effort (e.g., development of Part B application, installation of surface impoundment liner, etc.), DEQ may issue an Order in lieu of the Notice of Intent. The Notice of Intent or Order should establish a compliance schedule leading to resolution of the violations and attainment of full compliance.

The second action will be Assessment of Civil Penalty. The penalty assessment will cover all of the Class I violations documented by DEQ. (The violations cited in the Civil Penalty Assessment should be identical to those cited in the Notice of Intent.)

If Department staff have reason to believe that either of the DEQ administrative actions above will be ineffective, direct court action may be recommended.

Timeliness of Enforcement Response: The times indicated below pertain to the state's enforcement response options. They include the writing, processing and issuance of the enforcement action.

| <u>Enforcement Action</u> | <u>Time</u> |
|---|------------------------------------|
| a. Civil Penalty Assessment | 45 days after violation discovery. |
| b. Notice of Intent | 45 days after violation discovery. |
| c. DEQ order | 45 days after violation discovery. |
| d. Referral to Department of Justice for court action | 45 days after violation discovery. |

CLASS II VIOLATIONS

Appropriate Enforcement Response: In general, the initial DEQ enforcement response to Class II violations will be a Notice of Violation (NOV) issued by the Regional Manager.

Alternately, a Notice of Intent should be issued if: (1) correction of the violations will take longer than 90 days; (2) the violator has a large number of Class II violations; or (3) the Department has reason to believe the NOV will be ineffective.

In cases where correction of Class II violations will require an extended period of time and substantial effort, issuance of an Order may be recommended.

Timeliness of Enforcement Response: The times indicated below include the writing, processing and issuance of the respective enforcement responses.

| <u>Enforcement Action</u> | <u>Time</u> |
|---------------------------|------------------------------------|
| a. Notice of Violation | 30 days after violation discovery. |
| b. Notice of Intent | 60 days after violation discovery. |
| c. DEQ order | 90 days after violation discovery |

CLASS III VIOLATIONS

Appropriate Enforcement Response: A violator with only Class III violations will normally be issued a Notice of Violation as the initial enforcement response.

If there are a large number of Class III violations or if the violations will require more than 90 days to correct, a Notice of Intent should be issued initially.

Issuance of an Order or Civil Penalty Assessment as an initial enforcement response generally will not occur unless there are significant aggravating circumstances.

Timeliness of Enforcement Response:

| <u>Enforcement Action</u> | <u>Time</u> |
|---------------------------|------------------------------------|
| a. Notice of Violation | 30 days after violation discovery. |
| b. Notice of Intent | 60 days after violation discovery. |

B. ESCALATION OF ENFORCEMENT RESPONSES

While the Department expects the majority of violations to be resolved with an initial enforcement response, DEQ will closely monitor

compliance schedule dates and expeditiously take subsequent actions if such dates are not met or if full compliance is not achieved.

Appropriate Enforcement Response: Subsequent enforcement actions taken in response to a violator's failure to comply with an initial enforcement action normally will be escalated as indicated below:

| <u>Initial Enforcement Response</u> | <u>Subsequent Enforcement Response</u> |
|-------------------------------------|--|
| a. Notice of Violation | Notice of Intent. |
| b. Notice of Intent | Assessment of Civil Penalty. |
| c. Assessment of Civil Penalty | Additional Assessment of Civil Penalty or Department order. |
| d. DEQ order | Assessment of Civil Penalty or referral to Department of Justice for court action. |

However, these guidelines should not be interpreted to preclude DEQ from taking a subsequent enforcement action which may be more than one level higher than the initial action. For example, if a Notice of Violation is issued as the initial response to Class II violations, and compliance is not achieved with 90 days, DEQ may assess a civil penalty without first issuing a Notice of Intent.

Timeliness of Enforcement Response: Subsequent enforcement actions taken in response to a violator's failure to comply with the initial enforcement action will proceed according to the following timeframes.

| <u>Enforcement Action</u> | <u>Time¹</u> |
|--|-------------------------|
| a. Notice of Intent | 30 days |
| b. Assessment of Civil Penalty | 45 days |
| c. DEQ order | 60 days |
| d. Referral to Department of Justice for Court Action | 90 days |

C. CHRONIC OR REPEATED VIOLATIONS

If the Department finds that a person is a chronic violator of hazardous waste program requirements, or repeatedly violates the same requirements, this is an indication that the past enforcement actions were not successful in deterring the violator. In such cases, it may be appropriate for DEQ to escalate the initial enforcement actions for the newly documented violations above the level normally indicated for an initial response.

¹Begins on the first day after a compliance schedule date is not met.

For example, if a violator has repeated Class III violations, DEQ may issue a Notice of Intent or a Civil Penalty Assessment for the new violations, rather than begin with a Notice of Violation.

D. COMBINATIONS OF CLASS I, II AND III VIOLATIONS

When a violator has violations of more than one classification, it is desirable to issue one consolidated enforcement response which covers all of the violations.

For example, if a person has several Class I and Class II violations, a single Notice of Intent should be issued, citing all of the Class I and Class II violations. (The Civil Penalty Assessment, which is also required for Class I violations, would only cite and cover the Class I violations.)

Although dual enforcement actions should be minimized, they may be appropriate in some cases. For example, a person with both Class II and Class III violations could receive a penalty assessment for the Class II violations and a separate NOV or Notice of Intent for the Class III violations. This might occur when the circumstances surrounding the Class II violations justified a penalty, but the Class III violations did not.

SECTION 5

TYPES AND DESCRIPTIONS OF ENFORCEMENT RESPONSES

Notice of Violation is a written notice that identifies the violations and specifies a date when the violator must return to full compliance. Interim compliance dates may be included if appropriate.

Notices of Violation are used when there are Class II or III violations which can be corrected within 60 days of the notice. A Notice of Violation should not be considered a prerequisite to issuance of a Notice of Intent or a civil penalty if it is thought that either of those actions will eventually be needed to obtain compliance by the violator.

Notices of Violation are issued by the Regional Managers. The notice shall require a written response from the violator noting how and when the violations were corrected. The Department may conduct a followup inspection to verify compliance.

Notice of Intent to Assess Civil Penalty is a written document which warns a violator that civil penalties may be assessed for violations cited therein without further notice from the Department. The Notice of Intent cites the particular violations and describes the factual findings upon which the violations are based.

The letter accompanying the Notice of Intent shall either specify a schedule, if appropriate, for the violator to return to compliance or require the violator to submit a compliance schedule by a specified date for Department approval. A compliance schedule should contain interim requirements and dates for their achievement if final compliance will exceed 120 days. A compliance schedule should require that progress reports be submitted to the Department within 14 days following each scheduled date.

Notices of Intent are issued for all Class I violations and for Class II or Class III violations which require more than 60 days after the notice to correct. Notices of Intent are issued by the Administrator of the Regional Operations Division, based upon a referral to the Enforcement Section. The Hazardous Waste Section Manager and the appropriate Regional Manager shall be consulted for concurrence prior to issuance of Notices of Intent.

Failure to comply with the compliance schedule in a Notice of Intent should result in an escalated action such as civil penalty, Department order or referral to Department of Justice for court action.

Civil Penalty Assessment means the administrative levying of a monetary penalty by the Director of the Department. A hazardous waste management schedule of civil penalties is contained in OAR 340-12-068 and varies from

not less than \$100 to not more than \$10,000 for each violation. Each day the violation continues may constitute a separate offense.

In determining the amount of a civil penalty, the Director may consider the criteria in OAR 340-12-045. (Section 7 of these guidelines restates the criteria and provides procedures for determining the amount of a penalty.)

Pursuant to ORS 468.125, the Department is not required to provide advance notice prior to assessing a civil penalty for a violation of hazardous waste program requirements (ORS 459.410 to 459.450 and 459.460 to 459.690).

As indicated in Section 4 of these guidelines, civil penalties will be assessed against persons with Class I violations and may be assessed against persons who fail to comply with a Notice of Intent or Department order.

Assessments of civil penalty grant the violator the right to request a contested case hearing before the Environmental Quality Commission or its hearings officer. Under certain circumstances, the civil penalty may be mitigated in whole or in part by the Commission. Contested case decisions may be appealed to the Commission and are subject to judicial review.

Failure to comply following an assessment of civil penalty should result in the assessment of an additional penalty, Department order, site operation shutdown order or referral to Department of Justice for court action.

Department Order means an order issued by the Department pursuant to ORS 459.660. Whenever the Department believes a violation has occurred, it may investigate and issue an order requiring changes or compliance without notice or hearing. The Order takes effect 20 days after the date of its issuance, unless a hearing is requested before the 20-day period has expired.

If the Order is appealed, a contested case hearing is held by the Environmental Quality Commission or its hearing officer and is subject to judicial review. Failure to comply with the Order is enforceable through the assessment of civil penalties or criminal action.

Department orders may be used to respond to persons with Class I violations which require an extended period of time and substantial effort to correct or persons who do not adequately respond to initial enforcement actions. Compliance schedules may be included in Orders if appropriate. (See discussion of Notice of Intent on page 15 for guidance on compliance schedules.) In general, the Department's desire in issuing an Order is to obtain the respondent's consent to the terms of the Order. Therefore, if it appears likely that an order would be contested, use of a Notice of Intent to establish compliance requirements may be preferred.

Department orders shall be prepared by the Enforcement Section of Regional Operations based upon an enforcement referral from the Regional Manager. Department orders will require the concurrence of the Manager of the Hazardous Waste Section and the Administrator of the Hazardous and Solid Waste Division before being issued by the Director.

Commission Order means an order issued by the Environmental Quality Commission pursuant to ORS 459.650. Upon receipt of a complaint made to it by any person, the Department shall make an investigation to determine if the operation of any generator, transporter or hazardous waste management facility is unsafe or is in violation of a statute or regulation.

Following the investigation, if the Department is satisfied that sufficient grounds exist to justify a hearing, it shall give 10 days' written notice of the time and place of the hearing. Within 30 days of the hearing, the Commission shall make a specific order as it considers necessary. Any Order is subject to judicial review. Failure to follow the order, once final, may subject the violator to a Notice of Intent, assessment of a civil penalty, site operation shutdown order, injunctive relief or criminal action.

Commission orders are issued by the EQC or its hearing officer following a hearing. The results of the inspector's investigation will be reviewed by the Administrator of the Hazardous and Solid Waste Division, the Director and the Attorney General's Office before a hearing is scheduled for Commission action. The Department will not ordinarily use this authority unless initiated by a complaint, since ultimate enforcement of the Order would revert to an assessment of a civil penalty, site operation shutdown order, injunctive relief or criminal action.

Site Operation Shutdown Order means an order issued by the Department pursuant to ORS 459.680 without prior notice or hearings. The Department must establish reasonable cause that a clear and immediate danger to public health, welfare, safety or the environment exists from the continued operation of the activity or site. The Order shall be served on the site

superintendent. Within 24 hours, the Department must appear in circuit court to petition for the equitable relief required to protect public health, welfare, safety or the environment.

Injunctive Relief means actions or proceedings pursuant to ORS 459.690 for equitable remedies to enforce compliance or restrain further violations whenever it appears to the Department that any person is engaged or about to engage in any acts or practices that cause or threaten to cause a substantial violation or threat to public health, safety, welfare or the environment. No prior administrative hearing is required.

Criminal Action means proceedings under ORS 459.992(4). Criminal actions are handled by the local District Attorney for the county in which the violations occur. Referrals to the local District Attorney by inspectors shall not occur without the approval of the Director of the Department. The Administrators of the Hazardous and Solid Waste Division and Regional Operations Division shall confer with the Director on the merits of proceeding with criminal action in lieu of the other administrative remedies described in this policy. The Attorney General's Office may also be consulted. The Department may also consider referral of potential criminal actions to EPA for investigation.

The following types of cases or situations may warrant criminal action:

(1) a hazardous waste handler violates the terms of a Notice of Intent, Commission order or Department order and does not respond to the assessment of a civil penalty; (2) a hazardous waste handler is a frequent and recalcitrant violator; (3) long-term specific conduct by a violator is to be compelled; (4) deterrence of others situated similarly to the violator

is a main goal; and (5) intentional disposal of hazardous waste at an unauthorized disposal site.

Occasionally, local agencies (i.e., city police or fire, county sheriff) may be involved in investigating hazardous waste violations along with the state. Local government has the right and opportunity to seek a criminal action with or without DEQ concurrence and/or knowledge.

SECTION 6

PRIORITIES

All violations documented will be addressed with an appropriate enforcement response. In general, the Department's priority targets will be, first, Class I Violations, then Class II Violations, and then Class III Violations.

Within each category of violations, enforcement priorities may need to be set. In doing so, Department staff will consider the following factors:

- o The magnitude and imminence of the actual or potential public health or environmental threat.

- o The duration of the handlers noncompliance -- if two similar noncompliance scenarios exist, the one which has existed longer should generally be addressed first.

- o Length of time needed to achieve compliance -- violators requiring long-term remedies should be addressed first, except for imminent threat situations.

- o Strength of case -- when all other considerations are equal, the stronger case should receive higher priority.

- o Expression of uncooperativeness or willingness by violator to correct violations.

- o Potential for the enforcement action to set an important precedent.

SECTION 7

ASSESSMENT OF ADMINISTRATIVE CIVIL PENALTIES

As indicated in previous sections of these enforcement guidelines, assessment of civil penalties by the DEQ Director is one enforcement tool available to DEQ. A civil penalty may be an appropriate enforcement response depending upon the nature of a violation and its surrounding circumstances.

This section focuses on how to determine the proper amount of a civil penalty once a decision has been made that a civil penalty is the appropriate enforcement remedy to pursue.

Relationship to Statutory and Regulatory Provisions

These guidelines amplify existing provisions in Oregon Revised Statutes (ORS) and Oregon Administrative Rules (OAR) pertaining to assessment of civil penalties. This document does not establish any new authorities or require any action be taken which conflicts with provisions of existing state law.

ORS 459.995 establishes the liability of hazardous waste violators for civil penalties. In particular, ORS 459.995(2) states that:

"(2) In addition to any other penalty provided by law, any person who violates ORS 459.410 to 459.450 and 459.460 to 459.690, a license condition or any commission rule or order pertaining to the generation, treatment, storage, disposal or transportation by air or water of hazardous waste, as defined by ORS 459.410, shall incur a civil penalty not to exceed \$10,000 for each day of the violation."

Additionally, ORS 459.995(3) states that:

"(3) The civil penalty authorized by subsections (1) and (2) of this section shall be established, imposed, collected and appealed in the same manner as civil penalties are established, imposed and collected under ORS 448.305, 454.010 to 454.040, 454.205 to 454.255, 454.405 454.425, 454.505 to 454.535, 454.605 to 454.745 and ORS chapter 468."

Due to the references in ORS 459.995(3), Chapter 459 does not stand alone. The principal reference for consideration is ORS Chapter 468 which, in part, authorizes establishment of civil penalty schedules, and specifies considerations for imposing penalties (see ORS 468.130, 468.135, and 468.140). These statutory provisions have been codified by the Commission and comprise Division 12 of OAR Chapter 340. OAR 340-12-068 includes a hazardous waste management schedule of civil penalties. OAR 340-12-045 identifies factors which the Director may consider in establishing the amount of a civil penalty.

Summary of Penalty Determination

If a penalty is to be assessed by the Director, penalty determination will proceed using a component approach. First, a gravity-based penalty is determined. Next, the economic benefit of noncompliance is calculated if it is expected to be significant. Finally, special circumstances, if any, are considered, where such information is available, to adjust the penalty.

The gravity-based penalty considers "The gravity and magnitude of the violation." (OAR 340-12-045(1)(d)). Two relevant factors are evaluated:

- o Potential for harm; and

- o Extent of deviation from a statutory, regulatory, or permit requirement.

These factors are incorporated into a matrix (discussed later) from which the gravity-based penalty is chosen.

Where violators have derived significant savings by their failure to comply with hazardous waste requirements, the Director may calculate the amount of economic benefit from noncompliance gained by the violator and add this amount to the gravity-based penalty. Consideration of the economic benefit of noncompliance is provided for in OAR 340-12-045(1)(j), i.e., "any other relevant factor."

The Director may adjust the gravity-based penalty upwards or downwards to reflect other factors as provided for in OAR 340-12-045, if sufficient information is available. These factors include:

- (a) Whether the respondent has committed any prior violation, regardless of whether or not any administrative, civil, or criminal proceeding was commenced therefore;
- (b) The history of the respondent in taking all feasible steps or procedures necessary or appropriate to correct any violation;
- (c) The economic and financial conditions of the respondent;
- (d) The gravity and magnitude of the violation;
- (e) Whether the violation was repeated or continuous;
- (f) Whether a cause of the violation was an unavoidable accident, or negligence, or an intentional act of the respondent;

- (g) The opportunity and degree of difficulty to correct the violation;
- (h) The respondent's cooperativeness and efforts to correct the violation for which the penalty is to be assessed;
- (i) The cost to the Department of investigation and correction of the cited violation prior to the time the Department receives respondent's answer to the written notice of assessment of civil penalty; or
- (j) Any other relevant factor.

A penalty may be calculated for each separate and independent violation documented by the Department. In no case will the total penalty for any single violation exceed the statutory maximum of \$10,000 per day.

Determination of the Gravity-Based Penalty

The seriousness of a violation is based on the same two factors as the "gravity and magnitude of the violation:"

- o Potential for harm; and
- o Extent of deviation from a statutory or regulatory requirement.

Potential for Harm

The Department's requirements for hazardous waste handlers were promulgated in order to prevent harm to human health and the environment. Thus, noncompliance could result in a situation where there is potential for harm. The potential for harm resulting from a violation may be determined by:

- o The potential adverse effect on human health or the environment posed by noncompliance; or
- o The adverse effect noncompliance has on the statutory or regulatory purposes or procedures for implementing the hazardous waste program.

The presence or absence of direct harm in a noncompliance situation is something over which the violator may have no control. Therefore, violations will be evaluated for their potential harm in addition to whether actual harm occurred.

The "adverse effect noncompliance has on the statutory and regulatory purposes or procedures for implementing the hazardous waste program" pertains to actions or omissions by persons which result in frustrating the Department's ability to ensure proper hazardous waste management occurs.

One example would be the failure of a hazardous waste storage facility owner/operator to obtain an identification number and file a Part A permit application with DEQ. These requirements are the means used by DEQ to identify the regulated community. In the absence of this information, DEQ would not be aware that the facility was handling hazardous waste, and

hence no compliance inspections would be conducted. The net effect would be the Department's inability to ensure that the comprehensive waste management standards of 40 CFR Part 265 were being followed.

The potential for harm in a particular situation can be classified as major, moderate, or minor. The degree of potential harm represented by each category is defined as:

o MAJOR

- (1) Violation poses a substantial adverse effect on public health or the environment; and/or
- (2) The actions have or may have a substantial adverse effect on the statutory or regulatory purposes or procedures for implementing the hazardous waste program.

o MODERATE

- (1) The violation poses a significant adverse effect on public health or the environment; and/or
- (2) The actions have or may have a significant adverse effect on the statutory or regulatory purposes or procedures for implementing the hazardous waste program.

o MINOR

- (1) The violation poses a relatively low adverse effect on public health or the environment; and/or
- (2) The actions have or may have an relatively low adverse effect on the statutory or regulatory purposes or procedures for implementing the hazardous waste program.

Extent of Deviation from Requirement

The "extent of deviation" from the Department's statutes or regulatory requirements is an important factor in determining the amount of a civil penalty. Violators may be substantially in compliance with the provisions of the requirement or they may have totally disregarded the requirement (or a point in between). As with potential for harm, extent of deviation may be either major, moderate, or minor. In determining the extent of deviation, the following definitions should be used:

- o MAJOR - the violator deviates from the requirements of the regulation or statute to such an extent that there is substantial noncompliance.
- o MODERATE - the violator significantly deviates from the requirements of the regulation or statute but some of the requirements are implemented as intended.
- o MINOR - the violator deviates somewhat from the regulatory or statutory requirements but most of the requirements are met.

Penalty Assessment Matrix

The two axes of the penalty assessment matrix are; 1) the potential for harm, and 2) the extent of deviation from a requirement. The matrix has nine cells, each containing a penalty range. The specific cell is chosen after determining which category (major, moderate or minor) is appropriate for the potential for harm factor, and which category is appropriate for the extent of deviation factor. The complete matrix is illustrated below:

Extent of Deviation from Requirement

| | | MAJOR | MODERATE | MINOR |
|--------------------------|----------|-------------------------|-------------------------|-------------------------|
| Potential for Harm | MAJOR | \$10,000 to 8,000 | \$ 7,999 to 6,000 | \$ 5,999 to 4,400 |
| | MODERATE | \$ 4,399 to 3,200 | \$ 3,199 to 2,000 | \$1,999 to 1,200 |
| | MINOR | 1,199 to 600 | 599 to 200 | 199 to 100 |

The highest cell (major potential for harm/major extent of deviation) is limited by the maximum statutory penalty allowance of \$10,000 per day of violation.

The selection of the exact penalty amount within each cell is at the discretion of the Director in any given case. The Director will consider only the seriousness of the violation in selecting the penalty amount within the range. The reasons the violation was committed, the intent of the violator, and other relevant factors are not considered at this point; they will be considered at the adjustment stage.

Assessing Multiple Penalties

In certain situations, a particular violator may have violated several DEQ hazardous waste rules. A separate penalty may be calculated for each violation that results from an independent act (or failure to act) by the violator and is substantially distinguishable from any other violation for which a penalty is to be assessed. A given violation is independent of, and substantially distinguishable from, any other violation when it requires an element of proof not needed by the others. In many cases, violations of different rules constitute independent and substantially distinguishable violations.

For example, failure to implement a groundwater monitoring program and failure to have a written closure plan are violations which result from different sets of circumstances and which pose separate risks. In the case of a firm which has violated both of these rules, a separate count would be

charged for each violation. For penalty purposes, each of the violations would be evaluated separately and the amounts totalled.

It is also possible that different violations of the same rule could constitute independent and substantially distinguishable violations. For example, there are two separate violations in the case of a firm which has open containers of hazardous waste in its storage area and which also ruptured different hazardous waste containers while moving them on site. The violations result from two sets of circumstances (improper storage and improper handling) and pose separate and distinct risks. In this situation, two violations with two separate penalties would be appropriate. For penalty purposes, each of the violations would be assessed separately and the amounts totalled.

Multiple penalties also may be assessed where a person has violated the same requirement in substantially different locations. An example of this type of violation is failure to clean up hazardous waste discharged during transportation. A transporter who did not clean up waste discharged in two separate locations during the same trip should be charged with two violations. In these situations, the separate locations present separate and distinct risks to public health and the environment. Thus, separate penalty assessments are justified.

In general, multiple penalties would not be appropriate where the violations are not independent or substantially distinguishable. Where a violation derives from or merely restates another violation, a separate penalty is not warranted. For example, if an owner/operator of a storage facility failed to specify in the waste analysis plan the parameters for

which each hazardous waste will be analyzed and failed to specify the frequency with which the initial analysis of the waste will be repeated, the owner/operator has violated the requirement that they develop an adequate waste analysis plan. The violations result from the same factual event (failure to develop an adequate plan), and pose one risk (storing waste improperly due to inadequate analysis). In this situation, both requirements violated would be cited in the complaint, but one penalty, rather than two, would be assessed. The fact that two requirements were violated may be taken into account in choosing higher "potential for harm" and "extent of deviation" categories on the penalty matrix.

Assessing Multi-Day Violations

The Director has authority to assess civil penalties of up to \$10,000 per violation per day, with the potential of assessing each day of noncompliance as a separate violation. Multi-day penalties would generally be calculated in the case of continuing flagrant violations. However, per day assessment may be appropriate in other cases.

In the case of continuing violations, the Director has the authority to calculate penalties based on the number of days of documented violation since the effective date of the requirement and up to the date of coming into compliance. The gravity-based penalty derived from the penalty matrix may be multiplied by the number of days of documented violation, when a decision has been made to assess for multi-day violations.

Economic Benefit from Noncompliance

The Director may consider the economic benefit of noncompliance to a violator when assessing penalties. An "economic benefit component" may be calculated and added to the gravity-based penalty when a violator acquires a significant economic benefit from violating state hazardous waste program requirements. (The total penalty cannot exceed \$10,000 per violation per day.)

The following regulatory areas are candidates for an economic benefit analysis:

- o Groundwater monitoring
- o Financial requirements
- o Closure/post-closure
- o Waste determination
- o Waste analysis
- o Clean-up of discharge
- o Part B application submittal
- o Disposal at unauthorized location

Two types of economic benefits from noncompliance may occur:

- o Benefit from delayed costs; and
- o Benefit from avoided costs.

Delayed costs are expenditures which have been deferred by the violator's failure to comply with the requirements. The violator eventually will have

to spend the money in order to achieve compliance. Delayed costs are the equivalent of capital costs. Examples of violations which result in savings from delayed costs are:

- o Failure to install a groundwater monitoring program;
- o Failure to submit a Part B permit application; and
- o Failure to develop a waste analysis plan.

Avoided costs are expenditures which are nullified by the violator's failure to comply. These costs will never be incurred. Avoided costs are the equivalent of operating and maintenance costs. Examples of violations which result in savings from avoided costs are:

- o Failure to perform annual and semi-annual groundwater monitoring sampling and analysis;
- o Failure to follow the approved closure plan in removing waste from a facility, where removal is not now possible; and
- o Failure to perform waste analysis before adding waste to tanks, waste piles, incinerators, etc.

Because the savings that are derived from delayed costs differ from those derived from avoided costs, the economic benefit from delayed and avoided costs are calculated in a different manner. Guidance on calculating delayed and avoided costs is presented in Appendix I.

Adjustment Factors

As mentioned earlier, the seriousness of the violation is considered in determining the gravity-based penalty. The reasons the violation was committed, the intent of the violator, and other relevant factors are not considered in choosing the appropriate penalty from the matrix. However, OAR 340-12-045(1) identifies relevant factors which the Director may consider in establishing the amount of a civil penalty.

The adjustment factors can increase, decrease or have no effect on the penalty amount to be assessed to the violator. However, no upward adjustment can result in a penalty greater than the statutory maximum of \$10,000 per day of violation. Adjustment of a penalty may take place after determining the gravity-based penalty but prior to issuing the penalty assessment, if the necessary information is available to the Director.

In general, these adjustment factors apply only to the gravity-based penalty derived from the matrix, and not to the economic benefit component if calculated.

Application of the adjustment factors is cumulative, i.e., more than one factor may apply in a case.

- (1) Good faith efforts to comply/lack of good faith
(Degree of cooperation/noncooperation)

Good faith can be demonstrated by a violator promptly reporting its noncompliance. Assuming such self-reporting is not required by law,

regulation, or permit, this behavior may result in adjustment of the penalty. Prompt correction of environmental problems also can constitute good faith. Lack of good faith, on the other hand, can result in an upward adjustment of the penalty. No downward adjustment would be made if the good faith efforts to comply primarily consist of coming into compliance without demonstrated promptness.

(2) Degree of willfulness, negligence, and/or nonavoidability

There may be instances of culpability for "knowing" violations which do not meet the criteria for criminal action. In cases where administrative civil penalties are sought for actions of this type, the penalty may be adjusted upward for willfulness and/or negligence. Conversely, there may be instances where penalty adjustment downward may be justified based on the lack of willfulness or negligence, or the presence of unavoidable circumstances.

In assessing the degree of willfulness and/or negligence, the following factors may be considered, as well as any others deemed appropriate:

- o How much control the violator had over the events constituting the violation;
- o The foreseeability of the events constituting the violation;
- o Whether the violator took reasonable precautions against the events constituting the violation;

- o Whether the violator knew or should have known of the hazards associated with the conduct;

- o Whether the violator knew of the legal requirement which was violated.

The amount of control which the violator had over how quickly the violation was remedied also is relevant in certain circumstances. Specifically, if correction of the environmental problem was delayed by factors which the violator can clearly show were not reasonably foreseeable and out of their control, the penalty may be reduced.

(3) Past Compliance History

Where a party previously has violated hazardous waste requirements at the same or a different site, this is usually evidence that the party was not deterred by the previous enforcement response. Unless the previous violation was caused by factors entirely out of the control of the violator, this is an indication that the penalty should be adjusted upwards. If a violator otherwise has a record of substantial compliance, the penalty may be adjusted downward.

Some of the factors to be considered are the following:

- o How similar the previous violation was;

- o How recent the previous violation was;

- o The number of previous violations;

- o The violator's response to previous violation(s) in regard to correction of problem.

A violation generally should be considered "similar" if the Department's previous enforcement response should have alerted the party to a particular type of compliance problem.

(4) Ability to pay (downward adjustment only)

The Director generally does not intend to assess penalties that are clearly beyond the ability of the violator to pay. Therefore, the Director may consider the economic and financial conditions of a violator.

When it is determined that a violator cannot afford the penalty prescribed by these guidelines, or that payment of all or a portion of the penalty will preclude the violator from achieving compliance or from carrying out remedial measures which DEQ deems to be more important than the deterrence effect of the penalty (e.g., payment of penalty would preclude proper closure/post-closure), the following options may be considered:

- o Consider a delayed payment schedule. Such a schedule might even be contingent upon an increase in sales or some other indicator of improved business.

- o Consider an installment payment plan with interest.

- o Consider straight penalty reductions as a last recourse.

The amount of any downward adjustment of the penalty is dependent on the individual financial facts of the case.

(5) Other relevant factors

These guidelines allow an adjustment for other relevant factors which may arise on a case-by-case basis. The Director may make adjustments to the gravity-based penalty for such reasons.

APPENDIX I

CALCULATING ECONOMIC BENEFIT FROM NONCOMPLIANCE

The following formula is provided to help calculate the economic benefit component:

Economic

$$\text{Benefit} = \text{Avoided Costs} \times (1-T) + (\text{Delayed Costs} \times \text{Interest Rate})$$

In the above formula, T represents the firm's marginal state tax rate. Interest is calculated by using the interest rate charged by the State Department of Revenue for delinquent accounts.

The economic benefit formula provides a reasonable estimate of the economic benefit of noncompliance. If a violator believes that the economic benefit derived from noncompliance differs from the estimated amount, it may present information documenting its actual savings to the Director at the settlement stage or to the Environmental Quality Commission at the hearing stage.

For avoided costs, the economic benefit equals the cost of complying with the requirement, adjusted to reflect income tax effects on the violator.

The economic benefit for delayed costs consists of the amount of interest on the unspent money that reasonably could have been earned by the violator during noncompliance.

A CHANCE TO COMMENT ON...

PROPOSED HAZARDOUS WASTE ENFORCEMENT GUIDELINES AND PROCEDURES

**WHO IS
AFFECTED:**

Persons who manage hazardous waste, including generators, air and water transporters, and owners and operators of hazardous waste treatment, storage and disposal facilities.

BACKGROUND:

- o The Department of Environmental Quality (DEQ) has submitted an application for Final Authorization to the Environmental Protection Agency to operate the state hazardous waste program in lieu of the federal RCRA program in Oregon.
- o As a requirement for Final Authorization, DEQ must develop guidelines which identify how the Department will enforce the state hazardous waste program.

**WHAT IS
PROPOSED:**

Proposed Enforcement Guidelines and Procedures developed by DEQ describe the enforcement authorities available to DEQ and how these authorities will be used to enforce requirements of the hazardous waste program (OAR Chapter 340 Divisions 100-106).

**WHAT ARE THE
HIGHLIGHTS:**

The proposed guidelines:

- o Classify violations into one of three categories, according to the gravity and magnitude of the violation;
- o Identify appropriate enforcement actions for each violation category;
- o Require the assessment of a civil penalty for Class I violations;
- o Contain timeframes for issuance of enforcement actions;
- o Specify how and when escalated enforcement actions will be taken when compliance is not achieved; and
- o Describe how the amount of a civil penalty will be determined.

**HOW TO
COMMENT:**

Written comments should be sent to DEQ, Hazardous and Solid Waste Division, Attn: Alan Goodman, P.O. Box 1760, Portland, OR 97007, by October 14, 1985.

To receive a copy of the proposed guidelines, contact the DEQ Hazardous and Solid Waste Division at 229-5913. For more information, contact Alan Goodman at 229-5254.

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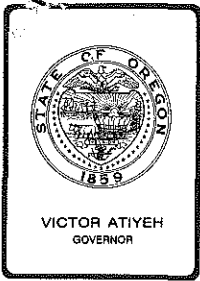


P.O. Box 1760
Portland, OR 97207

8/16/84

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.



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. Q, September 27, 1985, EQC Meeting

Information Report -- Water Quality Standards for Nutrients

Background

At the July 17, 1985 meeting, the Commission considered Agenda Item J, Proposed Adoption of Amendments to Water Quality Standards Regulations, OAR Chapter 340, Division 41. As a part of that package, the Department proposed that issue papers be prepared by Spring 1986 for additional potential rule amendments. Potential nutrient standards were included as one proposed issue paper.

Testimony was given by representatives of environmental organizations and the Lake Oswego Corporation requesting immediate adoption of nutrient standards. The testimony suggested that nutrient standards were necessary to protect water quality from excessive algae and plant growth and that sufficient information exists to support adoption of standards. The department indicated that substantial information would have to be assembled but that priorities could be rearranged to accelerate the schedule for nutrient standard development.

A motion was passed by the Commission to direct the staff to come back at the September meeting with a specific idea on how to accelerate the adoption of interim and/or permanent nutrient standards.

The Department has initiated review of the extensive body of literature regarding the development and application of nutrient standards. EPA has sponsored periodic literature reviews which have been summarized in water quality criteria guidance documents as follows:

"Water Quality Criteria", Report of the National Technical Advisory Committee to the Secretary of the Interior, April 1, 1968 (often referred to as the "Green Book").

"Water Quality Criteria 1972", A report of the Committee on Water Quality Criteria, Environmental Studies Board, National Academy of Sciences, National Academy of Engineering, 1972 (often referred to as the "Blue Book").

"Quality Criteria for Water", July 1976, U. S. Environmental Protection Agency (often referred to as the "Red Book").

Since these summary documents were prepared, much more literature has become available which supplements and in some cases contradicts earlier information. More recent documents of particular interest include:

"A Review of the EPA Red Book: Quality Criteria for Water", April 1979, Water Quality Section, American Fisheries Society.

"Summary Analysis of the North American (U. S. Portion) OECD Eutrophication Project: Nutrient Loading - Lake Response Relationships and Trophic State Indices", January 1978, by Walter Rast and G. Fred Lee.

Based on the review of these and other documents to date, this report summarizes general background information on the significance of nutrients in water bodies, reviews possible nutrient control approaches, and recommends an approach toward development of interim standards.

Nutrients and Aquatic Growth

A more detailed discussion of the significance of nutrients in water bodies is presented in Attachment A. The following is a brief summary of that discussion.

The term nutrients applies broadly to those chemicals necessary to support life. However, for the purpose of this discussion, it is limited to forms of phosphorus and nitrogen used in plant growth. These chemicals are most commonly found to either limit aquatic growth when in low concentrations or to stimulate growth when in excess concentrations.

Plants vary as to the amount and kind of nutrient required and the process used to obtain nutrients. For example, rooted aquatic plants can obtain nutrients from the sediment as well as the water column and blue-green algae can obtain nitrogen from the atmosphere. Even with all the nutrients necessary for plant growth present, growth will not take place unless environmental factors such as sunlight, current velocity, temperature and substrate are suitable. Environmental factors necessary for the type of plant community and water body being addressed must be considered in order to properly develop nutrient criteria to control aquatic plant growth. For example, for deep stratified lakes where phosphorus is the limiting nutrient, a load-response relationship has been developed between the total phosphorus loading and the mean depth and retention time in order to predict algal growth.

Nutrient Standards - Background

Several efforts have compiled information on potential pollutant parameters including nutrients. These efforts summarized available literature to

establish criteria upon which water quality standards can be based. The three water quality criteria documents previously cited are examples. The term "criterion" means a designated concentration of a constituent that when not exceeded, will protect an organism, community or a prescribed use or quality with an adequate degree of safety. A criterion may be a narrative statement instead of a constituent concentration. A water quality standard connotes a legal entity for a particular water body or an effluent. Therefore, the criteria were intended as guidelines only, to be used in conjunction with a thorough knowledge of local conditions.

The "red book" is the first criteria document to discuss specific parameter levels for nutrients. Previous criteria documents ("green book" and "blue book") discuss factors that affected recreational and aesthetic values of water. These documents recognized the role of nutrients in eutrophication but no numeric criteria were recommended. Instead, narrative criteria was used to describe nuisance or objectionable conditions and recommendations that waters be virtually free of substances that attribute to these conditions were made. It was stated that "specific numbers would add little to the usefulness of the descriptive recommendations because of the varying acuteness of sensory perception and because of the variability of substances and conditions so largely dependent on local conditions" (USEPA 1972). In essence, the criteria described were developed to protect the beneficial uses of swimming, boating, fishing and aesthetics by addressing nuisance growth rather than factors (such as nutrients) which may cause the growth. These documents recommended maintaining algal growth at natural levels and stressed the desirability of case-by-case studies for assessing the need for management programs. (See Attachment B for further background information). Numeric criteria were recommended for un-ionized ammonia, a toxic form of ammonia, (0.02 mg/l) to protect aquatic life and for Nitrate nitrogen (10.0 mg/l N) to protect public water supply usage.

Most states including Oregon adopted the narrative criteria as part of their water quality standards. Typical language from current Oregon Water Quality Standards address general nuisance conditions as follows:

- (2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Basin..

- (h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed.

- (i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palability of fish shall not be allowed.
- (j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed.
- (k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed.
- (l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed.

...

In addition, Oregon standards recognize the need to protect lakes and reservoirs from nutrient enrichment due to point sources by prohibiting the discharge of wastes to lakes or reservoirs without EQC approval (340-41-026(4)).

The 1976 "red book" suggested a rationale to support a criterion for consideration for phosphate phosphorus. Total Phosphorus values suggested were:

- 0.025 mg/l - P for lakes or reservoirs
- 0.050 mg/l - P in streams at the point it enters a lake or reservoir
- 0.10 mg/l - P in other flowing waters

A number of exceptions that reduce the affect of phosphorus in lake eutrophy were suggested. These included:

- (1) The role of turbidity or color in reducing growth;
- (2) Lake morphometry factoring into growth response;
- (3) Other nutrients being limiting; and
- (4) Phosphorus control not being sufficiently effective under present technology to make phosphorus limiting.

No discussion of the role of nitrogen in eutrophication was presented. Therefore, no national criteria for nutrients were presented (Attachment C contains pertinent sections from the "red book"). The "red book" retained narrative criteria relating to nuisance conditions and their impact on aesthetic values.

A review of the "red book" criteria for phosphorus by the American Fishery Society (Attachment D) suggested the "red book" discussion to be simplistic. Specifically, the reliability of predicting water quality problems due to algae based on a phosphorus concentration at one time during the year was questioned. The American Fishery Society recommended an approach using annual phosphorus loading curves relative to the mean depth and retention time of stratified lakes where phosphorus is a limiting nutrient. These loading curves can be related to summer average chlorophyll a values (an indicator of algal cell mass). Chlorophyll a is a parameter commonly used to assess lake eutrophication. The review pointed out the need for additional criteria development for water bodies where algal growth is limited by nitrogen or other elements, by light, or where attached algae or macrophytes are the primary form of aquatic growth.

USEPA has not suggested further nutrient criteria to date. "Red book" criteria modifications have been made on a parameter by parameter basis with most of the work focusing on "toxic" chemicals and suggesting flexible criteria rather than a single numeric guideline. Several states have adopted the rationale suggested for a phosphorus criteria as part of their water quality standards (See Attachments E and F for a summary of State standards for Phosphorus and Nitrogen, respectively).

The wording of the current Oregon water quality standards does not provide a condition" or a course of action to take upon the identification of such a condition. Essentially, it provides a means of addressing a nuisance condition once it occurs. The phosphorus loading model for stratified lakes appears to be a useful tool, however, it requires site specific study to use it properly. In the absence of a specific standard, chlorophyll a values of either 0.01 or 0.015 mg/l and "red book" total phosphorus concentrations have been used as screening guidelines to identify potential problem areas where further study is appropriate.

Development of Alternative Standards

Issues associated with the development of standards include:

- (1) Selection of appropriate parameters and parameter values; and
- (2) Description of courses of action to be taken when the standard is not attained (Implementation program).

The Department is suggesting one of two basic approaches to better address nutrients standards at this time. The most significant difference between the approaches lies in implementation actions when the standards are exceeded. The first alternative suggests the adoption of chlorophyll a (0.010 mg/l) as a standard for identifying nuisance growth of phytoplankton (floating algae). The second alternative suggests a standard based on "red book" rationale for total phosphorus to address nutrient conditions.

In addition, criteria for un-ionized ammonia (aquatic life protection) and nitrate (water supply) are included (See Attachment C for further discussion).

Alternative one suggests a course of action that is somewhat similar to the air quality designation of attainment/non-attainment areas. Upon determination of non-compliance with the standard, the water body is declared to be in non-attainment. Further study is then carried out to determine the extent, probable causes, use impact and to propose control strategies or other appropriate action as part of the implementation plan to be reviewed and adopted by the Commission. The second alternative proposes a fixed course of action that will directly address point and non-point sources of pollution in order to gain compliance. A range of alternatives exists that falls within and between these two approaches.

Specific rule language for the two alternatives is presented next followed by a brief discussion of the rationale, advantages and disadvantages of each.

Alternative No. 1

STANDARDS APPLICABLE TO ALL BASINS

Nuisance Aquatic Growths

340-41-150 The following standard and implementation program shall be applied to lakes, reservoirs and streams to prevent nuisance growths of phytoplankton:

- (1) No wastes shall be discharged and no activities shall be conducted which will cause the level of Chlorophyll a in the waters of the state to exceed an average of 0.01 mg/l measured over any 3 consecutive month period.
- (2) Upon determination by the Department that the standard in Paragraph (1) is exceeded, the Department shall:
 - (a) Declare the appropriate stream reach or water body to be in non-attainment with the standard.
 - (b) In accordance with a schedule approved by the Commission, conduct such studies as are necessary to describe present water quality; determine the impacts on beneficial uses; determine the probable causes of the standard violation and beneficial use impact; and develop a proposed control strategy for attaining compliance including standards for additional pollutant parameters, pollutant discharge load

limitations, and such other provisions as may be appropriate;

- (c) Conduct necessary public hearings preliminary to adoption of a control strategy and additional standards after obtaining commission authorization;
- (d) Implement the strategy upon adoption by the Commission.

Alternative No. 2

STANDARDS APPLICABLE TO ALL BASINS

Nutrient Standards

340-41-150(1) No wastes shall be discharged and no activities shall be conducted which will cause the average concentrations measured in any three consecutive months (except as noted) for the following nutrients to be exceeded:

- (a) Total phosphorus in lakes-----0.025 mg/l as P
- (b) Total phosphorus in streams entering lakes-----0.05 mg/l as P
- (c) Total phosphorus in other streams-----0.1 mg/l as P
- (d) Nitrate nitrogen, (N)-----10.0 mg/l as N
- (e) Un-ionized ammonia (individual value)-----0.02 mg/l

- (2) Upon determination that any of the above standards are exceeded, the standards shall be considered to be effluent standards for point source discharges to such waters. Permits for such discharges shall be modified to incorporate the appropriate standards together with a schedule for implementation. In addition, best management practices for non-point sources shall be evaluated and revised as necessary to attain compliance with the standards.
- (3) Where ambient levels of these nutrients are not exceeded, increments allocated to any new or expanded source shall not exceed 10% of the difference between the ambient level and the standard.
- (4) The standards and implementation program set forth in Paragraphs (1), (2), and (3) above shall be considered interim standards until replaced by specific standards for individual stream reaches or water bodies.

Discussion of Alternative 1

Rationale: Chlorophyll a was selected as the screening parameter to better quantify nuisance growth of phytoplankton. The relationship of chlorophyll a to algae concentrations is reasonably well established and has been used as a basis for lake classification and management schemes.

The concentration was based on work of C. N. Sawyer (1947) and is generally supported by other investigators. Sawyer related the "greenness" of water to chlorophyll a concentrations and found that concentrations of 0.010 mg/l or greater are often associated with water classified as eutrophic and possessing deteriorated water quality for beneficial uses. The three month average was suggested by the department to represent more typical conditions and to limit the influence of short-term blooms found in many lakes in the spring. Many researchers focus on a summer average to represent peak growth and water use conditions. The three-month average would include that period.

The recommended course of action is a further study because specific knowledge of nutrient relationships and loading is needed to develop a compliance strategy. Chlorophyll a is not discharged by sources but is influenced by a variety of factors including nutrient levels and environmental conditions. A procedure of declaring a water body to be in non-attainment, requiring further investigation, development of control strategies or other appropriate provisions and the adoption of the strategy upon hearing and EQC approval would better address the issue of nuisance growth than that currently being followed.

This alternative offers the following advantages:

- It provides a more direct or objective indicator of nuisance phytoplankton conditions than a nutrient value or narrative statement.
- Final control strategy is based on analysis of site specific data which provides reasonable assurance that the required controls will achieve a desired environmental benefit.
- Hearing process assures that ramifications of issues are understood prior to implementation.

Disadvantages include:

- It does not address periphyton or macrophytes (attached growth or rooted vegetation).
- There are limited rationale available for selection of the parameter concentration and averaging method.
- Further study (more data) is required rather than proposing immediate action for compliance.
- The standard does not directly translate to nutrients which are measurable and discharged from point sources.
- Further site specific studies may be resource intensive requiring a longer time period to achieve compliance with the standard.

Discussion of Alternative 2

Rationale: Total phosphorus concentrations were selected based on "red book" rationale for a criterion to control nuisance aquatic growth. The un-ionized ammonia level was suggested to protect freshwater aquatic life

from toxic affects and the nitrate level was suggested to protect water supply use (both red book criteria).

The three-month average for total phosphorus and nitrate was suggested by Department staff to represent more typical conditions. It may be desirable to focus the averaging period to spring and summer conditions, but no rationale for doing this was presented in the red book and this would reduce the potential screening of areas where annual loads are of a concern.

Numeric standards for nutrient parameters lend themselves to a more rigid course of action upon determination of non-compliance. When standards are not achieved, the standard becomes the point source effluent standard so that conditions do not get worse (the receiving water does not offer a dilution alternative). A further investigation of non-point sources is necessary in the case of non-compliance. In the case of compliance, new or expanded point sources are limited to a loading that would not exceed 10% of the difference between the ambient and standard levels. Finally, it is recognized that water bodies differ in their natural nutrient concentrations, therefore the standard is expected to be modified on a specific reach or water body basis.

This alternative offers the following advantages:

- Parameters and values are based on rationale presented in the "red book" (which is easy to reference).
- When a standard is exceeded, allowable discharge concentrations are automatically determined (i.e., the problem translates to a regulatory action).
- The fixed course of action leaves little doubt as to the strategy to achieve compliance.

Disadvantages include:

- There is no universal relationship between nutrient levels and aquatic growth (i.e., high nutrient concentrations do not necessarily produce nuisance aquatic growth).
- Does not address periphyton or macrophyton (attached growth or rooted vegetation).
- Course of action may be overly restrictive or costly and may not achieve environmental benefit (i.e., nutrient removal may be required with no discernable impact on nuisance aquatic growth).
- Standard may not be achievable under any circumstances due to natural conditions.

Discussion

The above alternatives are presented as possible interim standards that could proceed to hearing for possible adoption. Combinations of these alternatives could also be used. For example, nutrient parameter values in

Alternative 2 could be added to Alternative 1 to determine waters which are not in attainment.

A preliminary analysis of ambient river data collected at approximately 100 sites since 1975 showed that 18 sites exceeded the chlorophyll a standard and 57 sites exceeded the total phosphorus standard. All sites exceeding the chlorophyll standard also exceeded the total phosphorus standard. It was interesting to note that the Willamette River exceeded the total phosphorus criteria from Albany to the mouth especially during the high flow months between October and March. The chlorophyll a criteria was barely exceeded at one site in the Portland Harbor. This tends to support the U. S. Geological Survey conclusion that nutrients exceed levels for excessive growth but algal productivity is low and is limited by low light availability and short retention times of the water.

Director's Recommendation:

Based on information developed to date, the department would propose to proceed immediately to public hearing to consider adoption of Alternative 1 as a nuisance aquatic growth standard.

In addition, the department would propose to:

1. Develop an issue paper on nutrients that proposes further additions and refinements to this standard for consideration along with other proposed water quality standard revisions in the spring of 1986.
2. Include advisory language in permits that notifies sources of intended new instream standards and the potential for new requirements.
3. Complete the development of a detailed work plan for data collection and management plan revision for the Tualatin Sub basin and secure funding for the work effort. Data collection should begin by no later than January 1986. Preliminary target for management plan update hearings would be in the spring of 1987.



Fred Hansen

- Attachments:
- A. Significance of Nutrients in Water Bodies
 - B. Excerpts from USEPA 1972 "Blue Book"
 - C. Excerpts from USEPA 1976 "Red Book"
 - D. Excerpts from AFS Review of EPA "Red Book"
 - E. Review of State Standards for Phosphorus
 - F. Review of State Standards for Nitrogen

Andy Schaedel:m
WM568
229-5983
September 16, 1985

ATTACHMENT A

Significance of Nutrients in Water Bodies

When discussing water quality, the term "nutrients" refers to the chemicals necessary to support growth of biological forms in water including algae, fungi, and bacteria. Nutrient chemicals are generally classified as macronutrients, micronutrients (trace elements), and organic nutrients. Macronutrients include carbon, calcium, potassium, magnesium, sodium, sulfur, nitrogen and phosphorus. Of these macronutrients, phosphorus is usually the controlling and controllable nutrient. Micronutrients include silica, manganese, zinc, copper, molybdenum, boron, titanium, chromium, cobalt, and perhaps vanadium. Examples of organic nutrients include biotin, vitamin B-12, thiamine, and glycylglycine.

The variety and quantity of biological species present in a water body will depend on the amounts and kinds of nutrients present in the water body, along with such factors as current, velocity flow, depth, temperature, available sunlight, turbidity and bottom type. A change in any of the conditions present could result in a change in the observed plant communities.

The most common concern with excess nutrients is the occurrence of "nuisance" plant growth that may interfere with the beneficial uses of a water body. Beneficial uses that can be affected include:

swimming, boating, fishing, water supply, animal watering and aesthetics.

Aquatic growth can be divided into three plant communities. These communities are:

- (1) Phytoplankton - community of plants that are generally microscopic and non-motile and thus float with the current, (e.g. suspended algae).
- (2) Periphyton - community of plants that are generally microscopic but are attached to the surfaces of submerged objects; (e.g. attached algae); and
- (3) Macrophyton - community of larger plants that are either attached to the bottom or are free-floating (e.g. rooted aquatic plants, duckweed, lily pads).

Whether or not these communities will exist in bodies of water will depend on physical factors such as current velocity, depth, and bottom substrate. The following table is a general guide of the "nuisance concern for each community as compared to the type of water body.

Relative Concern of Excessive Growth Potential
by Plant Community and Water Body

| | <u>Phytoplankton</u> | <u>Periphyton</u> | <u>Macrophyton</u> |
|-----------------------|----------------------|-------------------|-------------------------|
| Flowing rivers | Low | High | Low |
| Sluggish rivers | High | Low | Medium |
| Deep stratified lakes | High | Low | Shallow shoreline areas |
| Shallow lakes | High | Low | High |
| Reservoirs | High | Low | Low |

(Based on staff assessment and literature review.)

The approach to the development of nutrient standards must consider the plant community and type of water body. A more detailed discussion of nutrient concerns by plant community follows:

Phytoplankton

A comparatively large amount of scientific investigation has been undertaken in an effort to better understand nutrient relationships in lakes. Studies have sought to understand the causes and potential controls of "excessive phytoplankton production" that has accompanied increased urbanization, industrialization, artificial soil fertilization and soil mantle disruption within the drainage basins tributary to lakes.

Lakes have been classified as follows (Trophic Status):

Oligotrophic -- low surface-to-volume ratio, a nutrient concentration that supports only a low level of aquatic productivity, a high dissolved oxygen concentration extending to the deep waters, and sediments largely inorganic in composition.

Eutrophic -- high surface to volume ratio, an abundance of nutrients producing heavy growth of phytoplankton or macrophyton or both, contains highly organic sediments, and may have seasonal or continuous low dissolved oxygen concentrations in its deeper waters.

Mesotrophic -- conditions lie between those of oligotrophic and eutrophic lakes.

Dystrophic -- has waters brownish from humic materials, a relatively low pH, a reduced rate of bacterial decomposition, bottom sediments usually composed of partially decomposed vegetation, and low aquatic biomass productivity.

Oligotrophic or nutrient poor lakes are generally poor fish producers compared to mesotrophic or slightly eutrophic lakes. Eutrophic lakes may be unappealing for swimming or other contact recreation.

Nutrients are not the only factors influencing plant growth in lakes. Lake depth, hydraulic residence time, temperature, and solar incidence are among other factors controlling plant production.

An example in Oregon would be the differences between the productivity in Suttle Lake and Blue Lake in the Central Oregon Cascade Mountains. Blue Lake drains into Suttle Lake which in turn drains into Lake Creek and then to the Metolius River. The table below presents comparative information on the two lakes:

Comparison of Selected Data for
Blue and Suttle Lakes in Oregon

| | <u>Blue Lake</u> | <u>Suttle Lake</u> |
|-------------------------|-----------------------------------|-----------------------------|
| Drainage Basin Area | 17 square miles | 21 square miles |
| Lake Area | 54 acres | 253 acres |
| Lake Volume | 7,600 acre ft. | 11,200 acre ft. |
| Maximum Depth | 314 ft. | 75 ft. |
| Average Depth | 140 ft. | 44 ft. |
| Retention Time | Not determined. | 5.2 years |
| Water Quality (7/21/82) | | |
| Temperature | 59°F | 65°F |
| pH | 6.9 | 8.4 |
| Transparency | 52.5 ft. | 5.6 ft. |
| Phosphorous | 0.029 mg/l | 0.024 mg/l |
| Nitrate-N | 0.02 mg/l | 0.02 mg/l |
| Chlorophyll <u>a</u> | 0.002 mg/l | 0.016 mg/l |
| Alkalinity | 16 mg/l | 15 mg/l |
| Conductivity | 50 umos/cm | 50 umos/cm |
| Dissolved Oxygen | 8.2 mg/l | 8.3 mg/l |
| Trophic Status | Oligotrophic | Eutrophic |
| Temp. Profile | Pronounced Thermal Stratification | Weak Thermal Stratification |

If the nutrient (phosphorus) content were the primary factor controlling algal growth, then one would expect the chlorophyll a values and trophic status to be similar for these two lakes.

Studies have with apparent reliability established relationships between mean depth, average hydraulic residence time, and total phosphorus loading in lakes that thermally stratify and phosphorus can be shown to be the nutrient which limits plant growth. In addition, a reasonable relationship has been demonstrated in such cases between phosphorus levels and chlorophyll a (a measure of the relative mass of phytoplankton present).

Using these relationships, a model has been developed to establish a concentration of chlorophyll a in the lake that should not be exceeded to protect the beneficial uses from excessive algae concentrations. It is further possible to estimate the total annual loading of phosphorus that should not be exceeded in order to achieve the objective. It is then necessary to quantify the present total annual loading of phosphorus to the lake, identify the individual sources or source categories contributing the phosphorus, evaluate potential options and costs for limiting or reducing loading for each source or source category, and finally determining whether desired conditions can be achieved. Thus, for a deeper, thermally stratified lake where phosphorus can be shown to be the limiting nutrient, and where total annual nutrient loading levels and sources are known, the tools appear to be available to establish theoretical maximum allowable phosphorus loads. (See Figure 1)

These tools may also apply to reservoirs that thermally stratify. However, the inflow and outflow patterns and the resultant conditions for distribution of nutrients may require modifications of the model.

Shallow lakes do not normally stratify, thus the nutrients in bottom sediments can be recycled for phytoplankton production. Therefore, management approaches and predictive models must take into account the influence of bottom sediments in shallow, unstratified lakes. Much research is currently being carried out on shallow lakes and impoundments but predictive models for establishing nutrient loading relationships have not been completed.

Nutrient impacts on rivers appear to have been studied less than lakes. Potential reasons include a greater lack of control over environmental factors that is desirable in research situations, and a lower occurrence of nuisance algae levels in flowing streams. Nuisance level algae concentrations can occur in very sluggish stream reaches where conditions approach those of shallow unstratified lakes and reservoirs. Predictive relationships between chlorophyll a, physical conditions, or levels of limiting nutrients have not generally been established. Case by case study is necessary to determine the potential for controlling nutrients or other conditions so as to limit algae production.

For example, USGS concluded that the Willamette River had summertime concentrations of nitrogen and phosphorus that exceeded the generally accepted levels for excessive algal growth. However, the productivity of the river was low, with algal communities present that do not form nuisance

conditions. Further testing found that nutrient addition did not affect algal production. USGS suggested that the short retention time and low light availability due to turbidity limited algal growth.

The department has attempted to apply this phosphorus load approach to Lake Oswego. Assuming that the lake stratifies, has a mean depth of 7.8 meters, and a mean residence time of 2.4 months, the maximum permissible loading of phosphorus would be 0.6 grams per square meter per year or 1975 pounds total phosphorus per year. Assuming the total load entered the lake through the diversion canal (an inaccurate assumption), and an annual average inflow through the canal of 70 cubic feet per second, the maximum allowable concentration of total phosphorus would be 0.014 mg/l. The median concentration of phosphorus in the Tualatin at Cherry Grove, above all known waste discharges, is 0.03 mg/l. The median concentration of phosphorus above the USA Rock Creek Plant discharge approaches 0.1 mg/l. Levels below the USA Durham plant discharge and mouth of Fanno Creek approximate 0.25 mg/l. USA is presently removing about 75% of the phosphorus in the influent waste during the summer months by addition of coagulant chemicals in the treatment process.

The above calculations and information raise a number of questions with respect to the Tualatin. Is phosphorus the limiting nutrient so that this approach is applicable? Will a reduction of phosphorus (or other nutrient) yield any noticeable change in algae levels in Lake Oswego? Is it technologically possible to reduce nutrients enough to be of benefit to the lake, particularly since concentrations in the basin headwaters (natural levels) exceed the theoretically allowable concentration? What portions of the phosphorus entering Lake Oswego annually comes from the Tualatin River? What portion comes from the land and development surrounding the lake itself?

What portion recycles from the bottom sediments? For the nutrient in the Tualatin River, what portion comes from point source discharges, urban runoff, agricultural runoff, and natural sources? If the Unified Sewerage Agency diverted 100% of its sewage effluent from the Tualatin basin (pipe it to the Willamette or Columbia River for example), what would be the expected benefit to Lake Oswego algae concentrations? Are there other approaches that could benefit the lake, such as increased inlet flow to reduce residence time, or reduction of nutrients for a limited seasonal period other than that presently required, or some other means? The department believes that significant additional information is needed before a nutrient control strategy for the Tualatin Basin can be established.

Periphyton

Periphyton are most typically a concern in shallow, clear flowing waters where there is a substrate for attachment and sufficient clarity for light penetration. These conditions may exist in shallow lakes, reservoirs and

sluggish rivers. Most research has focused on nuisance periphytic forms (such as Sphaerotilus and Cladophora) which, unlike phytoplankton, show dramatic effects immediately below organic pollution sources. Periphyton abundance and composition are governed by the water quality if proper physical conditions are present.

It is often difficult to collect quantitative samples of periphyton as they are dependent on gaining a representative surface for sampling. Growth on a surface may vary depending on stream canopy, orientation, substrate, velocity, predation, etc. Many studies use artificial substrates which have their own drawbacks. Most studies have focused on identifying general nuisance growth conditions or are site specific intensive surveys. Common water quality measurements, such as water column chlorophyll a or nutrient levels, do not necessarily reflect periphytic concentrations. Unlike phytoplankton, little research has been carried out to suggest a quantifiable level of nuisance growth or nutrient concentrations except in general, but readily discernable (visible), terms. Nuisance growth of periphyton most typically interferes with aesthetics, fish spawning and swimming uses.

Macrophyton

Macrophyton can grow in shallow water (depths up to 10 meters but more typically from 0 to 3 meters) and get much of their nutrient supply from the sediment. Their presence and growth depends on currents, substrate, depth, light and nutrients. They are typically predominant in small ponds, and in shallow lakes and slow moving waters. Rooted aquatic plants can obtain nutrients from the sediment, and will be present regardless of nutrient concentrations in the water column. Increased nutrient levels may increase macrophyte growth since the nutrient loads would likely contribute to the sediment.

Nuisance growth of macrophytes most typically interfere with boating, swimming and fishing uses. Typical water column measurements such as nutrient and chlorophyll a concentrations do not necessarily reflect macrophyten concentrations. Unlike phytoplankton, little work has been carried out to suggest a quantifiable level of nuisance growth or nutrient concentration. In addition, common approaches used in lake management to address macrophyton require manipulation of their environment not nutrient control. Examples are: dredging (Mirror Pond); herbicides (Blue Lake); lake drawdown (Blue Lake); grazing (with Grass Carp); covering of sediments; etc.

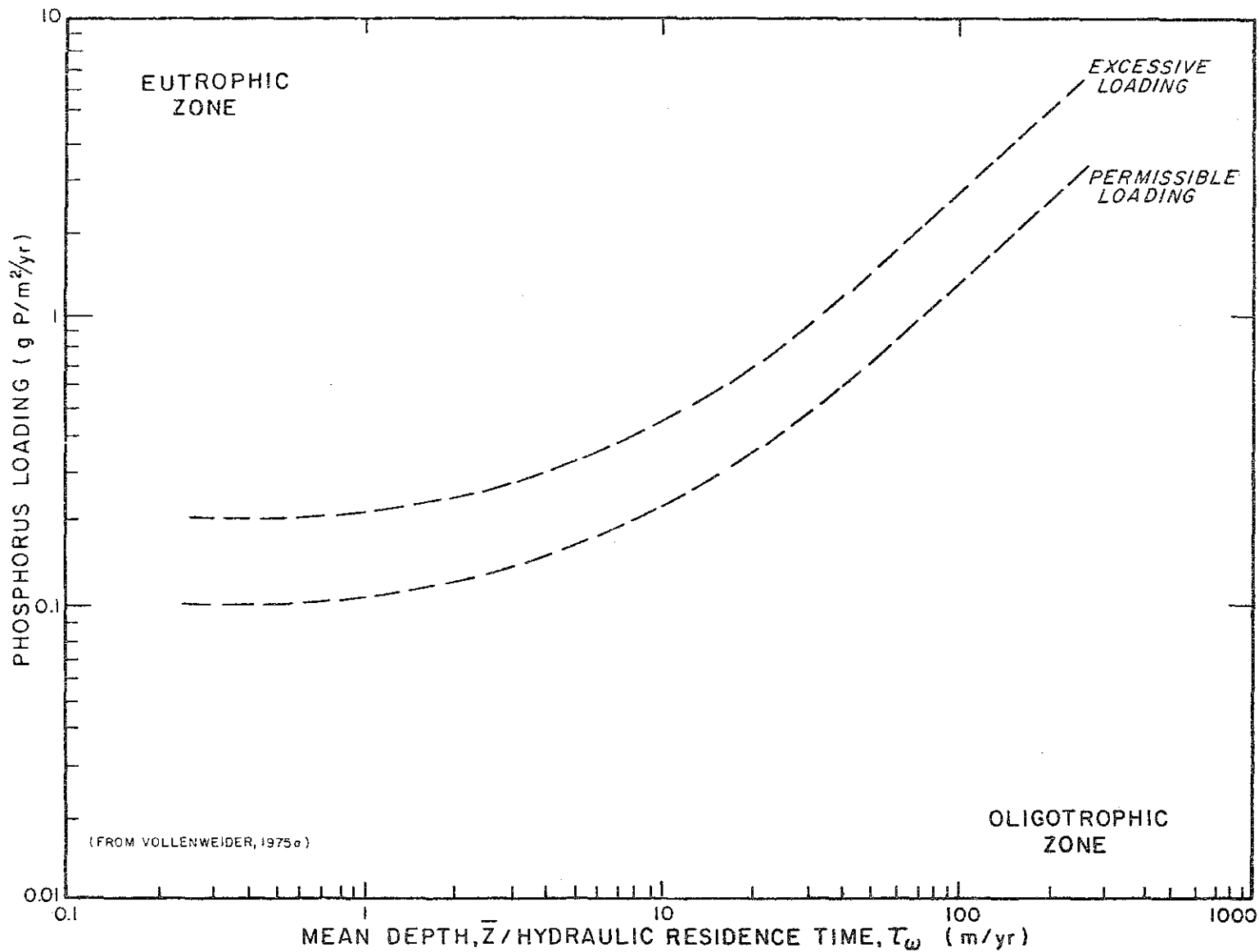


Figure 1. Modified Vollenweider Total Phosphorus Loading and Mean Depth/Hydraulic Residence Time Relationship.

Ref: After Rast and Lee, 1978

WATER QUALITY FOR PRESERVING AESTHETIC VALUES

Aesthetics is classically defined as the branch of philosophy that provides a theory of the beautiful. In this Section attention will be focused on the aesthetics of water in natural and man-made environments and the extent to which the beauty of that water can be preserved or enhanced by the establishment of water quality recommendations.

Although perceptions of many forms of beauty are profoundly subjective and experienced differently by each individual, there is an apparent sameness in the human response to the beauties of water. Aesthetically pleasing waters add to the quality of human experience. Water may be pleasant to look upon, to walk or rest beside, or simply to contemplate. It may enhance the visual scene wherever it appears, in cities or in the wilderness. It may enhance values of adjoining properties, public or private. It may provide a focal point of pride in the community. The perception of beauty and ugliness cannot be strictly defined. Either natural or man-made visual effects may add or detract, depending on many variables such as distance from the observer or the composition and texture of the surroundings. As one writer has said when comparing recreational values with aesthetics, "Of probably greater value is the relaxation and mental well-being achieved by viewing and absorbing the scenic grandeur of the great and restless Missouri. Many people crowd the 'high-line' drives along the bluffs to view this mighty river and achieve a certain restfulness from the proximity of nature" (Porges et al. 1952)¹⁸.

Similarly, aesthetic experience can be enhanced or destroyed by space relationships. Power boats on a two-acre lake are likely to be more hazardous than fun, and the water will be so choppy and turbid that people will hardly enjoy swimming near the shore. On the other hand, a sailboat on Lake Michigan can be viewed with pleasure. If a designated scenic area is surrounded by a wire fence, the naturalness is obviously tainted. If animals can only be viewed in restricted pens, the enjoyment is likely to be less than if they could be seen moving at will in their natural habitat.

MANAGEMENT FOR AESTHETICS

The management of water for aesthetic purposes must be planned and executed in the context of the uses of the land,

the shoreline, and the water surfaces. People must be the ultimate consideration. Aesthetic values relate to accessibility, perspective, space, human expectations, and the opportunity to derive a pleasurable reaction from the senses.

Congress has affirmed and reaffirmed its determination to enhance water quality in a series of actions strengthening the federal role in water pollution control and federal support for water pollution control programs of state and local governments and industry. In a number of states, political leaders and voters have supported programs to protect or even restore water quality with aesthetics as one of the values.

The recognition, identification, and protection of the aesthetic qualities of water should be an objective of all water quality management programs. The retention of suitable, aesthetic quality is more likely to be achieved through strict control of discharges at the source than by excessive dependence on assimilation by receiving waters. Paradoxically, the values that aesthetically pleasing water provide are most urgently needed where pollution problems are most serious as in the urban areas and particularly in the central portions of cities where population and industry are likely to be heavily concentrated.

Unfortunately, one of the greatest unknowns is the value of aesthetics to people. No workable formula incorporating a valid benefit-to-cost ratio has yet been devised to reflect tangible and intangible benefits accruing to conflicting uses or misuses and the cost of providing or avoiding them. This dilemma could be circumvented by boldly stating that aesthetic values are worth the cost of achieving them. The present public reaction to water quality might well support this position, but efforts in this area have not yet proceeded far enough to produce values worthy of wide acceptance. (See Appendix I.)

BASIS OF RECOMMENDATIONS FOR AESTHETIC PURPOSES

All surface waters should be aesthetically pleasing. But natural conditions vary widely, and because of this a series of descriptive rather than numerical recommendations is made. The descriptions are intended to provide, in general terms, for the protection of surface waters from substances or conditions arising from other than natural sources that

might degrade or tend to degrade the aesthetic quality of the water. Substances or conditions arising from natural sources may affect water quality independently of human activities. Human activities that augment degradation from natural sources, such as accelerated erosion from surface disturbances, are not considered natural. The recommendations are also intended to cover degradation from "discharges or waste," a phrase embracing undesirable inputs from all sources attributable to human activities whether surface flows, point discharges, or subsurface drainages.

The recommendations that follow are essentially finite criteria. The absence of visible debris, oil, scum, and other matter resulting from human activity is a strict requirement for aesthetic acceptability. Similarly, recommended values for objectionable color, odor, taste, and turbidity, although less precise, must be measured as no significant increase over background. Characteristics such as excessive nutrients and temperature elevations that encourage objectionable abundance of organisms, e.g., a bloom of blue-green algae resulting from discharge of a waste with a high nutrient content and an elevated temperature, must be considered.

These recommendations become finite when applied as intended in the context of natural background conditions. Specific numbers would add little to the usefulness of the descriptive recommendations because of the varying acute-

ness of sensory perception and because of the variability of substances and conditions so largely dependent on local conditions.

The phrase "virtually free" of an objectionable constituent as used in the recommendations implies the concept of freedom from the undesirable effects of the constituent but not necessarily freedom from the constituent itself. This recognizes the practical impossibility of complete absence and the inevitability of the presence of potential pollutants to some degree.

Recommendations

Surface waters will be aesthetically pleasing if they are virtually free of substances attributable to discharges or waste as follows:

- **materials that will settle to form objectionable deposits;**
- **floating debris, oil, scum, and other matter;**
- **substances producing objectionable color, odor, taste, or turbidity;**
- **substances and conditions or combinations thereof in concentrations which produce undesirable aquatic life.**

Snails serving as intermediate hosts include *Lymnaea*, *Physa*, and *Gyraulus* (Cort 1950).⁴³ Although swimmers' itch has wide distribution, in the United States it is principally endemic to the north central lake region. Occasional incidence is reported in marine waters (Stunkard and Hinchliffe 1952).⁶²

About 90 per cent of severe swimmers' itch outbreaks are associated with *Cercaria stagnicolae* shed from varieties of the snail *Lymnaea emarginata*. This relationship is promoted by (1) clean, sandy beaches ideal for swimming and preferred by the snail; (2) peak populations of the snail host that develop in sandy-bottomed lakes of glacial origin; (3) the greatest development of adult snails that do not die off until toward the end of the bathing season; and (4) the cycle of cercarial infection so timed that the greatest numbers of cercariae emerge during the hot weather in the middle of the summer when the greatest amount of bathing is done (Brackett 1941).³⁹ Infected vector snails are also found throughout the United States in swamps, muddy ponds, and ditches; but dermatitis rarely results, because humans seldom use these areas without protective clothing.

In some marine recreational waters jellyfish or sea nettles are serious problems. Some species possess stinging mechanisms whose cnidoblast filaments can penetrate human skin causing painful, inflamed weals. The effects of water quality on their abundance is not known, but Schultz and Cargo (1971)⁶¹ reported that the summer sea nettle, *Chrysaora quinquecirrha*, has been a problem in Chesapeake Bay since colonial days. When these nettles are abundant, swimming is practically eliminated and fishermen's nets and traps are clogged.

Conclusion

The role of water quality in either limiting or augmenting the production of vector and nuisance organisms involves many interrelationships which are not clearly understood. Since organic wastes generally directly or indirectly increase biomass production, there may be an attendant increase in vector or nuisance organisms. Some wastes favor their production by creating water quality or habitat conditions that limit their predators and competitors. Increased production of vector and nuisance organisms may degrade a healthy and desirable human environment and be accompanied by a lessening of recreational and aesthetic values (see the discussion of Aquatic Life and Wildlife in this Section, p. 35.)

EUTROPHICATION AND NUTRIENTS

Man's recent concern with eutrophy relates primarily to lakes, reservoirs, rivers, estuaries, and coastal waters that have been or are being over-fertilized through society's

carelessness to a point where beneficial uses are impaired or threatened. With increasing urbanization, industrialization, artificial soil fertilization, and soil mantle disruption, eutrophication has become a serious problem affecting the aesthetic and recreational enjoyment of many of the nation's waters.

Defining Eutrophication and Nutrients

Lakes have been classified in accordance with their trophic level or bathymetry as eutrophic, oligotrophic, mesotrophic, or dystrophic (National Academy of Sciences 1969,⁹⁷ Russell-Hunter 1970,¹⁰⁵ Warren 1971,¹¹⁴ Stewart and Rohlich 1967).¹⁰⁷ A typical eutrophic lake has a high surface-to-volume ratio, and an abundance of nutrients producing heavy growth of aquatic plants and other vegetation; it contains highly organic sediments, and may have seasonal or continuous low dissolved-oxygen concentrations in its deeper waters. A typical oligotrophic lake has a low surface-to-volume ratio, a nutrient content that supports only a low level of aquatic productivity, a high dissolved-oxygen concentration extending to the deep waters, and sediments largely inorganic in composition. The characteristics of mesotrophic lakes lie between those of eutrophic and oligotrophic lakes. A dystrophic lake has waters brownish from humic materials, a relatively low pH, a reduced rate of bacterial decomposition, bottom sediments usually composed of partially decomposed vegetation, and low aquatic biomass productivity. Dystrophication is a lake-aging process different from that of eutrophication. Whereas the senescent stage in eutrophication may be a productive marsh or swamp, dystrophication leads to a peat bog rich in humic materials but low in productivity.

Eutrophication refers to the addition of nutrients to bodies of water and to the effects of those nutrients. The theory that there is a natural, gradual, and steady increase in external nutrient supply throughout the existence of a lake is widely held, but there is no support for this idea of natural eutrophication (Beeton and Edmondson 1972).⁷⁴ The paleolimnological literature supports instead a concept of trophic equilibrium such as that introduced by Hutchinson (1969).⁹¹ According to this concept the progressive changes that occur as a lake ages constitute an ecological succession effected in part by the change in the shape of the basin brought about by its filling. As the basin fills and the volume decreases, the resulting shallowness increases the cycling of available nutrients and this usually increases plant production.

There are many naturally eutrophic lakes of such recreational value that extensive efforts have been made to control their overproduction of nuisance aquatic plants and algae. In the past, man has often accepted as a natural phenomenon the loss or decreased value of a resource through eutrophication. He has drained shallow, senescent lakes for agricultural purposes or filled them to form building

sites. The increasing value of lakes for recreation, however, will reorder man's priorities, and instead of accepting such alternative uses of lakes, he will divert his reclamation efforts to salvaging and renovating their recreational values.

Artificial or cultural eutrophication results from increased nutrient supplies through human activity. Many aquatic systems have suffered cultural eutrophication in the past 50 years as a consequence of continually increasing nutrient loading from the wastes of society. Man-induced nutrients come largely from the discharge of municipal and industrial wastewaters and from the land runoff effects of agricultural practices and disruption of the soil mantle and its vegetative cover in the course of land development and construction. If eutrophication is not to become the future major deterrent to the recreational and aesthetic enjoyment of water, it is essential that unnatural additions of nutrients be kept out of water bodies through improved wastewater treatment and land management.

Effects of Eutrophication and Nutrients

Green Lake, a lowland lake with high recreation use in Seattle, is an example of a natural eutrophic lake (Sylvester and Anderson 1960),¹⁰⁹ formed some 25,000 years ago after the retreat of the Vashon glacier. During the ensuing years, about two-thirds of the original lake volume was filled with inorganic and organic sediments. A core taken near the center of the lake to a sediment depth of 20.5 feet represented a sediment accumulation over a period of approximately 6,700 years. Organic, nutrient, and chlorophyll analyses on samples from the different sediment depths indicated a relatively constant rate of sedimentation, suggesting that Green Lake has been in a natural state of eutrophy for several thousands of years.

The recreational and aesthetic potential of the lake was reduced for most users by littoral and emergent vegetation and by heavy blooms of blue-green algae in late summer. The aquatic weeds provided harborage for production of mosquitoes and interfered with boating, swimming, fishing, access to the beach, and model boat activities. The heavy, blue-green algal blooms adhered to swimmers. The wind blew the algal masses onto the shore where they decomposed with a disagreeable odor. They dried like a blue-green paint on objects along the shoreline, rendered boating and fishing unattractive, and accentuated water line marks on boats.

Nevertheless, through the continuous addition of low-nutrient dilution water by the City of Seattle (Oglesby 1969),⁹⁶ Green lake has been reclaimed through a reversal of the trophic development to mesotrophic and is now recreationally and aesthetically acceptable.

Lake Washington is an example of a large, deep, oligotrophic-mesotrophic lake that turned eutrophic in about 35 years, primarily through the discharge of treated and untreated domestic sewage. Even to laymen, the change was rapid, dramatic, and spectacular. In the period of a year, the apparent color of the lake water turned from

bluish-green to rust as a result of massive growths of the blue-green alga, *Oscillatoria rubescens*. This threat to aesthetic and recreational enjoyment was a key factor in voter approval of Metro, a metropolitan sewer district. Metro has greatly reduced the nutrient content of the lake and consequent algal growth by diverting wastewater discharges out of the drainage basin (Edmondson 1969,⁸² 1970).⁸³

Lake Sammamish at the northern inlet of Lake Washington appeared to be responding to the enrichment it received from treated sewage and other nutrient waste, although it had not yet produced nuisance conditions to the extent found in Lake Washington (Edmondson 1970).⁸³ However, subsequent diversion of that waste by Metro has resulted in little or no detectable recovery in three years, a period that proved adequate for substantial recovery in Lake Washington (Emery et al. 1972).⁸⁵ Lake Sebasticook, Maine, affords another example of undesirable enrichment. Although previously in an acceptable condition, it became obnoxious during the 1960's in response to sewage and a wide variety of industrial wastes (HEW 1966).¹¹² The nutrient income of Lake Winnisquam, New Hampshire, has been studied to determine the cause of nuisance blooms of blue-green algae (Edmondson 1969).⁸² The well-known lakes at Madison, Wisconsin, including Monona, Waubesa, and Mendota, have been the object of detailed studies of nutrient sources and their deteriorating effect on water quality (Sawyer 1947,¹⁰⁶ Mackenthun et al. 1960,⁹⁵ Edmondson 1961,⁸⁰ 1968).⁸¹

A desirable aspect of eutrophication is the ability of mesotrophic or slightly eutrophic lakes typically to produce greater crops of fish than their oligotrophic or nutrient-poor counterparts. As long as nuisance blooms of algae and extensive aquatic weed beds do not hinder the growth of desirable fish species or obstruct the mechanics and aesthetics of fishing or other beneficial uses, some enrichment may be desirable. Fertilization is a tool in commercial and sport fishery management used to produce greater crops of fish. Many prairie lakes in the east slope foothills of the Rocky Mountains would be classed as eutrophic according to the characteristics discussed below, yet many of these lakes are exceptional trout producers because of the high natural fertility of the prairie (Sunde et al. 1970).¹⁰⁸ As an example of an accepted eutrophic condition, their waters are dense with plankton, but few would consider reducing the enrichment of these lakes.

Streams and estuaries, as well as lakes, show symptoms of over-enrichment, but there is less opportunity for buildup of nutrients because of the continual transport of water. Although aquatic growths can develop to nuisance proportions in streams and estuaries as a result of over-enrichment, manipulation of the nutrient input can modify the situation more rapidly than in lakes.

Man's fertilization of some rivers, estuaries, and marine embayments has produced undesirable aquatic growths of algae, water weeds, and slime organisms such as *Cladophora*,

Ulva, *Potamogeton*, and *Sphaerotilus*. In addition to interfering with other uses, as in clogging fishing nets with slime (Lincoln and Foster 1943),⁹⁴ the accompanying water-quality changes in some instances upset the natural fauna and flora and cause undesirable shifts in the species composition of the community.

Determination of Trophic Conditions

It should be emphasized that (a) eutrophication has a significant relationship to the use of water for recreational and aesthetic enjoyment as well as the other water uses discussed in this book; (b) this relationship may be desirable or undesirable, depending upon the type of recreational and aesthetic enjoyment sought; and (c) the possible disadvantages or advantages of eutrophication may be viewed subjectively as they relate to a particular water use. There are no generally accepted guidelines for judging whether a state of eutrophy exists or by what criteria it may be measured, such as production of biomass, rate of productivity, appearance, or change in water quality. Ranges in primary productivity and oxygen deficit have been suggested as indicative of eutrophy, mesotrophy, and oligotrophy by Edmondson (1970)⁸³ and Rodhe (1969),¹⁰⁴ but these ranges have had no official recognition.

The trophic state and natural rate of eutrophication that exists, or would exist, in the absence of man's activities is the basis of reference in judging man-induced eutrophication. The determination of the natural state in many water bodies will require the careful examination of past data, referral to published historical accounts, recall by "old-timers," and perhaps the examination of sediment cores for indicator species and chemical composition. The following guidelines are suggested in determining the reference trophic states of lakes or detecting changes in trophic states. Determination of the reference trophic state accompanied by studies of the nutrient budget may reveal that the lake is already in an advanced state of eutrophy. For temperate lakes, a significant change in indicator communities or a significant increase in any of the other four indices, detectable over a five-year period or less, is considered sufficient evidence that accelerated eutrophication is occurring. An undetectable change over a shorter period would not necessarily indicate a lack of accelerated eutrophication. A change detectable only after five years may still indicate unnaturally accelerated eutrophication, but five years is suggested as a realistic maximum for the average monitoring endeavor. Where cultural eutrophication is suspected and changes in indices are not observable, analysis of sediment cores may be necessary to establish the natural state. The dynamic characteristics and individuality of lakes may produce exceptions to these guidelines. They are not infallible indicators of interference with recreation, but for now they may serve as a beginning, subject to modification as more complete data on the range of trophic conditions and their associated effects become available.

Primary Productivity Ranges in the photosynthetic rate, measured by radioactive carbon assimilation, have been suggested by Rodhe (1969)¹⁰⁴ as indicative of trophic conditions (Table I-2).

Biomass Chlorophyll *a* is used as a versatile measure of algal biomass. The ranges presented for mean summer chlorophyll *a* concentration determined in epilimnetic water supplies collected at least biweekly and analyzed according to *Standard Methods* (American Public Health Assoc., American Water Works Assoc., and Water Pollution Control Federation 1971)⁷⁰ are indices of the trophic stage of a lake: oligotrophic, 0-4 mg chlorophyll *a*/m³; eutrophic, 10-100 mg chlorophyll *a*/m³.

These ranges are suggested after reviewing data on chlorophyll concentrations and other indicators of trophic state in several lakes throughout the United States and Canada. Of greatest significance are data from Lake Washington which show that during peak enrichment, mean summer chlorophyll *a* content rose to about 27 mg/m³ and that the lake was definitely eutrophic. The post nutrient diversion summer mean declined to about 7 mg/m³, and the lake is now more typically mesotrophic (Edmondson 1970;⁸³ chlorophyll *a* values corrected to conform to recent analytical techniques). Unenriched and relatively low productive lakes at higher elevations in the Lake Washington drainage basin show mean summer chlorophyll *a* contents of 1 to 2 mg/m³. Moses Lake, which can be considered hypereutrophic, shows a summer mean of 90 mg/m³ chlorophyll *a* (Bush and Welch 1972).⁷⁶

Oxygen Deficit Criteria for rate of depletion of hypolimnetic oxygen in relation to trophic state were reported by Mortimer (1941)⁹⁶ as follows:

| | |
|---|---|
| <i>oligotrophic</i> | <i>eutrophic</i> |
| <250 mg O ₂ /m ² /day | >550 mg O ₂ /m ² /day |

This is the rate of depletion of hypolimnetic oxygen determined by the change in mean concentration of hypolimnetic oxygen per unit time multiplied by the mean depth of the hypolimnion. The observed time interval should be at least a month, preferably longer, during summer stratification.

TABLE I-2—Ranges in Photosynthetic Rate for Primary Productivity Determinations^a

| Period | Oligotrophic | Eutrophic |
|---|--------------|-----------|
| Mean daily rates in a growing season, mgC/m ² /day.... | 30-100 | 300-3000 |
| Total annual rates, gC/m ² /year | 7-75 | 75-788 |

^a Measured by total carbon uptake per square meter of water surface per unit of time. Productivity estimates should be determined from at least monthly measurements according to *Standard Methods*. American Public Health Association, American Water Works Assoc., and Water Pollution Control Federation 1971⁷⁰; Rodhe 1969.¹⁰⁴

Indicator Communities The representation of certain species in a community grouping in fresh water environments is often a sensitive indicator of the trophic state. Nutrient enrichment in streams causes changes in the size of faunal and floral populations, kinds of species, and numbers of species (Richardson 1928,¹⁰⁸ Ellis 1937,⁸⁴ Patrick 1949,⁹⁹ Tarzwell and Gaufin 1953¹¹⁰). For example, in a stream typical of the temperate zone in the eastern United States degraded by organic pollution the following shifts in aquatic communities are often found: in the zone of rapid decomposition below a pollution source, bacterial counts are increased; sludgeworms (Tubificidae), rattail maggots (*Eristalis tenax*) and bloodworms (Chironomidae) dominate the benthic fauna; and blue-green algae and the sewage fungus (*Sphaerotilus*) become common (Patrick 1949,⁹⁹ Tarzwell and Gaufin 1953,¹¹⁰ Patrick et al. 1967¹⁰⁰). Various blue-green algae such as *Schizothrix calcicola*, *Microcoleus vaginatus*, *Microcystis aeruginosa*, and *Anabaena* sp. are commonly found in nutrient-rich waters, and blooms of these and other algae frequently detract from the aesthetic and recreational value of lakes. Diatoms such as *Nitzschia palea*, *Gomphonema parvulum*, *Navicula cryptocephala*, *Cyclotella meneghiniana*, and *Melosira varians* are also often abundant in nutrient-rich water (Patrick and Reimer 1966).¹⁰¹ Midges, leeches, blackfly larvae, *Physa* snails, and fingernail clams are frequently abundant in the recovery zone.

Nutrients Chemicals necessary to the growth and reproduction of rooted or floating flowering plants, ferns, algae, fungi, or bacteria are considered to be nutrient chemicals. All these chemicals are not yet known, but those that have been identified are classified as macronutrients, trace elements or micronutrients, and organic nutrients. The macronutrients are calcium, potassium, magnesium, sodium, sulfur, carbon and carbonates, nitrogen, and phosphorus. The micronutrients are silica, manganese, zinc, copper, molybdenum, boron, titanium, chromium, cobalt, and perhaps vanadium (Chu 1942,⁷⁷ Arnon and Wessell 1953,⁷⁸ Hansen et al. 1954).⁸⁹ Examples of organic nutrients are biotin, B₁₂, thiamine, and glycylglycine (Droop 1962).⁷⁹ Some of the amino acids and simple sugars have also been shown to be nutrients for heterotrophs or partial heterotrophs.

Plants vary as to the amounts and kinds of nutrients they require, and as a result one species or group of species of algae or aquatic plants may gain dominance over another group because of the variation in concentration of nutrient chemicals. Even though all the nutrients necessary for plant growth are present, growth will not take place unless environmental factors such as light, temperature, and substrate are suitable. Man's use of the watershed also influences the sediment load and nutrient levels in surface waters (Leopold et al. 1964,⁹³ Bormann and Likens 1967).⁷⁵

Thomas (1953)¹¹¹ found that the important factor in artificial eutrophication was the high phosphorus content of domestic wastes. Nitrogen became the limiting growth factor if the algal demand for phosphorus was met. Nu-

merous studies have verified these conclusions (American Society of Limnology and Oceanography 1972).⁷¹

Sawyer (1947)¹⁰⁶ determined critical levels of inorganic nitrogen (300 $\mu\text{g/l N}$) and inorganic phosphorus (10 $\mu\text{g/l P}$) at the time of spring overturn in Wisconsin lakes. If exceeded, these levels would probably produce nuisance blooms of algae during the summer. Nutrient concentrations should be maximum when measured at the spring overturn and at the start of the growing season. Nutrient concentrations during active growth periods may only indicate the difference between amounts absorbed in biomass (suspended and settled) and the initial amount biologically available. The values, therefore, would not be indicative of potential algal production. Nutrient content should be determined at least monthly (including the time of spring overturn) from the surface, mid-depth, and bottom. These values can be related to water volume in each stratum, and nutrient concentrations based on total lake volume can be derived.

One of the most convincing relationships between maximum phosphate content at the time of lake overturn and eutrophication as indicated by algal biomass has been shown in Lake Washington (Edmondson 1970).⁸³ During the years when algal densities progressed to nuisance levels, mean winter $\text{PO}_4\text{-P}$ increased from 10–20 $\mu\text{g/l}$ to 57 $\mu\text{g/l}$. Following diversion of the sewage mean $\text{PO}_4\text{-P}$ decreased once again to the preenrichment level. Correlated with the $\text{PO}_4\text{-P}$ reduction was mean summer chlorophyll *a* content, which decreased from a mean of 27 $\mu\text{g/l}$ at peak enrichment to less than 10 $\mu\text{g/l}$, six years after diversion was initiated.

Although difficult to assess, the rate of nutrient inflow more closely represents nutrient availability than does nutrient concentration because of the dynamic character of these nonconservative materials. Loading rates are usually determined annually on the basis of monthly monitoring of water flow, nutrient concentration in natural surface and groundwater, and wastewater inflows.

Vollenweider (1968)¹¹⁸ related nutrient loading to mean depths for various well-known lakes and identified trophic states associated with induced eutrophication. These findings showed shallow lakes to be clearly more sensitive to nutrient income per unit area than deep lakes, because nutrient reuse to perpetuate nuisance growth of algae increased as depth decreased. From this standpoint nutrient loading was a more valid criterion than nutrient concentration in judging trophic state. Examples of nutrient loadings which produced nuisance conditions were about 0.3 $\text{g/m}^2\text{/yr P}$ and 4 $\text{g/m}^2\text{/yr N}$ for a lake with a mean depth of 20 meters, and about 0.8 $\text{g/m}^2\text{/yr P}$ and 11 $\text{g/m}^2\text{/yr N}$ for a lake with a mean depth of 100 meters.

These suggested criteria apply only if other requirements of algal growth are met, such as available light and water retention time. If these factors limit growth rate and the increase of biomass, large amounts of nutrients may move through the system unused, and nuisance conditions may not occur (Welch 1969).¹¹⁵

Carbon (C) is required by all photosynthetic plants. It may be in the form of CO_2 in solution, HCO_3^- , or CO_3^{2-} . Carbamate carboxylate, which may form by the complexing of calcium or other carbonates and amino compounds in alkaline water, is an efficient source of CO_2 (Hutchinson 1967).⁹⁰ Usually carbon is not a limiting factor in water (Goldman et al. 1971).⁸⁸ However, King (1970)⁹² estimated that concentrations of CO_2 less than 3 micromoles at equilibrium favored blue-green algae, and concentrations greater than this favored green algae.

Cations such as calcium, magnesium, sodium, and potassium are required by algae and higher aquatic plants for growth, but the optimum amounts and ratios vary. Furthermore, few situations exist in which these would be in such low supply as to be limiting to plants. Trace elements either singly or in combination are important for the growth of algae (Goldman 1964).⁸⁶ For example molybdenum has been demonstrated to be a limiting nutrient in Castle Lake. Deficiencies in trace elements are more likely to occur in oligotrophic than in eutrophic waters (Goldman 1972).⁸⁷

The vitamins important in promoting optimum growth in algae are biotin, thiamin, and B_{12} . All major groups require one or more of these vitamins, but particular species may or may not require them. As Provasoli and D'Agostino (1969)¹⁰² pointed out, little is known about the requirement for these vitamins for growth of algae in polluted water.

Under natural conditions it is difficult to determine the effect of change in concentrations of a single chemical on the growth of organisms. The principal reasons are that growth results from the interaction of many chemical, physical, and biological factors on the functioning of an organism; and that nutrients arise from a mixture of chemicals from farm, industrial, and sanitary wastes, and runoff from fields. However, the increase in amounts and types of nutrients can be traced by shifts in species forming aquatic communities. Such biotic shifts have occurred in western Lake Erie (Beeton 1969).⁷³ Since 1900 the watershed of western Lake Erie has changed with the rapidly increasing human population and industrial development, as a result of which the lake has received large quantities of sanitary, industrial, and agricultural organic wastes. The lake has become modified by increased concentrations of dissolved solids, lower transparency, and low dissolved oxygen concentration. Blooms of blue-green algae and shifts in invertebrate populations have markedly increased in the 1960's (Davis 1964,⁷⁸ Beeton 1969).⁷³

Summary of Measurement of Nutrient Enrichment

Several conditions can be used to measure nutrient enrichment or its effects:

- a steady decrease over several years in the dissolved oxygen content of the hypolimnion when measured prior to fall overturn, and an increase in anaerobic areas in the lower portion of the hypolimnion;

- an increase in dissolved materials, especially nutrients such as nitrogen, phosphorus, and simple carbohydrates;
- an increase in suspended solids, especially organic materials;
- a shift in the structure of communities of aquatic organisms involving a shift in kinds of species and relative abundances of species and biomass;
- a steady though slow decrease in light penetration;
- an increase in organic materials and nutrients, especially phosphorus, in bottom deposits;
- increases in total phosphorus in the spring of the year.

Recommendations

The principal recommendations for aesthetic and recreational uses of lakes, ponds, rivers, estuaries, and near-shore coastal waters are that these uses continue to be pleasing and undiminished by effects of cultural activities that increase plant nutrients. The trophic level and natural rate of eutrophication that exists, or would exist, in these waters in the absence of man's activities is considered the reference level and the commonly desirable level to be maintained. Such water should not have a demonstrable accelerated production of algae growth in excess of rates normally expected for the same type of waterbody in nature without man-made influences.

The concentrations of phosphorus and nitrogen mentioned in the text as leading to accelerated eutrophication were developed from studies for certain aquatic systems: maintenance of lower concentrations may or may not prevent eutrophic conditions. All the factors causing nuisance plant growths and the level of each which should not be exceeded are not known. However, nuisance growths will be limited if the addition of all wastes such as sewage, food processing, cannery, and industrial wastes containing nutrients, vitamins, trace elements, and growth stimulants are carefully controlled and nothing is added that causes a slow overall decrease of average dissolved oxygen concentration in the hypolimnion and an increase in the extent and duration of anaerobic conditions.

AQUATIC VASCULAR PLANTS

Aquatic vascular plants affect water quality, other aquatic organisms, and the uses man makes of the water. Generally, the effects are inversely proportional to the volume of the water body and directly proportional to the use man wishes to make of that water. Thus the impact is often most significant in marshes, ponds, canals, irrigation ditches, rivers, shallow lakes, estuaries and embayments, public water supply sources, and man-made impoundments. Dense

growths of aquatic vascular plants are not necessarily due to human alteration of the environment. Where an appropriate environment for plant growth occurs, it is extremely difficult to prevent the growth without changing the environment. Addition of plant nutrients can cause aquatic vascular plants to increase to nuisance proportions in waters where natural fertility levels are insufficient to maintain dense populations (Lind and Cottam 1969).¹⁴⁷ In other waters where artificial nutrient additions are not a problem, natural fertility alone may support nuisance growths (Frink 1967).¹³⁵

Interrelationships With Water Quality

Through their metabolic processes, manner of growth, and eventual decay, aquatic vascular plants can have significant effects on such environmental factors as dissolved oxygen and carbon dioxide, carbonate and bicarbonate alkalinity, pH, nutrient supplies, light penetration, evaporation, water circulation, current velocity, and sediment composition. The difficulty in understanding the interrelationships among plant growth and water quality is described in part by Lathwell et al. (1969).¹⁴⁴ Diurnal oxygen rhythm with maximum concentrations in the afternoon and minimums just before dawn is a universally-recognized limnological phenomenon, and metabolic activities of vascular plants can contribute to these rhythms. The effect of aquatic plants on dissolved oxygen within a reach of stream at a particular time of day is a function of the plant density and distribution, plant species, light intensity, water depth, turbidity, temperature, and ambient dissolved oxygen. Oxygen production is proportional to plant density only to a certain limit; when this limit is exceeded, net oxygen production begins to decrease and, with increasing density, the plants become net oxygen consumers (Owens et al. 1969).¹⁵⁹ It is hypothesized that this phenomenon occurs because the plants become so dense that some are shaded by other overlying plants. Westlake (1966)¹⁷³ developed a model for predicting the effects of aquatic vascular plant density and distribution on oxygen balance which demonstrates that if the weeds are concentrated within a small area, the net effect of the weeds may be to consume more oxygen than that produced, even though the average density may be relatively low.

After reviewing the literature on the direct effects of plants on the oxygen balance, Sculthorpe (1967)¹⁶² concluded that the extent of oxygen enrichment at all sites varies with changing light intensity, temperature, and plant population density and distribution. On a cloudy, cool day community respiration may exceed even the maximum photosynthetic rate. Although vigorous oxygen production occurs in the growing season, the plants eventually die and decay, and the resulting oxygen consumption is spread over the cooler seasons of the year.

Light penetration is significantly reduced by dense stands of aquatic vascular plants, and this reduces photosynthetic

rates at shallow depths. Buscemi (1958)¹⁵⁹ found that under dense beds of *Elodea* the dissolved oxygen concentration fell sharply with depth and marked stratification was produced. Severe oxygen depletion under floating mats of water hyacinth (Lynch et al. 1947),¹⁶⁰ duckweed and water lettuce (Yount 1963)¹⁷⁰ have occurred. Extensive covers of floating or emergent plants shelter the surface from the wind, reduce turbulence and reaeration, hinder mixing, and promote thermal stratification. Dense growths of phytoplankton may also shade-out submerged macrophytes, and this phenomenon is used to advantage in fisheries pond culture. Fertilization of ponds to promote phytoplankton growth is recommended as a means of reducing the standing crop of submerged vascular plants (Swingle 1947,¹⁶⁷ Surber 1961¹⁶⁶).

Interrelationships of plants with water chemistry were reported by Straskraba (1965)¹⁶⁵ when foliage of dense populations of *Nuphar*, *Ceratophyllum*, and *Myriophyllum* were aggregated on the surface. He found pronounced stratification of temperature and chemical factors and reported that the variations of oxygen, pH, and alkalinity were clearly dependent on the photosynthesis and respiration of the plants. Photosynthesis also involves carbon dioxide, and Sculthorpe (1967)¹⁶² found that for every rise of 2 mg/l of dissolved oxygen the total carbon dioxide should drop 2.75 mg/l and be accompanied by a rise in the pH. A rise in pH will allow greater concentrations of un-ionized ammonia (see Freshwater Aquatic Life, p. 140).

Hannan and Anderson (1971)¹³⁷ studied diurnal oxygen balance, carbonate and bicarbonate alkalinity and pH on a seasonal basis in two Texas ponds less than 1 m deep which supported dense growths of submerged rooted macrophytes. One pond received seepage water containing free carbon dioxide and supported a greater plant biomass. This pond exhibited a diurnal dissolved-oxygen range in summer from 0.8 to 16.4 mg/l, and a winter range from 0.3 to 18.0 mg/l. The other pond's summer diurnal dissolved-oxygen range was 3.8 to 14.9 mg/l and the winter range was 8.3 to 12.3 mg/l. They concluded that (a) when macrophytes use bicarbonate as a carbon source, they liberate carbonate and hydroxyl ions, resulting in an increase in pH and a lowered bicarbonate alkalinity; and (b) the pH of a macrophyte community is a function of the carbon dioxide-bicarbonate-carbonate ionization phenomena as altered by photosynthesis and community respiration.

Dense colonies of aquatic macrophytes may occupy up to 10 per cent of the total volume of a river and reduce the maximum velocity of the current to less than 75 per cent of that in uncolonized reaches (Hillebrand 1950,¹³⁹ as reported by Sculthorpe 1967¹⁶²). This can increase sediment deposition and lessen channel capacity by raising the substrate, thus increasing the chance of flooding. Newly deposited silt may be quickly stabilized by aquatic plants, further affecting flow.

Loss of water by transpiration varies between species and

growth forms. Otis (1914)¹⁶⁸ showed that the rate of transpiration of *Nymphaea odorata* was slightly less than the rate of evaporation from a free water surface of equivalent area, but that of several emergent species was up to three times greater. Sculthorpe (1967)¹⁶² postulated that transpiration from the leaves of free-floating rosettes could be at rates six times greater than evaporation from an equivalent water surface. Loss of water through water hyacinth was reported by Das (1969)¹⁸³ at 7.8 times that of open water.

Interrelationships With Other Biota

Aquatic macrophytes provide a direct or indirect source of food for aquatic invertebrates and fish and for wildlife. The plants provide increased substrate for colonization by epiphytic algae, bacteria, and other microorganisms which provide food for the larger invertebrates which, in turn, provide food for fish. Sculthorpe (1967)¹⁶² presented a well-documented summary of the importance of a wide variety of aquatic macrophytes to fish, birds, and mammals. Sago pondweed (*Potamogeton pectinatus*) illustrates the opposite extreme in man's attitude toward aquatic macrophytes: Timmons (1966)¹⁶⁸ called it the most noxious plant in irrigation and drainage ditches of the American west, whereas Martin and Uhler (1939)¹⁵⁶ considered it the most important duck food plant in the United States.

Aquatic vegetation and flottage breaking the water surface enhance mosquito production by protecting larvae from wave action and aquatic predators and interfering with mosquito control procedures. Two major vectors of malaria in the United States are *Anopheles quadrimaculatus* east of the Rocky Mountains, and *A. freeborni* to the west (Carpenter and La Casse 1955).¹³⁰ Anopheline mosquitoes are generally recognized as permanent pool breeders. The more important breeding sites of these two mosquitoes are freshwater lakes, swamps, marshes, impoundment margins, ponds, and seepage areas (Carpenter and La Casse 1955).¹³⁰ The role of various aquatic plant types in relation to the production and control of *A. quadrimaculatus* on artificial ponds and reservoirs indicates that the greatest problems are created by macrophytes that are (1) free-floating, (2) submersed and anchored but which break the water surface, (3) floating leaf anchored, and (4) emerged floating-mat anchored (U.S. Department of Health, Education, and Welfare, Public Health Service, and Tennessee Valley Authority 1947).¹⁶⁹ In addition to vector mosquitoes, pestiferous mosquitoes develop in association with plant parts in shoreline areas. Jenkins (1964)¹⁴² provided an annotated list and bibliography of papers dealing with aquatic vegetation and mosquitoes.

Generally, submersed vascular plants have lower nutrient requirements than filamentous algae or phytoplankton (Mulligan and Baranowski 1969).¹⁶⁷ Plants with root systems in the substrate do not have to compete with phytoplankton, periphyton, or non-rooted macrophytes for the phosphorus in the sediments.

Boyd (1971b),¹²⁶ relating his earlier work on emergent species (Boyd 1969,¹²² 1970a,¹²³ 1971a¹²⁵) to that of Stake (1967,¹⁶³ 1968¹⁶⁴) on submersed species, stated that in the southern United States most of the total net nutrient accumulation by aquatic vascular plants occurs by midspring before peak dry matter standing crop is reached, and that nutrients stored during early spring growth are utilized for growth later. Thus nutrients are removed from the environment early in the season, giving the vascular hydrophytes a competitive advantage over phytoplankton. Boyd (1967)¹²¹ also reported that the quantity of phosphorus in aquatic plants frequently exceeds that of the total water volume. These phenomena may account for the high productivity in terms of macrophytes which can occur in infertile waters. However, if the dissolved phosphorus level is not a limiting factor for the phytoplankton, the ability to utilize sediment phosphorus is not a competitive advantage for rooted plants.

Further interaction between aquatic vascular plants and phytoplankton has been demonstrated recently in studies showing that concentrations of dissolved organic matter can control plant growth in lakes by regulating the availability of trace metals and other nutrients essential to plant photosynthesis. An array of organic-inorganic interactions shown to suppress plant growth in hardwater lakes (Wetzel 1969,¹⁷⁴ 1971¹⁷⁵) appear to operate in other lake types and streams (Breger 1970,¹²⁷ Malcolm et al. 1970,¹⁵² Allen 1971¹¹⁶). Wetzel and Allen in press (1971)¹⁷⁶ and Wetzel and Manny (1972)¹⁷⁷ showed that aquatic macrophytes near inlets of lakes can influence phytoplankton growth by removing nutrients as they enter the lake while at the same time producing dissolved organic compounds that complex with other nutrients necessary to phytoplankton growth. Manny (1971,¹⁵³ 1972¹⁶⁴) showed several mechanisms by which dissolved organic nitrogen (DON) compounds regulate plant growth and rates of bacterial nutrient regeneration. These control mechanisms can be disrupted by nutrients from municipal and agricultural wastes and dissolved organic matter from inadequately treated wastes.

Effects on Recreation and Aesthetics

It is difficult to estimate the magnitude of the adverse effects of aquatic macrophytes in terms of loss of recreational opportunities or degree of interference with recreational pursuits. For example, extensive growths of aquatic macrophytes interfere with boating of all kinds; but the extent of interference depends, among other things, on the growth form of the plants, the density of the colonization, the fraction of the waterbody covered, and the purposes, attitudes, and tolerance of the boaters. Extremes of opinion on the degree of impact create difficulty in estimating a monetary, physical, or psychological loss.

Dense growths of aquatic macrophytes are generally objectionable to the swimmer, diver, water skier, and scuba enthusiast. Plants or plant parts can be at least a nuisance to swimmers and, in extreme cases, can be a factor in

drowning. Plants obstruct a diver's view of the bottom and underwater hazards, and fronds can become entangled in a scuba diver's gear. Water skiers' preparations in shallow water are hampered by dense growths of plants, and fear of falling into such growths while skiing detracts from enjoyment of the sport.

Rafts of free-floating plants or attached plants which have been dislodged from the substrate often drift onto beaches or into swimming areas, and time and labor are entailed in restoring their attractiveness. Drying and decaying aquatic plants often produce objectionable odors and provide breeding areas for a variety of insects.

Sport fishermen have mixed feelings about aquatic macrophytes. Fishing is often good around patches of lily pads, over deeply-submerged plants, and on the edges of beds of submerged weeds which rise near the surface. On the other hand, dense growths may restrict the movement and feeding of larger fish and limit the fishable area of a waterbody. Aquatic plants entangle lures and baits and can prevent fishermen from reaching desirable fishing areas.

Marshes and aquatic macrophytes in sparse or moderate densities along watercourse and waterbody margins augment nature study and shoreline exploration and add to the naturalistic value of camping and recreation sites. It is only when the density of the growths, or their growth forms, become a nuisance and interfere with man's activities that he finds them objectionable. An indication of how often that occurs is provided by McCarthy (1961),¹⁵⁶ who reported that on the basis of a questionnaire sent to all states in 1960, there were over 2,000 aquatic vegetation control projects conducted annually, and that most states considered excessive growth of aquatic vegetation a serious and increasing problem.

The aesthetic value of aquatic macrophytes is in the mind of the beholder. The age-old appeal of aquatic plants is reflected in their importance as motifs in ancient architecture, art, and mythology. Aquatic gardens continue to be popular tourist attractions and landscaping features, and wild aquatic plant communities have strong appeal to the artist, the photographer, and the public. To many, these plants make a contribution of their own to the beauty of man's environment.

Control Considerations

Aquatic vascular plants can be controlled by several methods: chemical (Hall 1961,¹³⁶ Little 1968¹⁴⁸); biological (Avault et al. 1968,¹¹⁷ Maddox et al. 1971,¹⁵¹ Blackburn et al. 1971¹²⁰); mechanical (Livermore and Wunderlich 1969¹⁴⁹); and naturalistic environmental manipulation (Penfound 1953).¹⁶⁰ General reviews of control techniques have been made by Holm et al. (1969),¹⁴¹ Sculthorpe (1967),¹⁶² and Lawrence (1968).¹⁴⁵

Harvesting aquatic vascular plants to reduce nutrients as a means of eutrophication control has been investigated

by Boyd (1970b),¹²⁴ Yount and Crossman (1970),¹⁷¹ and Peterson (1971).¹⁶¹ Although many investigators have reported important nutrients in various aquatic plants, the high moisture content of the vegetation as it is harvested has been an impediment to economic usefulness. Peterson (1971)¹⁶¹ reported the cost per pound of phosphorus, nitrogen, and carbon removed from a large lake supporting dense growths of aquatic vascular plants as \$61.19, \$8.24 and \$0.61 respectively.

Nevertheless, improved methods of harvesting and processing promise to reduce the costs of removing these bothersome plants and reclaiming their nutrients for animal and human rations or for soil enrichment. Investigation into the nutritive value of various aquatic plants has frequently been an adjunct of research on the efficiency and economy of harvesting and processing these plants in an effort to remove nuisance growth from lakes and streams. Extensive harvesting of aquatic vegetation from plant-clogged Caddo Lake (Texas-Louisiana) was followed by plant analysis and feeding trials. The dehydrated material was found to be rich in protein and xanthophyll (Creger et al. 1963,¹³² Couch et al. 1963¹³¹). Bailey (1965)¹¹⁸ reported an average of 380 milligrams of xanthophyll per pound of vacuum oven-dried aquatic plant material with about 19 per cent protein. Hentges (1970),¹³⁸ in cooperation with Bagnall (1970),¹¹⁹ in preliminary tests with cattle fed press-dehydrated aquatic forage, found that pelleted *Hydrilla verticillata* (Florida elodea) could be fed satisfactorily as 75 per cent of a balanced ration. Bruhn et al. (1971)¹²⁸ and Koegel et al. (1972)¹⁴³ found 44 per cent mineral and 21 per cent protein composition in the dry matter of the heat coagulum of the expressed juice of Eurasian water milfoil (*Myriophyllum spicatum*). The press residue, further reduced by cutting and pressing to 16 per cent of the original volume and 32 per cent of the original weight, could readily be spread for lawn or garden mulch.

Control measures are undertaken when plant growth interferes with human activities beyond some ill-defined point, but too little effort has been expended to determine the causes of infestations and too little concern has been given the true nature of the biological problem (Boyd 1971b).¹²⁶ Each aquatic macrophyte problem under consideration for control should be treated as unique, the biology of the plant should be well understood, and all the local factors thoroughly investigated before a technique is selected. Once aquatic macrophytes are killed, space for other plants becomes available. Nutrients contained in the original plants are released for use by other species. Long-term control normally requires continued efforts. Herbicides may be directly toxic to fish, fish eggs, or invertebrates important as fish food (Eipper 1959,¹³⁴ Walker 1965,¹⁷² Hiltibran 1967).¹⁴⁰ (See the discussion of Pesticides, pp. 182-186, in Section III.) On man-made lakes, reservoirs and ponds the potential for invasion by undesirable aquatic

plants may be lessened by employing naturalistic methods which limit the available habitat and requirements of particular species. It is difficult to predict what biotic form will replace the species eliminated. Boyd (1971b)¹²⁶ states that in some Florida lakes, herbicide applications have upset the balance between rooted aquatics and phytoplankton, resulting in nuisance phytoplankton blooms that were sometimes more objectionable than the original situation.

Control of aquatic vascular plants can be a positive factor in fisheries management (Leonard and Cain 1961);¹⁴⁶ but when control projects are contemplated in multi-purpose waters, consideration should be given to existing interdependencies between man and the aquatic community. For example: what biomass of aquatic vascular plants is necessary to support waterfowl; what biomass will permit boating; what is a tolerable condition for swimming; must the shoreline be clear of plants for wading; will shore erosion increase if the shoreline vegetation is removed? The interference of aquatic vascular plant communities in human activities should be controlled with methods that stop short of attempted plant eradication.

Recommendation

The complex interrelationships among aquatic vascular plants, associated biota, water quality, and the activities of humans call for case-by-case evaluation in assessing the need for management programs. If management is undertaken, study of its potential impacts on the aquatic ecosystem and on various water uses should precede its implementation.

INTRODUCTION OF SPECIES

Extent and Types of Introductions

Purposeful or accidental introductions of foreign aquatic organisms or transplantations of organisms from one drainage system to another can profoundly influence the aesthetic appeal and the recreational or commercial potential of affected waterbodies. The introduction of a single species may alter an entire aquatic ecosystem (Lachner et al. 1970).¹⁸⁸ An example of extreme alteration occurred with the invasion of the Great Lakes by the sea lamprey (*Petromyzon marinus*) (Moffett 1957,¹⁹⁰ Smith 1964¹⁹⁷). Introduced and transplanted species account for about half of the fish fauna of Connecticut (Whitworth et al. 1968),¹⁹⁹ California (Shapovalov et al. 1959),¹⁹⁵ Arizona, and Utah (Miller 1961).¹⁸⁹ The nature of the original aquatic fauna is obscured in many cases, and some indigenous species have been adversely affected through predation, competition, hybridization, or alteration of habitat by the introduced species. Exotics that have established reproducing populations in the United States (exclusive of the Hawaiian

Islands) include 25 species of fish (Lachner et al. 1970),¹⁸⁸ more than 50 species of land and aquatic mollusks (Abbott 1950),¹⁷⁸ and over 20 species of aquatic vascular plants (Hotchkiss 1967)¹⁸⁶ in addition to aquatic rodents, reptiles, amphibians, insects, and crustaceans.

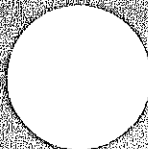
Growths of native aquatic vascular plants and a variety of exotic species commonly interfere with recreation and fishing activities (see p. 25) and a variety of other water uses including industrial and agricultural use (Holm et al. 1969,¹⁸⁴ Sculthorpe 1967).¹⁹⁴ Water hyacinth (*Eichhornia crassipes*) caused loss of almost \$43 million through combined deleterious effects in Florida, Alabama, Mississippi, and Louisiana in 1956 (Wunderlich 1962).²⁰⁰ Penfound and Earle (1948)¹⁹² estimated that the annual loss caused by water hyacinth in Louisiana before the growths were brought under control averaged \$5 million and in some years reached \$15 million. Water chestnut (*Trapa natans*) produced beds covering 10,000 acres within ten years of its introduction near Washington, D.C. (Rawls 1964).¹⁹³ The beds blocked navigation and provided breeding sites for mosquitoes, and their hard spined seed cases on the shorelines and bottom were a serious nuisance to swimmers, waders, and people walking the shores. Eurasian milfoil (*Myriophyllum spicatum*) infested 100,000 acres in Chesapeake Bay. The plants blocked navigation, prevented recreational boating and swimming, interfered with seafood harvest, increased siltation, and encouraged mosquitoes (Cronin 1967).¹⁸²

Invertebrate introductions include the Asian clam (*Corbicula manilensis*), a serious pest in the clogging of industrial and municipal raw water intake systems and irrigation canals (Sinclair 1971),¹⁹⁶ and an oriental oyster drill (*Tritonalia japonica*) considered the most destructive drill in the Puget Sound area (Korringa 1952).¹⁸⁷

Some Results of Introductions

Some introductions of exotics, e.g., brown trout (*Salmo trutta*), and some transplants, e.g., striped bass (*Morone saxatilis*) from the Atlantic to the Pacific and coho salmon (*Oncorhynchus kisutch*) from the Pacific to the Great Lakes, have been spectacularly successful in providing sport and commercial fishing opportunities. Benefits of introductions and transplantations of many species in a variety of aquatic situations are discussed by several authors in *A Century of Fisheries in North America* (Benson 1970).¹⁷⁹

The success of other introductions has been questionable or controversial. In the case of carp (*Cyprinus carpio*), the introduction actually decreased aesthetic values because of the increased turbidity caused by the habits of the carp. The increased turbidity in turn decreased the biological productivity of the waterbody. The presence of carp has lowered the sportfishing potential of many waterbodies because of a variety of ecological interactions. The grass carp or white amur (*Ctenopharyngodon idella*), a recent impor-



QUALITY CRITERIA FOR WATER

QUALITY CRITERIA FOR WATER • 1976

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

OFFICE OF WATER AND
HAZARDOUS MATERIALS

To the Reader:


Thousands of fine scientists throughout the country have contributed directly or indirectly to this publication of "Quality Criteria for Water." This volume represents a stocktaking effort on the part of this Agency to identify as precisely as possible at this time, on a national scale, the various water constituents that combine to form the concept of "Quality Criteria for Water." This process of definition will continue far into the future because research related to water quality is a never-ending evolutionary process, and the water environment is so complex that man's efforts to define it will never attain finite precision.

Water quality criteria do not have direct regulatory use, but they form the basis for judgment in several Environmental Protection Agency and State programs that are associated with water quality considerations. The criteria presented in this publication should not be used as absolute values for water quality. As stated in the chapter on "The Philosophy of Quality Criteria," variability exists in the natural quality of water and certain organisms become adapted to that quality, which may be considered extreme in other areas. These criteria represent scientific judgments based upon literature and research about the concentration-effect relationship of a particular water quality constituent to a particular aquatic species within the limits of experimental investigation. They should be used with considered judgment and with an understanding of their development. The judgment associated with their use should include the natural quality of water under consideration, the kinds of organisms that it contains, the association of those species to the particular species described in this volume upon which criteria values have been placed, and the local hydrologic conditions.

It must be emphasized that national criteria can never be developed to meet the individual needs of each of the Nation's waterways—the natural variability within the aquatic ecosystem can never be identified with a single numerical value. Water quality criteria will change in the future as our knowledge and perception of the intricacies of water improve. There is no question but that criteria for some constituents will change within a period of only two years based upon research now in progress. That is a mark of continuing progressive research effort, as

well as a mark of a better understanding by man of the environment that he inhabits.

This, then, is the challenge for the future: to expand upon our present baseline of knowledge of the cause-effect relationships of water constituents to aquatic life and of the antagonistic and synergistic reactions among many quality constituents in water; and to mold such future knowledge into realistic, environmentally protective criteria to insure that the water resource can fulfill society's needs.



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PHOSPHORUS

CRITERION

0.10 ug/l yellow (elemental) phosphorus for marine or estuarine waters.

INTRODUCTION

Phosphorus in the elemental form is particularly toxic and is subject to bioaccumulation in much the same way as mercury. Phosphorus as phosphate is one of the major nutrients required for plant nutrition and is essential for life. In excess of a critical concentration, phosphates stimulate plant growth. During the past 30 years, the belief has developed that increased standing crops of aquatic plants frequently are caused by increased supplies of phosphorus. Such phenomena are associated with a condition of accelerated eutrophication or aging of waters. Generally, it is recognized that phosphorus is not the sole cause of eutrophication but there is evidence that frequently it is the key element required by freshwater plants, and generally, is present in the least amount relative to need. Therefore, an increase in phosphorus allows use of other already present nutrients for plant growth. Further, of all of the elements required for plant growth in the water environment, phosphorus is the most easily controlled by man.

Large deposits of phosphate rock are found near the western shore of central Florida, as well as in a number of other states. Deposits in Florida are found in the form of pebbles which vary in size from fine sand to about the size of a human foot. These pebbles are embedded in a matrix of clay and sand. The phosphate rock beds lie within a few feet of the surface and mining is accomplished by use of hydraulic water jets and a washing operation that separates the phosphate from waste materials. The process is similar to that of strip-mining. Florida, Idaho, Montana, North Carolina, South Carolina, Tennessee, Utah, Virginia, and Wyoming share phosphate mining activities.

Phosphates enter waterways from several different sources. The human body excretes about 1 pound per year of phosphorus expressed as "P." The use of phosphate detergents and other domestic phosphates increases the per capita contribution to about 3½ pounds per year of phosphorus as P. Some industries, such as potato processing, have wastewaters high in phosphates. Varying amounts of phosphorus drain to watercourses from the land. This drainage may be surface runoff of rainfall, effluent from tile lines, or return flow from irrigation. Cattle feedlots, concentrations of domestic duck or wild duck populations, and tree leaves, as well as atmospheric fallout are all contributing sources.

Evidence indicates that: (1) high phosphorus concentrations are associated with accelerated eutrophication of waters, when other growth-promoting factors are present; (2) aquatic plant problems develop in reservoirs and other standing waters at phosphorus values lower than those critical in flowing streams; (3) reservoirs and lakes collect phosphates from influent streams and store a portion of them within consolidated sediments, thus serving as a phosphate sink; and, (4) phosphorus concentrations critical to noxious plant growth vary, and nuisance growths may result from a particular concentration of phosphate in one geographical area but not in another. The amount or percentage of inflowing nutrients that may be retained by a lake or reservoir is variable and will depend upon: (1) the nutrient loading to the lake or reservoir; (2) the volume of the euphotic zone; (3) the extent of biological activities; (4) the detention time within the lake basin or the time available for biological activities; and, (5) the level of discharge from the lake or of the penstock from the reservoir.

Once nutrients are combined within the aquatic ecosystem, their removal is tedious and expensive. Phosphates are used by algae and higher aquatic plants and an excess may be stored within the plant cell. With decomposition of the plant cell, some phosphorus may be released immediately through bacterial action for recycling within the biotic community, while the remainder may be deposited with sediments. Much of the material that becomes combined with the consolidated sediments within the lake bottom is bound permanently and will not be recycled into the system.

RATIONALE

Elemental Phosphorus

Isom (1960) reported an LC_{50} of 0.105 mg/l at 48 hours and 0.025 mg/l at 160 hours for bluegill sunfish, *Lepomis macrochirus*, exposed to yellow phosphorus in distilled water at 26° C and pH 7. The 125- and 195-hour LC_{50} s of yellow phosphorus to Atlantic cod, *Gadus morhua*, and Atlantic salmon, *Salmo salar*, smolts in continuous exposure experiments were 1.89 and 0.79 ug/l, respectively (Fletcher and Hoyle, 1972). No evidence of an incipient lethal level was observed since the lowest concentration of elemental phosphorus (P_4) tested was 0.79 ug/l. Salmon that were exposed to elemental phosphorus concentrations of 40 ug/l or less developed a distinct external red color and showed signs of extensive hemolysis. The predominant features of P_4 poisoning in salmon were external redness, hemolysis, and reduced hematocrits.

Following the opening of an elemental phosphorus production plant in Long Harbour, Placentia Bay, Newfoundland, divers observed dead fish upon the bottom throughout the harbour (Peer, 1972). Mortalities were confined to a water depth of less than 18 meters. There was visual evidence of selective mortality among benthos. Live mussels were found within 300 meters of the effluent pipe, while all scallops within this area were dead.

Fish will concentrate elemental phosphorus from water containing as little as 1 ug/l (Idler, 1969). In one set of experiments, a cod swimming in water containing 1 ug/l elemental phosphorus for 18 hours concentrated phosphorus to 50 ug/kg in muscle, 150 ug/kg in fatty tissue, and 25,000 ug/kg in the liver (Idler, 1969; Jangaard, 1970). The experimental findings showed that phosphorus is quite stable in the fish tissues.

The criterion of 0.10 ug/l elemental phosphorus for marine or estuarine waters is 1/10 of demonstrated lethal levels to important marine organisms and of levels that have been found to result in significant bioaccumulation.

Phosphate Phosphorus

Although a total phosphorus criterion to control nuisance aquatic growths is not presented, it is believed that the following rationale to support such a criterion, which currently is evolving, should be considered.

Total phosphate phosphorus concentrations in excess of 100 ug/l P may interfere with coagulation in water treatment plants. When such concentrations exceed 25 ug/l at the time of the spring turnover on a volume-weighted basis in lakes or reservoirs, they may occasionally stimulate excessive or nuisance growths of algae and other aquatic plants. Algal growths impart undesirable tastes and odors to water, interfere with water treatment, become aesthetically unpleasant, and alter the chemistry of the water supply. They contribute to the phenomenon of cultural eutrophication.

To prevent the development of biological nuisances and to control accelerated or cultural eutrophication, total phosphates as phosphorus (P) should not exceed 50 ug/l in any stream at the point where it enters any lake or reservoir, or 25 ug/l within the lake or reservoir. A desired goal for the prevention of plant nuisances in streams or other flowing waters not discharging directly to lakes or impoundments is 100 ug/l total P (Mackenthun, 1973). Most relatively uncontaminated lake districts are known to have surface waters that contain from 10 to 30 ug/l total phosphorus as P (Hutchinson, 1957).

The majority of the Nation's eutrophication problems are associated with lakes or reservoirs, and currently more data support the establishment of a limiting phosphorus level in those waters than in streams or rivers that do not directly impact such water. Natural conditions also dictate the consideration of either a more or less stringent phosphorus level. Eutrophication problems may occur in waters where the phosphorus concentration is less than that indicated above and, obviously, there would be a need in such waters to have nutrient limits that are more stringent. Likewise, there are those waters within the Nation where phosphorus is not now a limiting nutrient and where the need for phosphorus limits is substantially diminished. Such conditions are described in the last paragraph of this rationale.

Two basic needs must be met in establishing a phosphorus criterion for flowing waters: one is to control the development of plant nuisances within the flowing water and, in turn, to control and prevent animal

pests that may become associated with such plants; the other is to protect the downstream receiving waterway, regardless of its proximity in linear distance. It is evident that a portion of that phosphorus that enters a stream or other flowing waterway eventually will reach a receiving lake or estuary either as a component of the fluid mass, as bed load sediments that are carried downstream, or as floating organic materials that may drift just above the stream's bed or float on its surface. Superimposed on the loading from the inflowing waterway, additional phosphorus may enter the lake or estuary as fallout from the air shed or as a direct introduction from shoreline areas.

Another method to control the inflow of nutrients, particularly phosphates, into a lake is that of prescribing an annual loading to the receiving water. Vollenweider (1973) suggests total phosphorus (P) loadings in grams per square meter of surface area per year that will be a critical level for eutrophic conditions within the receiving waterway for a particular water volume where the mean depth of the lake in meters is divided by the hydraulic detention time in years. Vollenweider's data (Table 13) suggest a range of loading values that should result in oligotrophic lake water quality.

Table 13.

| Mean depth/hydraulic detention time | Oligotrophic or permissible loading | Eutrophic or critical loading |
|--|---|-------------------------------------|
| (meters/year) | (grams/meter ² /year) | (grams/meter ² /year) |
| 0.5 | 0.07 | 0.14 |
| 1.0 | 0.10 | 0.20 |
| 2.5 | 0.16 | 0.32 |
| 5.0 | 0.22 | 0.45 |
| 7.5 | 0.27 | 0.55 |
| 10.0 | 0.32 | 0.63 |
| 25.0 | 0.50 | 1.00 |
| 50.0 | 0.71 | 1.41 |
| 75.0 | 0.87 | 1.73 |
| 100.0 | 1.00 | 2.00 |

There may be waterways wherein higher concentrations or loadings of total phosphorus do not produce eutrophy, as well as those waterways wherein lower concentrations or loadings of total phosphorus may be associated with populations of nuisance organisms. Waters now containing less than the specified amounts of phosphorus should not be degraded by the introduction of additional phosphates.

It should be recognized that a number of specific exceptions can occur to reduce the threat of phosphorus as a contributor to lake eutrophy. Often, naturally occurring phenomena limit the development of plant nuisances; often there are technological or cost-effective limitations to the control of introduced pollutants. Exceptions to the threat of phosphorus in eutrophication occur in waters (1) highly laden with natural silts or colors which reduce the penetration of sunlight needed for plant photosynthesis; (2) whose morphometric features of

steep banks, great depth, and substantial flows contribute to a history of no plant problems; (3) that are managed primarily for waterfowl or other wildlife; (4) where an identified nutrient other than phosphorus is limiting to plant growth and the level and nature of such limiting nutrient would not be expected to increase to an extent that would influence eutrophication; and (5) where phosphorus control cannot be sufficiently effective under present technology to make phosphorus the limiting nutrient. No national criterion is presented for phosphate phosphorus for the control of eutrophication.

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AESTHETIC QUALITIES

CRITERIA

All waters free from substances attributable to wastewater or other discharges that:

- (1) settle to form objectionable deposits;
- (2) float as debris, scum, oil, or other matter to form nuisances;
- (3) produce objectionable color, odor, taste, or turbidity;
- (4) injure or are toxic or produce adverse physiological responses in humans, animals or plants; and
- (5) produce undesirable or nuisance aquatic life.

RATIONALE

Aesthetic qualities of water address the general principles laid down in common law. They embody the beauty and quality of water and their concepts may vary within the minds of individuals encountering the waterway. A rationale for these qualities cannot be developed with quantifying definitions; however, decisions concerning such quality factors can portray the best in the public interest.

Aesthetic qualities provide the general rules to protect water against environmental insults; they provide minimal requirements for freedom from pollution; they are essential to the enjoyment of the Nation's waterways.

NITRATES, NITRITES

CRITERION

10 mg/l nitrate nitrogen (N) for domestic water supply (health).

INTRODUCTION

Two gases (molecular nitrogen and nitrous oxide) and five forms of nongaseous, combined nitrogen (amino and amide groups, ammonium, nitrite, and nitrate) are important in the nitrogen cycle. The amino and amide groups are found in soil organic matter and as constituents of plant and animal protein. The ammonium ion is either released from proteinaceous organic matter and urea, or is synthesized in industrial processes involving atmospheric nitrogen fixation. The nitrite ion is formed from the nitrate or the ammonium ions by certain microorganisms found in soil, water, sewage, and the digestive tract. The nitrate ion is formed by the complete oxidation of ammonium ions by soil or water microorganisms; nitrite is an intermediate product of this nitrification process. In oxygenated natural water systems nitrite is rapidly oxidized to nitrate. Growing plants assimilate nitrate or ammonium ions and convert them to protein. A process known as denitrification takes place when nitrate-containing soils become anaerobic and the conversion to nitrite, molecular nitrogen, or nitrous oxide occurs. Ammonium ions may also be produced in some circumstances.

Among the major point sources of nitrogen entry into water bodies are municipal and industrial wastewaters, septic tanks, and feedlot discharges. Diffuse sources of nitrogen include farm-site fertilizer and animal wastes, lawn fertilizer, leachate from waste disposal in dumps or sanitary landfills, atmospheric fallout, nitric oxide and nitrite discharges from automobile exhausts and other combustion processes, and losses from natural sources such as mineralization of soil organic matter (NAS, 1972). Water reuse systems in some fish hatcheries employ a nitrification process for ammonia reduction; this may result in exposure of the hatchery fish to elevated levels of nitrite (Russo, et al. 1974).

RATIONALE

In quantities normally found in food or feed, nitrates become toxic only under conditions in which they are, or may be, reduced to nitrites. Otherwise, at "reasonable" concentrations, nitrates are rapidly excreted in the urine. High intake of nitrates constitutes a hazard primarily to warmblooded animals under conditions that are favorable to their

reduction to nitrite. Under certain circumstances, nitrate can be reduced to nitrite in the gastrointestinal tract which then reaches the bloodstream and reacts directly with hemoglobin to produce methemoglobin, with consequent impairment of oxygen transport.

The reaction of nitrite with hemoglobin can be hazardous in infants under 3 months of age. Serious and occasionally fatal poisonings in infants have occurred following ingestion of untreated well waters shown to contain nitrate at concentrations greater than 10 mg/l nitrate nitrogen (N) (NAS, 1974). High nitrate concentrations frequently are found in shallow farm and rural community wells, often as the result of inadequate protection from barnyard drainage or from septic tanks (USPHS, 1961; Stewart, et al. 1967). Increased concentrations of nitrates also have been found in streams from farm tile drainage in areas of intense fertilization and farm crop production (Harmeson, et al. 1971). Approximately 2,000 cases of infant methemoglobinemia have been reported in Europe and North America since 1945; 7 to 8 percent of the affected infants died (Walton, 1951; Sattelmacher, 1962). Many infants have drunk water in which the nitrate nitrogen content was greater than 10 mg/l without developing methemoglobinemia. Many public water supplies in the United States contain levels that routinely are in excess of this amount, but only one U.S. case of infant methemoglobinemia associated with a public water supply has ever been reported (Vigil, et al. 1965). The differences in susceptibility to methemoglobinemia are not yet understood but appear to be related to a combination of factors including nitrate concentration, enteric bacteria, and the lower acidity characteristic of the digestive systems of baby mammals. Methemoglobinemia symptoms and other toxic effects were observed when high nitrate well waters containing pathogenic bacteria were fed to laboratory mammals (Wolff and Wasserman, 1972). Conventional water treatment has no significant effect on nitrate removal from water (NAS, 1974).

Because of the potential risk of methemoglobinemia to bottle-fed infants, and in view of the absence of substantiated physiological effects at nitrate concentrations below 10 mg/l nitrate nitrogen, this level is the criterion for domestic water supplies. Waters with nitrite nitrogen concentrations over 1 mg/l should not be used for infant feeding. Waters with a significant nitrite concentration usually would be heavily polluted and probably bacteriologically unacceptable.

Westin (1974) determined that the respective 96-hour and 7-day LC_{50} values for chinook salmon, *Oncorhynchus tshawytscha*, were 1,310 and 1,080 mg/l nitrate nitrogen in fresh water and 990 and 900 mg/l nitrate nitrogen in 15 o/oo saline water. For fingerling rainbow trout, *Salmo gairdneri*, the respective 96-hour and 7-day LC_{50} values were 1,360 and 1,060 mg/l nitrate nitrogen in fresh water, and 1,050 and 900 mg/l nitrate nitrogen in 15 o/oo saline water. Trama (1954) reported that the 96-hour LC_{50} for bluegills, *Lepomis macrochirus*, at 20° C was 2,000 mg/l nitrate nitrogen (sodium nitrate) and 420 mg/l nitrate nitrogen (potassium nitrate). Knepp and Arkin (1973) observed that largemouth bass, *Micropterus salmoides*, and channel catfish, *Ictalurus punctatus*, could be maintained at concentrations up to 400 mg/l nitrate (90 mg/l

nitrate nitrogen) without significant effect upon their growth and feeding activities.

The 96-hour and 7-day LC_{50} values for chinook salmon, *Oncorhynchus tshawytscha*, were found to be 0.9 and 0.7 mg/l nitrite nitrogen in fresh water (Westin, 1974). Smith and Williams (1974) tested the effects of nitrite nitrogen and observed that yearling rainbow trout, *Salmo gairdneri*, suffered a 55 percent mortality after 24 hours at 0.55 mg/l, fingerling rainbow trout suffered a 50 percent mortality after 24 hours of exposure at 1.6 mg/l, and chinook salmon, *Oncorhynchus tshawytscha*, suffered a 40 percent mortality within 24 hours at 0.5 mg/l. There were no mortalities among rainbow trout exposed to 0.15 mg/l nitrite nitrogen for 48 hours. These data indicate that salmonids are more sensitive to nitrite toxicity than are other fish species, e.g., minnows, *Phoxinus laevis*, that suffered a 50 percent mortality within 1.5 hours of exposure to 2,030 mg/l nitrite nitrogen, but required 14 days of exposure for mortality to occur at 10 mg/l (Klingler, 1957), and carp, *Cyprinus carpio*, when raised in a water reuse system, tolerated up to 1.8 mg/l nitrite nitrogen (Saeki, 1965).

Gillette, et al. (1952) observed that the critical range for creek chub, *Semotilus atromaculatus*, was 80 to 400 mg/l nitrite nitrogen. Wallen, et al. (1957) reported a 24-hour LC_{50} of 1.6 mg/l nitrite nitrogen, and 48- and 96-hour LC_{50} values of 1.5 mg/l nitrite nitrogen for mosquitofish, *Gambusia affinis*. McCoy (1972) tested the nitrite susceptibility of 13 fish species and found that logperch, *Percina caprodes*, were the most sensitive species tested (mortality at 5 mg/l nitrite nitrogen in less than 3 hours of exposure), whereas carp, *Cyprinus carpio*, and black bullheads, *Ictalurus melas*, survived 40 mg/l nitrite nitrogen for a 48-hour exposure period; the common white sucker, *Catostomus commersoni*, and the quillback, *Carpoides cyprinus*, survived 100 mg/l for 48 and 36 hours, respectively.

Russo, et al. (1974) performed flow-through nitrite bioassays in hard water (hardness = 199 mg/l $CaCO_3$, alkalinity = 176 mg/l $CaCO_3$, pH = 7.9) on rainbow trout, *Salmo gairdneri*, of four different sizes, and obtained 96-hour LC_{50} values ranging from 0.19 to 0.39 mg/l nitrite nitrogen. Duplicate bioassays on 12-gram rainbow trout were continued long enough for their toxicity curves to level off, and asymptotic LC_{50} concentrations of 0.14 and 0.15 mg/l were reached in 8 days; on day 19, additional mortalities occurred. For 2-gram rainbow trout, the minimum tested level of nitrite nitrogen at which no mortalities were observed after 10 days was 0.14 mg/l; for the 235-gram trout, the minimum level with no mortality after 10 days was 0.06 mg/l.

It is concluded that: (1) levels of nitrate nitrogen at or below 90 mg/l would have no adverse effects on warm water fish (Knepp and Arkin, 1973); (2) nitrite nitrogen at or below 5 mg/l should be protective of most warm water fish (McCoy, 1972); and (3) nitrite nitrogen at or below 0.06 mg/l should be protective of salmonid fishes (Russo, et al. 1974; Russo and Thurston, 1975). These levels either are not known to occur or would be unlikely to occur in natural surface waters.

Recognizing that concentrations of nitrate or nitrite that would exhibit toxic effects on warm or cold water fish could rarely occur in nature, restrictive criteria are not recommended.

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AMMONIA

CRITERION

0.02 mg/l (as un-ionized ammonia) for freshwater aquatic life.

Table 2.—Concentrations of total ammonia (NH₃ + NH₄⁺) which contain an un-ionized ammonia concentration of 0.020 mg/l NH₃(mg/l)*

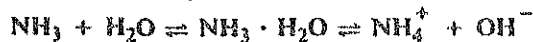
| Temperature (°C) | pH Value | | | | | | | | |
|---------------------|----------|-----|-----|------|------|-------|-------|-------|-------|
| | 6.0 | 6.5 | 7.0 | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 |
| 5 | 160. | 51. | 16. | 5.1 | 1.6 | 0.53 | 0.18 | 0.071 | 0.036 |
| 10 | 110. | 34. | 11. | 3.4 | 1.1 | 0.36 | 0.13 | 0.054 | 0.031 |
| 15 | 73. | 23. | 7.3 | 2.3 | 0.75 | 0.25 | 0.093 | 0.043 | 0.027 |
| 20 | 50. | 16. | 5.1 | 1.6 | 0.52 | 0.18 | 0.070 | 0.036 | 0.025 |
| 25 | 35. | 11. | 3.5 | 1.1 | 0.37 | 0.13 | 0.055 | 0.031 | 0.024 |
| 30 | 25. | 7.9 | 2.5 | 0.81 | 0.27 | 0.099 | 0.045 | 0.028 | 0.022 |

*[Abstracted from Thurston et al. (1974)]

INTRODUCTION

Ammonia is a pungent, colorless, gaseous, alkaline compound of nitrogen and hydrogen that is highly soluble in water. It is a biologically active compound present in most waters as a normal biological degradation product of nitrogenous organic matter. It may also reach ground and surface waters through discharge of industrial wastes containing ammonia as a byproduct, or wastes from industrial processes using "ammonia water."

When ammonia dissolves in water, some of the ammonia reacts with the water to form ammonium ions. A chemical equilibrium is established which contains un-ionized ammonia (NH₃), ionized ammonia (NH₄⁺), and hydroxide ions (OH⁻). The equilibrium for these chemical species can be expressed in simplified form by the following equation:



In the above equation, NH₃ represents ammonia gas combining with water. The term NH₃ · H₂O represents the un-ionized ammonia molecule which is loosely attached to water molecules. Dissolved un-ionized ammonia will be represented for convenience as NH₃. The ionized form of ammonia will be represented as NH₄⁺. The term total ammonia will refer to the sum of these (NH₃ + NH₄⁺).

The toxicity of aqueous solutions of ammonia is attributed to the NH₃ species. Because of the equilibrium relationship among NH₃, NH₄⁺, and OH⁻, the toxicity of ammonia is very much dependent upon pH as well

as the concentration of total ammonia. Other factors also affect the concentration of NH_3 in water solutions, the most important of which are temperature and ionic strength. The concentration of NH_3 increases with increasing temperature, and decreases with increasing ionic strength. In aqueous ammonia solutions of dilute saline concentrations, the NH_3 concentration decreases with increasing salinity.

Percent NH_3 for aqueous ammonia solutions of zero salinity at different values of pH and temperature is given in Table 3. This percentage can be used to determine the amount of total ammonia which is in the most toxic (NH_3) form.

Table 3.—Percent un-ionized ammonia in aqueous ammonia solutions*

| Temperature (°C) | pH Value | | | | | | | | |
|---------------------|----------|-------|------|------|-----|-----|-----|-----|------|
| | 6.0 | 6.5 | 7.0 | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 |
| 5 | 0.013 | 0.040 | 0.12 | 0.39 | 1.2 | 3.8 | 11. | 28. | 56. |
| 10 | 0.019 | 0.059 | 0.19 | 0.59 | 1.8 | 5.6 | 16. | 37. | 65. |
| 15 | 0.027 | 0.087 | 0.27 | 0.86 | 2.7 | 8.0 | 21. | 46. | 73. |
| 20 | 0.040 | 0.13 | 0.40 | 1.2 | 3.8 | 11. | 28. | 56. | 80. |
| 25 | 0.057 | 0.18 | 0.57 | 1.8 | 5.4 | 15. | 36. | 64. | 85. |
| 30 | 0.080 | 0.25 | 0.80 | 2.5 | 7.5 | 20. | 45. | 72. | 89. |

*[Thurston, et al. (1974)]

RATIONALE

It has been known since early in this century that ammonia is toxic to fishes and that the toxicity varies with the pH of the water. Chipman (1934) demonstrated that undissociated ammonia (NH_3) was the chemical species toxic to goldfish, amphipods, and cladocerans. He concluded from his studies that the toxicity of ammonium salts was pH-dependent and was directly related to the concentration of undissociated ammonia. Chipman's work was confirmed by Wuhrmann, et al. (1947) who concluded that the NH_3 fraction was toxic to fish and that the NH_4^+ fraction had little or no toxicity. Further studies by Wuhrmann and Woker (1948) and Downing and Merkens (1955) agreed with these earlier findings. Tabata (1962), however, has attributed some degree of toxicity to fishes and invertebrates by the NH_4^+ species (less than 1/50th that of NH_3).

In most natural waters, the pH range is such that the NH_4^+ fraction of ammonia predominates; however, in highly alkaline waters, the NH_3 fraction can reach toxic levels. Many laboratory experiments of relatively short duration have demonstrated that the lethal concentrations for a variety of fish species are in the range of 0.2 to 2.0 mg/l NH_3 , with trout being the most sensitive and carp the most resistant. Although coarse fish such as carp survive longer in toxic solutions than do salmonids, the difference in sensitivity among fish species to prolonged exposure is probably small (European Inland Fisheries Advisory Commission, 1970). The lowest lethal concentration reported for salmonids is 0.2 mg/l NH_3 for rainbow trout fry, *Salmo gairdneri*

(Liebmann, 1960). The toxic concentration for Atlantic salmon smolts, *Salmo salar* (Herbert and Shurben, 1965), and for rainbow trout (Ball, 1967) was found to be only slightly higher. Although a concentration of NH_3 below 0.2 mg/l may not kill a significant proportion of a fish population, such concentration may still exert an adverse physiological or histopathological effect (Flis, 1968; Lloyd and Orr, 1969; Smith and Piper, 1975). Fromm (1970) found that at concentrations of 3 mg/l ammonia as N, the trout became hyperexcitable; at 5 mg/l, ammonia excretion by rainbow trout was inhibited; and at 8 mg/l, 50 percent died within 24 hours. Burrows (1964) found progressive gill hyperplasia in fingerling chinook salmon, *Oncorhynchus tshawytscha*, during a 6-week exposure to a total ammonia concentration (expressed as NH_4) of 0.3 mg/l (0.002 mg/l NH_3), which was the lowest concentration applied. Reichenbach-Klinke (1967) also noted gill hyperplasia, as well as pathological effects on the liver and blood of various species at a concentration of 0.27 mg/l NH_3 . Flis (1968) noted that exposure of carp, *Cyprinus carpio*, to sublethal NH_3 concentrations resulted in extensive necrotic changes and tissue disintegration in various organs.

Herbert and Shurben (1965) reported that the resistance of yearling rainbow trout to ammonia increased with salinity (i.e., dilution with about 30 percent seawater) but above that level resistance appeared to decrease. Katz and Pierro (1967) subjected fingerling coho salmon, *Oncorhynchus kisutch*, to an ammonia waste at salinity levels of 20, 25, and 29 parts per thousand (i.e., dilution with about 57–83 percent seawater) and also found that toxicity increased with increased salinity. In saline waters the $\text{NH}_4^+/\text{NH}_3$ ratio must be adjusted by consideration of the activity of the charged species and total ionic strength of the solution. In dilute saline waters this ratio will change to favor NH_4^+ , and thereby reduce the concentration of the toxic NH_3 species. At higher salinity levels the reported toxic effects of ammonia to fish must therefore be attributed to some mechanism other than changes in the $\text{NH}_4^+/\text{NH}_3$ ratio. Data on the effect of ammonia on marine species are limited and the information on anadromous species generally has been reported in conjunction with studies on freshwater species.

Although the NH_3 fraction of total ammonia increases with temperature, the toxic effect of NH_3 versus temperature is not clear. Burrows (1964) has reported that the recovery rate from hyperplasia in gill tissues of chinook salmon, *Oncorhynchus tshawytscha*, exposed first to ammonia at sublethal levels and then to fresh water was less at 6°C than at 14°C. In this experiment, comparison was made between two different age classes of salmon.

Levels of un-ionized ammonia in the range of 0.20 to 2 mg/l have been shown to be toxic to some species of freshwater aquatic life. To provide safety for those life forms not examined, 1/10th of the lower value of this toxic effect range results in a criterion of 0.020 mg/l of un-ionized ammonia. This criterion is slightly lower than that recommended for European inland fisheries (EIFAC, 1970) for temperatures above 5°C and pH values below 8.5. Measurement of values of total ammonia for calculation of values in the range of 0.020 mg/l NH_3 is well within current analytical capability.

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A REVIEW OF THE EPA RED BOOK:
QUALITY CRITERIA FOR WATER

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PHOSPHORUS

EPA Criterion

0.10 µg/l yellow (elemental) phosphorus for marine or estuarine waters.

Reviewers: G.F. Lee (Coordinator), R.A. Jones, B.A. Manny, J.G. Pearson, D.L. Swanson, R.G. Wetzel, and J.C. Wright

The Red Book discussion and criterion for elemental phosphorus should have been in a section separate from that of phosphate phosphorus. Elemental phosphorus is a highly toxic element which occurs in the environment under very rare conditions. Phosphate phosphorus is a naturally occurring material which is of water quality significance because it may lead to excessive fertilization problems. The nature of the sources and effects on environmental quality for these two forms of phosphorus are significantly different and, therefore, should be separated into two sections in order to avoid confusion. This review discusses each of the two forms separately.

A. ELEMENTAL PHOSPHORUS

I. Criterion

In general, the review panel had limited familiarity with the problems of elemental phosphorus. However, one member (Pearson) was in the process of reviewing a comprehensive report on the environmental impact of elemental phosphorus (Bentley et al. In press). Based on the information provided by him, it is the conclusion of the panel that consideration should be given to altering the criterion for elemental phosphorus to 0.04 µg/liter P for both fresh and marine waters. This represents a change from the 0.1 µg/liter P criterion recommended by the U.S. EPA for marine waters. The review panel feels there is sufficient evidence at this time to justify a re-evaluation of the elemental phosphorus criterion and recommends that as part of the next revision of the EPA water quality criteria, a critical review be conducted of the information that is available at that time. By then, the unpublished information which was made available to this panel, which suggests that a 0.04 µg/liter P criterion should be used, will have been published and the technical community will have had the opportunity to review this information critically and judge its appropriateness.

II. Introduction

It is recommended that Red Book paragraph 2, page 187, be deleted from any future writeups of the criteria for phosphorus. It adds little to the understanding of the behavior of phosphorus in natural waters and its significance in causing water quality problems. The presence of phosphate rock, per se, does not necessarily lead to a water quality problem. This paragraph is extraneous to the overall writeup and should be deleted.

III. Rationale

In both the "Introduction" and the "Rationale", mention is made of the bioaccumulation of elemental phosphorus within fish. No discussion is presented on the significance of this bioaccumulation, however. If the significance is unknown, then the text should say so. If any significance is attributed to bioaccumulation of elemental phosphorus, then this should be presented in the discussion of elemental phosphorus in natural waters. There are some questions about whether or not elemental phosphorus can bioaccumulate in a potentially toxic form.

Page 187, P.3. The reference to "yellow phosphorus" should be changed to "elemental phosphorus". A statement should be included to explain what is meant by "P₄", i.e., why elemental phosphorus is called P₄. It is recommended that someone thoroughly familiar with the nomenclature of elemental phosphorus review any revisions of the elemental phosphorus section before publication of a revised EPA criteria.

Page 188, P.2, l.2-3. What is the justification for the 1/10th factor? Justification should be provided for this factor in relating the "demonstrated lethal levels" and levels that have been found to result in "significant bioaccumulation" to the criterion.

Page 188, P.2, l.4. What is meant by "significant bioaccumulation"? An explanation should be provided as to the meaning of the word "significant".

B. PHOSPHATE PHOSPHORUS

I. Criterion

No criterion is provided for phosphate phosphorus. Instead, a discussion is presented on various methods that have been used to estimate the impact of phosphate phosphorus on excessive fertilization of natural waters. It is the recommendation of this review panel that the phosphorus loading approach formulated by Vollenweider (1975, 1976) and modified and expanded by Rast and Lee (1978) be utilized to establish the relationship between phosphorus load to a lake, impoundment, or estuary, and the excessive fertilization problems that may occur in the water body arising from the growth of planktonic algae. This recommendation is further discussed in detail in a subsequent section of this review.

II. Introduction

From an overall point of view, the discussion of the significance of

phosphate phosphorus is highly simplistic. Specific points of concern in the "Introduction" are listed below.

Page 186, P.1, 2.4-5. This sentence should be rephrased and clarified. The term "critical concentrations" has different meanings to different individuals. Available phosphorus, at all concentrations, stimulates algal growth if it is the growth-limiting element. Also in this sentence, the word "phosphates" should be changed to "phosphate". As written, this sentence implies that the cation associated with the phosphate is of some importance in the impact of phosphate on water quality. There is no evidence to support this statement. This problem also occurs at other locations such as page 186, P.3, 2.1. Reference to "phosphates" throughout the phosphate phosphorus section should be changed to "phosphate".

Page 186, P.1, 2.6. "Aquatic plants" should read "algae" since rooted aquatic plants can obtain some of their phosphorus from sediments.

Page 186, P.1, 2.7. This sentence should read, "increased supplies of available phosphorus". It is now well known that only certain forms of phosphorus are available to stimulate algal growth.

Page 186, P.1, 2.8-9. The word "aging" should be deleted. It is a general misconception among those who are not familiar with the eutrophication process of natural waters, that eutrophication is in some way related to the shortening of the life of the lake or impoundment. Eutrophication and the water quality problems associated with excessive fertilization are controlled primarily by the overall phosphorus load (for some lakes: nitrogen or other elements), the lake's morphology as measured by mean depth, and its hydrology as measured by the hydraulic residence time. As discussed by Lee (1973) the water quality of a lake receiving large amounts of culturally derived phosphorus can deteriorate significantly. This, however, does not necessarily result in a significant shortening of the overall life of the lake as measured by the filling of the lake, except during the final stages of a lake's life when it becomes essentially completely filled with aquatic macrophytes. The filling of lakes is determined primarily by the erosion of clastic materials from the watershed and not by the production of phytoplankton in the lake. Work on the chemical characteristics of lake sediments supports this approach. Therefore, where eutrophication is primarily manifested in the production of planktonic algae, highly eutrophic lakes do not, in general, fill at a significantly different rate than oligotrophic lakes. Also, change "waters" to "water bodies".

Page 186, P.1, 2.11. Mention is made that phosphorus stimulates the growth of freshwater plants. "Plants" should be changed to "algae" since the relationship between phosphorus load and macrophyte growth is not clear. However, since macrophytes obtain all or part of their phosphorus from the sediments and since the phosphorus load to a water body contributes phosphorus to the sediments, increased macrophyte growth would likely occur in shallow water bodies when inputs of phosphorus are increased.

Page 186, P.3, 2.2 and 4. A metric equivalent should be given for

the amounts of phosphorus derived from various sources.

Page 186, P.3, l.4. This sentence should be rewritten to reflect the fact that the total per capita phosphorus in domestic wastewaters today is about three pounds (1.4 kilograms) per year. Approximately one pound (0.45 kilograms) per person per year is derived from human excreta. Synthetic detergents contribute another pound or 0.45 kilograms per person per year. The amount of phosphorus used in synthetic detergents has decreased significantly over the past half a dozen years with the result that the phosphorus content of domestic wastewaters which is attributable to detergents is currently about 35 percent.

Page 186, P.3, l.8. "Effluent from tile lines" is not meaningful to many of the readers. This should be more clearly delineated as to what is meant. The concentrations of ducks is an awkward way to describe the impact of wild and domestic ducks.

Page 187, P.1, l.13. In addition to listing the volume of the euphotic zone as an important factor for controlling the amount of nutrients retained in a lake, the volume of the lake and its depth should also be listed.

Page 187, P.1, l.14. Item (4) should read, "the detention time of water within the lake basin . . .".

Page 187, P.1 and 2. These two paragraphs should be prefaced by a phrase such as "In a simplistic way", or "Simplistically" followed by a listing of the various items. Many of the items and ideas listed, when corrected as noted above, are proper. However, it should be indicated to the reader who is not knowledgeable in the area, that this discussion is a very simplistic overview.

III. Rationale

Page 188, P.3. It is proposed that this paragraph be deleted and that a specific recommendation involving the use of the attached revised Table 13 be used by the EPA as the criterion for those water bodies for which phosphorus is or can be made to be the primary factor limiting planktonic algal growth.

Page 188, P.4, l.1. The statement that total phosphorus concentrations in excess of 100 $\mu\text{g/liter P}$ interfere with coagulation is not correct. There are certain forms of phosphorus which interfere with water coagulation. These should not be equated to total phosphate.

Page 188, P.4 and 5. The statement in paragraphs 4 and 5 concerning so-called "critical concentrations" of phosphorus for lakes, impoundments, and rivers should be deleted. There are many exceptions to these relationships. This is why the Vollenweider-type relationship involving phosphorus load has developed. One cannot, with any degree of reliability, predict the water quality problems due to algae based on phosphorus concentrations at one time during the year. An attempt to establish, as some states have done, single value critical concentrations, is not in

Table 43-1. Replacement for Red Book Table 13

| Mean Depth/Hydraulic Residence Time (m/yr) | Oligotrophic or Permissible Loading (g/m ² /yr) | Eutrophic or Critical Loading (g/m ² /yr) |
|--|---|---|
| 0.25 | 0.102 | 0.205 |
| 0.5 | 0.105 | 0.21 |
| 1.0 | 0.11 | 0.22 |
| 2.5 | 0.125 | 0.25 |
| 5.0 | 0.15 | 0.30 |
| 7.5 | 0.175 | 0.35 |
| 10.0 | 0.20 | 0.40 |
| 25.0 | 0.35 | 0.70 |
| 50.0 | 0.60 | 1.2 |
| 75.0 | 0.85 | 1.7 |
| 100.0 | 1.1 | 2.2 |

Based on relationships developed by Vollenweider (1976).

accord with the information available today on the role of phosphorus in causing fertilization problems in water bodies. Listing of numbers such as 25 µg/liter or 50 µg/liter as critical concentrations for phosphorus will tend to promote out-dated approaches for establishing water quality standards. All reference to specific numerical phosphorus concentrations should be deleted from this discussion.

Page 189, P.2. This discussion should be expanded to include reference to the work of Rast and Lee (1978). On behalf of the U.S. EPA as part of the Organization for Economic Cooperation and Development (OECD) Eutrophication Program, they conducted a detailed review of the phosphorus load-lake and impoundment water quality response relationships for a variety of water bodies across the U.S. Rast and Lee have found that the modified Vollenweider approach, involving the relationship between the areal phosphorus load to a water body and the mean depth and hydraulic residence time of the water body, is a valid approach to use to predict water quality characteristics of those water bodies in which algal growth is or can be made to be limited by phosphorus. The current Table 13 is based on an early version of Vollenweider's work. It has subsequently been shown by Rast and Lee that the revised approach developed by Vollenweider (1976) (see revised Table 13) gives a better representation of the nutrient load-response relationships for U.S. water bodies studied as part of the U.S. OECD Eutrophication Program, than does the original version.

A discussion should also be presented on the proper interpretation of "permissible" and "excessive" phosphorus loadings. It is important to point out that the "permissible" and "excessive" loading curves do not represent sharp boundary lines. The fact that a lake has a load that is slightly above the critical loading value does not mean that it has significantly different water quality than a lake that is just below the critical loading level for the same morphological and hydrological relationships. As discussed by Rast and Lee (1978), for a series of lakes, in which algal growth is phosphorus limited and which have the same mean depth/hydraulic residence time ratios but different areal P loadings, there is a gradation of water quality among them which is proportional to the areal P load. The best water quality would be found in lakes which have the lowest areal P load. Conversely, the worst water quality would be found in those water bodies with the highest areal P load.

It should also be pointed out in the text that the permissible and critical loading curves are, in general, based on impairment of the recreational use of water bodies due to planktonic algal growth. These values are not necessarily directly applicable to other impacts of planktonic algal growth such as taste and odors in water supplies and the growth of attached algae or aquatic macrophytes. Rast and Lee (1978) have found that the Vollenweider permissible loading curve approximately corresponds to an average summer chlorophyll *a* concentration of 2 µg/liter; an average summer Secchi depth of 4.5 m; and a hypolimnetic oxygen depletion rate of 0.3 g O₂/m²/day. The corresponding approximate values for the "excessive" loading line are: 6 µg/liter average summer chlorophyll *a*; 2.7 m average summer Secchi depth; and 0.6 g O₂/m²/day hypolimnetic

oxygen depletion rate. The results of this work can be used by a water pollution regulatory agency to establish its own permissible and excessive loading values for any given water body, based on the water quality that is desired in the water body.

Page 190, P.1, 2.8-9. This sentence should be deleted. Instead a recommendation should be made for adoption of the revised Table 13 as the criterion for those water bodies which are or can be made to be phosphorus limited and in which the problems of deteriorated water quality are manifested as excessive growths of planktonic algae. It should be pointed out that additional work is needed to develop criteria for water bodies in which algal growth is limited by nitrogen or some other element, or by light, and for water bodies in which the primary aquatic plant growths are aquatic macrophytes and/or attached algae.

IV. References Cited

The reference to Hutchinson (1957) should be deleted as currently used. It does not help in establishing the criterion for phosphate phosphorus. The reference to Mackenthun (1973) also should be deleted or be used only as a general reference to eutrophication problems. The reference to Vollenweider (1973) is incomplete. Other references, cited above, should be included.

Literature Cited

- Bentley, R.E., J.W. Dean, T.A. Hollister, G.A. LeBlanc, S. Sauter, B.H. Sleight, III, and W.G. Wilson. Laboratory evaluation of the toxicity of elemental phosphorus (P_4) to aquatic organisms. E.G. & G. Bionomics, Wareham, MA. (In press).
- Hutchinson, G.E. 1957. A treatise on limnology. Vol. I. Geography, physics, and chemistry. John Wiley and Sons, Inc., New York, NY: 1015 p.
- Lee, G.F. 1973. Eutrophication. Trans. Northeast Fish and Wildlife Conference: 30-90.
- Mackenthun, K.M. 1973. Toward a cleaner aquatic environment. U.S. Environmental Protection Agency, Washington, D.C.
- Rast, W. and G.F. Lee. 1978. Summary analysis of the North American (US Portion) OECD Eutrophication Project: Nutrient load - lake response relationships and trophic state indices. EPA-600/3-78-008, U.S. Environmental Protection Agency.
- Vollenweider, R.A. 1975. Input-output models with special reference to the phosphorus loading concept in limnology. Schweiz. Z. Hydrol. 37: 53-84.
- Vollenweider, R.A. 1976. Advances in defining critical loading levels for phosphorus in lake eutrophication. Mem. Ist. Ital. Idrobiol. 33: 53-83.

PHOSPHORUS

Water Quality Standards
Criteria Summaries
A Compilation of State/Federal Criteria

September 1980

U. S. Environmental Protection Agency
Office of Water Regulations and Standards
Washington, D. C. 20460

INTRODUCTION

This digest is compiled to provide general information to the public as well as to Federal, State, and local officials. It contains excerpts from the individual Federal-State water quality standards establishing pollutant specific criteria for interstate surface waters. The water quality standards program is implemented by the U. S. Environmental Protection Agency where responsibility for providing water quality recommendations, approving State-adopted standards for interstate waters, evaluating adherence to the standards, and overseeing enforcement of standards compliance, has been mandated by Congress.

Standards, a nationwide strategy for surface water quality management, contain three major elements: the use (recreation, drinking water, fish and wildlife propagation, industrial, or agricultural) to be made of the navigable water; criteria to protect these uses; and an antidegradation statement to protect existing high quality waters, from degradation by the addition of pollutants.

Water quality criteria (numerical or narrative specifications) for physical, chemical, temperature, and biological constituents are stated in the July 1976 U. S. Environmental Protection Agency publication Quality Criteria for Water (QCW), available from the Government Printing Office, Washington, D. C. The 1976 QCW, commonly referred to as the "Red Book," is the most current compilation of scientific information used by the Agency as a basis for assessing water quality. This publication is subject to periodic updating and revisions in light of new scientific and technical information.

Criteria for phosphorus in State water quality standards are the subject of this digest. Phosphorus criteria for water are established to provide a threshold level which when exceeded would most likely result in aquatic life toxicity, due to elemental phosphorus, and excessive aquatic plant growth, caused by phosphate phosphorus which is an essential plant nutrient. Phosphorus and phosphates usually enter a waterbody from land runoff, human and animal excreta, decaying vegetation, and industrial processes and detergents. Once combined with other nutrients in a waterbody, their removal becomes tedious and expensive. The 1976 Quality Criteria for Water recommends a phosphorus criterion of:

0.10 ug/l yellow (elemental) phosphorus for marine and estuarine waters.

There is no freshwater criterion.

Since water quality standards experience revisions and upgrading from time to time, following procedures set forth in the Clean Water Act, individual entries in this digest may be superseded. As these revisions are accomplished and allowing for the States to revise their standards accordingly, this digest will be updated and

reissued. Because this publication is not intended for use other than as a general information resource, to obtain the latest information and for special purposes and applications, the reader needs to refer to the current approved water quality standards. These can be obtained from the State water pollution control agencies or the EPA or Regional Offices.

Individual State-adopted criteria follow:

PHOSPHORUS

| <u>State</u> | <u>Criteria Value in mg/l</u> | <u>Designated Stream Use</u> |
|----------------------|---|--|
| Alabama ¹ | Not specified | All |
| Alaska ² | Not specified | All |
| Arizona ³ | <p>The mean annual total phosphate concentrations of the following waters shall not exceed the values given below nor shall the total phosphate or total nitrate concentrations of more than 10 percent of the samples in any year exceed the 90 percent values given below. Unless otherwise specified, indicated values also apply to tributaries to the named waters.</p> <p>Total phosphates as PO₄ mg/l</p> <p>0.04 Mean annual 0.06 90 pct-value</p> <p>0.06 Mean annual 0.10 90 pct-value</p> <p>0.08 Mean annual 0.12 90 pct-value</p> <p>0.10 Mean annual 0.15 90 pct-value</p> <p>0.50 Mean annual 0.80 90 pct-value</p> <p>0.30 Mean annual 0.50 90 pct-value</p> | <p>Colorado River from Utah border to Willow Beach (main stem)</p> <p>Colorado River from Willow Beach to Parker Dam (main stem)</p> <p>Colorado River from Parker Dam to Imperial Dam (main stem)</p> <p>Colorado River from Imperial Dam to Morelos Dam (main stem)</p> <p>Gila River from New Mexico border to San Carlos Reservoir (excluding San Carlos Reservoir)</p> <p>Gila River from San Carlos Reservoir to Ashurst Hayden Dam (including San Carlos Reservoir)</p> |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|--------------------|---------------------------------------|--|
| Arizona (con't) | 0.30 Annual mean 0.50 90 pct-value | San Pedro River |
| | 0.20 Annual mean 0.30 90 pct-value | Verde River (except Granite Creek) |
| | 0.20 Mean annual 0.30 90 pct-value | Salt River above Roosevelt Lake |
| | 0.50 Mean annual 0.80 90 pct-value | Santa Cruz River from international boundary near Nogales to Sahuarita |
| | 0.30 Mean annual 0.50 90 pct-value | Little Colorado River above Lyman Reservoir |

The above standards are intended to protect the beneficial uses of the named waters. Because regulation of nitrates and phosphates alone may not be adequate to protect waters from eutrophication, no substance shall be added to any surface water which produces aquatic growth to the extent that such growths create a public nuisance or interference with beneficial uses of the water defined and designated in Reg. 6-2-65.

Federally promulgated in June, 1976.

| | | |
|-----------------------|---|-----|
| Arkansas ⁴ | The naturally occurring nitrogen/phosphorus ratio shall not be significantly altered due to municipal, industrial, agricultural or other waste discharges, nor shall total phosphorus exceed 100 ug/l in streams or 50 ug/l in lakes and reservoirs due to any such discharges. | All |
|-----------------------|---|-----|

| | | |
|-------------------------|---|--|
| California ^A | Concentration not to be exceeded: (Total Phosphorus) | |
| | 0.2 mg/l | Marine habitat, warm freshwater habitat (Basin 3) |
| | 0.1 mg/l | Cold freshwater habitat, fish spawning (Basin 3) |
| | 0.05 mg/l | Water contact recreation (or non-contact water recreation (Basin 3) |

| <u>Sta</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|--------------------------|--|--|
| Colorado ⁵ | Not specified | All |
| Connecticut ⁶ | None other than of natural origin There shall be no point source discharge into any natural lake or pond or tributary surface waters which will raise the phosphorus concentration, of the receiving surface waters, including phosphorus contained in suspended matter to an amount in excess of 0.03 mg/l. | Drinking water supply Recreation, agricultural, industrial, fish, and wild-life habitat |
| Delaware ^B | Not specified | All |
| Florida ⁷ | 0.0001(Elemental) | Shellfish harvesting recreation, fish and wildlife |
| Georgia ⁸ | Not specified | All |
| Hawaii ⁹ | Total phosphorus, not greater than 0.020 mg/l Not greater than 0.025 mg/l Not greater than 0.030 mg/l Not greater than 0.20 mg/l except not greater than 0.05 mg/l for waters entering lakes or reservoirs. | Class AA Class A Class B Classes 1 and 2 |
| Idaho ¹⁰ | Not specified | All |
| Illinois ¹¹ | After December 31, 1983, phosphorus as P shall not exceed 0.05 mg/l in any reservoir or lake with a surface area of 20 acres or more, or in any stream at the point where it enters any such reservoir or lake. For the purposes of this Rule (203C) the term 'reservoir or lake' shall not include low level pools constructed in free flowing streams or any body of water which is an integral part of an operation | All, except Lake Michigan |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|-------------------------|---|---|
| Illinois (con't) | which includes the application of sludge on land. Point source discharges which comply with Rule 407 of this Chapter shall be in compliance with this Rule 203(c) for purposes of the application of Rule 402 of this chapter. | |
| | 0.007 | All Lake Michigan |
| Indiana ¹² | 0.03 mg/1 monthly average | Inner Harbor |
| | 0.04 mg/1 daily average | Gary Harbor, Burns Harbor, and Lake Michigan |
| | 0.1 mg/1 Maximum value, except in waters flowing westward into Illinois. | Grand Calument River and Indiana Harbor Ship Canal |
| | 0.04 mg/1 (total phosphorus) | Wolf Lake and Wolf Lake Channel |
| | Free from substances attributable to municipal, industrial, agricultural or other sources in concentrations or combinations which will cause or contribute to the growth of aquatic plants or algae in such degree as to create a nuisance, be unsightly or deleterious, or be harmful to salmonid fishes or the natural biota. | Natural spawning, rearing or imprinting areas, and migration route for Salmonid Fishes. |
| Iowa ¹³ | Not specified | All |
| Kansas ¹⁴ | Not specified | All |
| Kentucky ¹⁵ | Not specified | All |
| Louisiana ¹⁶ | Not specified | All |
| | Nutrients: The naturally occurring nitrogen-phosphorous ratio shall be maintained. On completion of detailed studies on the naturally occurring levels of the various macro and micro nutrients the state will establish numerical limits on nutrients where possible. | All |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|-----------------------------|--|------------------------------|
| Maine ¹⁷ | Total phosphorus shall not exceed 15 parts per billion | GP-A |
| | The total phosphorus concentration shall not exceed 50 parts per billion at measured in samples taken at or near the surface of the water. | GP-B |
| Maryland ¹⁸ | The state recognizes that certain waters of the State are eutrophic or are approaching eutrophic conditions. All discharges to waters which are eutrophic or potentially eutrophic, when so identified by the State, shall be treated as necessary to reduce eutrophic effects. The State shall require that wastewaters, containing nutrients which cause or may cause eutrophication be given advanced waste treatment prior to discharge, or be disposed of by spray irrigation on land, or by other practicable procedures which will avoid direct discharge to surface waters. | |
| Massachusetts ¹⁹ | The discharge of nutrients, primarily phosphorus or nitrogen, to waters of the Commonwealth will be limited or prohibited by the Division as necessary to prevent excessive eutrophication of such waters. There shall be no new or increased discharges of nutrients into lakes and ponds, or tributaries thereto. Existing discharges containing nutrients which encourage eutrophication or growth of weeds or algae shall be treated. Activities which may result in non-point discharges of nutrients shall be conducted in accordance with the best management practices reasonably determined by the Division to be necessary to preclude or minimize such discharges of nutrients. | All |
| Michigan ²⁰ | 1.0 (monthly average effluent concentration goal) | All |
| Minnesota ²¹ | The standards provide for an effluent limit of 1.0 mg/l where the effluent affects a lake or reservoir. | All |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|-----------------------------|---|--|
| Mississippi ²² | Not specified | All |
| Missouri ^D | Not specified | All |
| Montana ²³ | Not specified | All |
| Nebraska ²⁴ | Not specified | All |
| Nevada ²⁵ | Total phosphate shall not exceed 0.15 in any stream at the point where it enters any reservoir or lake, nor 0.075 in any reservoir or lake, nor 0.30 in streams and other flowing waters. | Drinking water supply with treatment by disinfection only suitable for aquatic life habitat, wildlife propagation, agricultural use, recreation, boating and esthetics. |
| | Total phosphates shall not exceed 0.3 | Drinking water supply with treatment by disinfection and filtration only, for agricultural use, aquatic life and wildlife propagation, recreation, industrial supply and esthetics |
| | Total phosphates shall not exceed 1.0 | Domestic water supply following complete treatment, agricultural use, aquatic life, wildlife propagation, recreation, and industrial supply |
| | See Nevada State Water Quality Criteria Compilation 1979, for specific stretches of stream. | |
| New Hampshire ²⁶ | None, except as naturally occurs | Water supply (after disinfection) |
| | None in such concentrations (generally less than 0.015 ppm) that would impair any usages assigned to this class unless naturally occurring | All, except water supply (after disinfection) |

State

Criteria Value

Designated Stream Use

New Hampshire
(con't)

There shall be no phosphorus in such concentrations that would impair any usages assigned to the specific class involved. Where treatment to remove phosphorus is required under this regulation such treatment shall remove phosphorus to the maximum extent technically feasible.

All

In all lakes and ponds: There shall be no new point discharge of wastewater containing phosphorus. In addition there shall be no new discharge of wastewater containing phosphorus to tributaries of lakes or ponds that would encourage eutrophication or growth of weeds or algae in such lakes and ponds.

All

Any point discharge of wastewater existing as of the date of adoption of these rules and regulations and containing phosphates in concentrations which encourage eutrophication or growth of weeds or algae, shall be treated to remove such phosphates to the maximum extent technically feasible.

All

The preceding shall not apply to any condition due to natural causes.

New Jersey²⁷

Phosphorus as total P shall not exceed 50 ug/l in any reservoir, lake, pond or in a tributary at the point where it enters such bodies of water, unless it can be demonstrated that total P is not a limiting factor considering the morphological, physical, chemical and other characteristics of the water body.

Fresh, non-tidal designated for public water supply, biota, recreation, industrial, agricultural, and any other reasonable use.

Phosphorus at total P shall not exceed 50 mg/l in any reservoir, lake, pond or in a tributary at the point where it enters such bodies of water, unless it can be demonstrated that total P is not a limiting factor considering the morphological, physical, chemical and other characteristics of the water body.

Fresh, non-tidal designated for natural biota, recreation, industrial, agricultural, and any other reasonable use.

0.7

All uses in central Pine Barrens

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|------------------------------|---|---|
| New Mexico ²⁸ | Not specified | All |
| New York ²⁹ | Concentration should be limited to the extent necessary to prevent nuisance growths of algae, weeds and slimes that are or may become injurious to any beneficial water use. | All uses of International boundary waters |
| North Carolina ³⁰ | 0.0001 (Elemental) | All |
| North Dakota ³¹ | 0.1 - 0.2 depending upon type of drinking water treatment process utilized | All |
| | 0.025 (goal) | All lake uses |
| Ohio ³² | Total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in a violation of the water quality standards set forth in Chapter 3745-1 of the Ohio Administrative Code. In areas where such nuisance growths exist, phosphorus discharges from point sources determined significant by the Ohio Environmental Protection Agency shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by Ohio EPA in accordance with the International Joint Commission (US-Canada agreement) | Warmwater habitat, exceptional warm water habitat, seasonal warm water habitat, limited warm water habitat (with specific exceptions), cold water habitat, and Lake Erie. |
| Oklahoma ³³ | Not specified | All |
| | The total phosphorus concentration and the nitrogen/phosphorous concentration ratio shall be limited to present eutrophication problems. | All |
| | Where historical data on nitrogen and phosphorus does not exist, sample points upstream of the point of discharge shall be used to calculate the natural nitrogen/phosphorus concentration ratio. The application of this standard shall be determined on a case by case basis. Compliance with this standard shall be determined at the end of the mixing zone. | |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|------------------------------|--|--|
| Oregon ³⁴ | Not specified | All |
| Pennsylvania ³⁵ | P ₁ 0.03 P ₂ 0.10 P ₃ 0.13 | See Drainage Lists A through E of Pennsylvania Water Quality Standards for applicable uses and streams |
| Rhode Island ³⁶ | None in such concentration that would impair any usages specifically assigned to said Class. New discharges of wastes containing phosphates will not be permitted into or immediately upstream of lakes or ponds. Phosphates shall be removed from existing discharges to the extent that such removal is or may become technically and reasonably feasible. | All |
| South Carolina ³⁷ | Not specified | All |
| South Dakota ³⁸ | Not specified | All |
| Tennessee ³⁹ | Not specified | All |
| Texas ⁴⁰ | Not specified | All |
| Utah ⁴¹ | 0.05 0.025 | Recreation, aesthetics, aquatic life All uses in lakes and reservoirs |
| Vermont ⁴² | There shall be no discharge of wastes to Class A waters that do not meet or exceed the technical and other requirements for such waters nor shall there be any discharge of wastes containing any form of nutrients which would encourage eutrophication or growth of weeds or algae. | All |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|------------------------------------|---|--|
| Vermont (cont) | There shall be no new or increased discharge of wastes after May 27, 1971 containing any form of nutrients which would encourage eutrophication or growth of weeds and algae in any lake, pond or reservoir. Any discharge of wastes existing prior to May 27, 1971 containing soluble or other nutrients which would encourage eutrophication or growth of weeds and algae in any lake, pond, or reservoir shall receive the highest practical degree of treatment currently available to remove such nutrients. | |
| Virginia ⁴³ | In impounded waters, the total phosphate as phosphorus (P) should not exceed 50 ug/l in any stream where it enters a lake or reservoir nor 25/ug/l within the lake or reservoir. | Class I, II, III, IV, V, and VI waters |
| Washington ⁴⁴ | Not specified | All |
| West Virginia ⁴⁵ | Not specified | All |
| Wisconsin ⁴⁶ | Not specified | All |
| Wyoming ⁴⁷ | Not specified | All |
| American Samoa ^E | Not specified | All |
| | The naturally occurring atomic ratio of $\text{NO}_3\text{-N}$ to $\text{PO}_4\text{-P}$ in a body of water will be maintained. Similarly, the ratio of inorganic phosphorus (orthophosphate) to total phosphorus (the sum of inorganic phosphorus, dissolved organic phosphorus, and particulate phosphorus) will be maintained in the ratio and amount as it occurs in the receiving waters naturally. | Recreation, aquatic life |
| District of Columbia ⁴⁸ | Not specified | All |

| <u>State</u> | <u>Criteria Value</u> | <u>Designated Stream Use</u> |
|--------------------------------|---|--|
| Guam ^F | Total phosphorus shall not exceed 0.025 mg/l | AA |
| | Total phosphorus shall not exceed 0.05 mg/l | A, 2b, I, 2b, II, C |
| | Total phosphorus shall not exceed 0.10 mg/l | 2a-I, 2a-II |
| Puerto Rico ⁴⁹ | 0.025 | All fresh water uses and preservation of coastal water natural phenomena |
| Trust Territories ^G | 0.025 | Drinking water supply |
| | The naturally occurring ratio of the con- centrations of nitrogen to phosphorus will be maintained in all waters. | All |
| Virgin Islands ^H | 0.050 | All except preservation of natural phenomena |

NITROGEN - AMMONIA/NITRATE/NITRITE

Water Quality Standards
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A Compilation of State/Federal Criteria

September 1980

U. S. Environmental Protection Agency
Office of Water Regulations and Standards
Washington, D. C. 20460

INTRODUCTION

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Standards, a nationwide strategy for surface water quality management, contain three major elements: the use (recreation, drinking water, fish and wildlife propagation, industrial, or agricultural) to be made of the navigable water; criteria to protect these uses; and an antidegradation statement to protect existing high quality waters, from degradation by the addition of pollutants.

Water quality criteria (numerical or narrative specifications) for physical, chemical, temperature, and biological constituents are stated in the July 1976 U. S. Environmental Protection Agency publication Quality Criteria for Water (QCW), available from the Government Printing Office, Washington, D. C. The 1976 QCW, commonly referred to as the "Red Book," is the most current compilation of scientific information used by the Agency as a basis for assessing water quality. This publication is subject to periodic updating and revisions in light of new scientific and technical information.

Criteria for ammonia, nitrate or nitrite nitrogen in State water quality standards are the subject of this digest. Ammonia in most waters is a biological degradation product of nitrogenous organic matter. When dissolved in water, ammonia will react with the water to form ammonium ions. Ammonium can also be released from proteinaceous organic matter and urea, or synthesized from nitrogen fixation. Nitrate is formed from the complete oxidation of ammonium by certain micro organisms in which nitrite is an intermediate product. In well oxygenated waters nitrite is readily oxidized to nitrate. The rationale for establishing water quality criteria for these three common molecular forms of nitrogen are:

- (1) ammonia toxicity to aquatic life is well documented and its toxicity is directly dependent on the pH of the water in which it is dissolved;
- (2) growing plants assimilate nitrate and ammonium ions into plant proteins; and
- (3) both nitrate and nitrite nitrogen are toxic to aquatic life where specific concentrations of either are reached in a waterbody.

To prevent the nuisance and toxic effects of any of the nitrogen forms, the 1976 Quality Criteria for Water recommends the following criteria:

0.02 mg/l (as un-ionized ammonia) for freshwater aquatic life.

Concentrations of total ammonia ($\text{NH}_3 + \text{NH}_4^+$) which contain an un-ionized ammonia concentration of 0.020 mg/l NH_3 (mg/l)

| Temperature (°C) | pH Value | | | | | | | | |
|---------------------|----------|-----|-----|------|------|-------|-------|-------|-------|
| | 6.0 | 6.5 | 7.0 | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 |
| 5... | 160. | 51. | 16. | 5.1 | 1.6 | 0.53 | 0.18 | 0.071 | 0.036 |
| 10... | 110. | 34. | 11. | 3.4 | 1.1 | 0.36 | 0.13 | 0.054 | 0.031 |
| 15... | 73. | 23. | 7.3 | 2.3 | 0.75 | 0.25 | 0.093 | 0.043 | 0.027 |
| 20... | 50. | 16. | 5.1 | 1.6 | 0.52 | 0.18 | 0.070 | 0.036 | 0.025 |
| 25... | 35. | 11. | 3.5 | 1.1 | 0.37 | 0.13 | 0.055 | 0.031 | 0.024 |
| 30... | 25. | 7.9 | 2.5 | 0.81 | 0.27 | 0.099 | 0.045 | 0.028 | 0.022 |

10 mg/l nitrate nitrogen (N) for domestic water supply (health).

Since water quality standards experience revisions and upgrading from time to time, following procedures set forth in the Clean Water Act, individual entries in this digest may be superseded. As these revisions are accomplished and allowing for the States to revise their standards accordingly, this digest will be updated and reissued. Because this publication is not intended for use other than as a general information resource, to obtain the latest information and for special purposes and applications, the reader needs to refer to the current approved water quality standards. These can be obtained from the State water pollution control agencies or the EPA or Regional Offices.

Individual State-adopted criteria follow:

NITRATES/NITRITES/AMMONIA

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|----------------------|--|---|
| Alabama ¹ | Not specified | All |
| Alaska ² | Not specified | All |
| Arizona ³ | <p>A. The mean annual total nitrate concentrations of the following waters shall not exceed the values given below nor shall the total nitrate concentrations of more than 10 percent of the samples in any year exceed the 90 percent values given below. Unless otherwise specified, indicated values also apply to tributaries to the named waters.</p> <p>Total nitrates as NO₃ mg/l</p> <p>4 Mean annual 7 90 pct-value</p> <p>5 Mean annual</p> <p>5 Mean annual 7 90 pct-value</p> <p>5 Mean annual 7 90 pct-value</p> <p>B. The above standards are intended to protect the beneficial uses of the named waters. Because regulation of nitrates and phosphates alone may not be adequate to protect waters from eutrophication, no substance shall be added to any surface water which produces aquatic growth to the extent that such growths create a public nuisance or interference with beneficial uses of the water defined and designated in Reg. 6-2-6.5.</p> | <p>Colorado River from Utah border to Willow Beach (main stem)</p> <p>Colorado River from Willow Beach to Parker Dam (main stem)</p> <p>Colorado River from Parker Dam to Imperial Dam (main stem)</p> <p>Colorado River from Imperial Dam to Morelos Dam (main stem)</p> |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|-------------------------|--|---|
| Arkansas ⁴ | Not specified Nutrients - The naturally occurring nitrogen/phosphorus ratio shall not be significantly altered due to municipal, industrial, agricultural or other waste discharges, nor shall total phosphorus exceed 100 ug/l in streams or 50 ug/l in lakes and reservoirs due to any such discharges. | All |
| California ^A | Nitrates + total nitrites 10 100 Ammonia - not specified Un-ionized ammonia - some basins Note: See California State Water Standards for specific rivers, basins and coastal waters. | All Livestock watering (Basin 3) All |
| Colorado ⁵ | Ammonia (as N) 0.02 (un-ionized) 0.06 (un-ionized) 0.5 Nitrate (as N) 100 ¹ 10 Nitrite (as N) 0.05 0.5 10 ¹ 1.0 | Cold water biota Warm water biota Domestic water supply Agriculture Domestic water supply Cold water biota Warm water biota Agriculture Domestic water supply |
| | ¹ In order to provide a reasonable margin of safety to allow for unusual situations such as extremely high water ingestion or nitrite formation in slurries, the NO ₃ -N plus NO ₂ -N content in drinking waters for livestock and poultry should be limited to 100 ppm or less, and the NO ₂ -N content alone be limited to 10 ppm or less. | |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|--------------------------|--|---|
| Connecticut ⁶ | Not specified | All |
| Delaware ^B | Ammonia - N 0.4 | Public water supply |
| | Total nitrogen 3.0 | Public water supply |
| Florida ⁷ | Nitrate - 10.0 as N or that concentration determined in Nutrients below | Public water supply |
| | Nitrite - Not specified | All |
| | Ammonia (un-ionized) 0.02 | Public water supply, shell-fish, recreation |
| | Nutrients - In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora and fauna. | Public water supply, shell-fish, recreation |
| Georgia ⁸ | Not specified | |
| Hawaii ⁹ | Total nitrogen, not greater than 0.10 mg/l | Class AA |
| | Total nitrogen, not greater than 0.15 mg/l | Class A |
| | Total nitrogen, not greater than 0.20 mg/l | Class B |
| Idaho ¹⁰ | Not specified | All |
| Illinois ¹¹ | Ammonia (as N) 1.5 mg/ | All waters except secondary contact and indigenous aquatic life and Lake Michigan |
| | Ammonia Nitrogen as N. (Storet No. 00610). No effluent from any source which discharges to the Illinois River, The DesPlaines River downstream of its confluence with the Chicago River System, or the Calumet River System, and whose untreated waste load is 50,000 or more population equivalents shall contain more than 2.5 mg/l of ammonia nitrogen as N - | Secondary contact and indigenous aquatic life waters |

State

Criteria Values in mg/l

Designated Stream Use

Illinois
(con't)

during the months of April through October, or 4 mg/l at other times, after December 31, 1977. Sources discharging to any of the above waters and whose untreated waste load cannot be computed on a population equivalent basis comparable to that used for municipal waste treatment plants and whose ammonia nitrogen discharge exceeds 100 pounds per day shall not discharge an effluent of more than 3.0 mg/l of ammonia nitrogen after December 31, 1974.

0.02 mg/l

All Lake Michigan Waters

10.0 mg/l Nitrate-Nitrogen

Public and Food Processing water supply

1.0 mg/l Nitrite-Nitrogen

Public and Food Processing water supply

Indiana¹²

The bioassay criterion for toxic substances of 1/10 x 96 hr TLM applies to ammonia in all waters except those listed in the specific standards as follows:

Unionized Ammonia

0.03 mg/l - Monthly Ave.

0.1 mg/l - Daily Max.

Inner Harbor, Gary Harbor, Burns Harbor

0.02 mg/l Monthly Ave.

0.05 mg/l - Daily Max.

Lake Michigan

1.5 mg/l total Ammonia Nitrogen

Grand Calumet River and Indiana Harbor Ship Canal

0.02 mg/l Unionized Ammonia

Wolf Lake and Wolf Lake Harbor

Ammonia

Toxic Substances: The concentration of toxic substances shall not exceed those values listed in the United States Environmental Protection Agency Administrator's Quality Criteria for Water 1976 for the protection of sensitive aquatic life.

(For Ammonia this value is 0.02 mg/l NH₃)

Natural Spawning and Rearing or Imprinting Areas for Salmonid Fishes

Toxic Substances: Not to exceed one-tenth of the 96-hour median tolerance limit of salmonid fishes or the natural

Migration Routes for Salmonid Fishes

State

Criteria Values in mg/l

Designated Stream Use

Indiana
(con't)

biota obtained from continuous flow bio-assays where the dilution water and toxicant are continuously renewed, except that other lower application factors may be used in specific cases when justified on the basis of available evidence.

Nitrates and Nitrites:

Plant Nutrients: Free from substances attributable to municipal, industrial, agricultural or other sources in concentrations or combinations which will cause or contribute to the growth of aquatic plants or algae in such degree as to create a nuisance, be unsightly or deleterious, or be harmful to salmonid fishes or the natural biota. (Stream Pollution Control Board of the State of Indiana; SPC 12R, Sec.B; filed May 26, 1978, 3:30 PM 1 IR 100)

Natural Spawning and Rearing or Imprinting Areas for Salmonid Fishes

Plant Nutrients: Free from substances attributable to municipal, industrial, agricultural or other sources in concentrations or combinations which will cause or contribute to the growth of aquatic plants or algae in such degree as to create a nuisance, be unsightly or deleterious, or be harmful to salmonid fishes or the natural biota.

Migration Routes for Salmonid Fishes

Iowa¹³

Ammonia (N)

5 (Nov 1 - March 31)

2 (April 1 - Oct. 31)

Warm water fish and aquatic life, secondary recreation

2.5 (Nov.1 - March 31)

1.0 (April 1 - Oct. 31)

Cold water fish and aquatic life, secondary recreation.

Nitrate (NO₃) 45

Public water supply

Nitrite - Not specified

All

Kansas¹⁴

Ammonia: Man-made sources shall not cause the undissociated ammonium hydroxide concentration of waters of the state to exceed 0.15 mg/l as N.

All

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|-----------------------------|---|------------------------------|
| Kansas (con't) | Nitrites - Not specified | All |
| Kentucky ¹⁵ | Ammonia 0.05 | All |
| Louisiana ¹⁶ | Not specified | All |
| | Nutrients - the naturally occurring nitrogen phosphorous ratio shall be maintained. | |
| Maine ¹⁷ | Not specified | All |
| Maryland ¹⁸ | Not specified | All |
| | The state recognizes that certain waters of the State are eutrophic or are approaching eutrophic conditions. All discharges to waters which are eutrophic or potentially eutrophic, when so identified by the State, shall be treated as necessary to reduce eutrophic effects. The State shall require that wastewaters, containing nutrients which cause or may cause eutrophication be given advanced waste treatment prior to discharge, or be disposed of by spray irrigation on land, or by other practicable procedures which will avoid direct discharge to surface waters. | |
| Massachusetts ¹⁹ | Nitrate: 10 | Public water supply |
| | The discharge of nutrients, primarily phosphorus or nitrogen, to waters of the Commonwealth will be limited or prohibited by the Division as necessary to prevent excessive eutrophication of such waters. There shall be no new or increased discharges of nutrients into lakes and ponds, or tributaries thereto. Existing discharges containing nutrients which encourage eutrophication or growth of weeds or algae shall be treated. Activities which may result in non-point discharges of nutrients shall be conducted in | |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|--------------------------|---|------------------------------|
| Massachusetts (con't) | accordance with the best management practices reasonably determined by the Division to be necessary to preclude or minimize such discharges of nutrients. | |
| Michigan ²⁰ | Not specified | All |
| | Nutrients originating from domestic, industrial, municipal or domestic animal sources shall be limited to the extent necessary to prevent stimulation of growths of aquatic rooted, attached and floating plants, fungi or bacteria which are or may become injurious to the designated uses of the waters of the state. | All |
| | (1) Toxicity of undefined toxic substances not specifically included in subrules (2) and (3) shall be determined by development of 96-hour TLM's or other appropriate effect and points obtained by continuous flow or <u>in situ</u> bioassays using suitable test organisms. Concentrations of undefined toxic substances in the waters of the State shall not exceed safe concentrations as determined by applying an application factor, based on knowledge of the behavior of the toxic substances and the organisms to be protected in the environment, to the TLM or other appropriate effect end point. | |
| | (2) For all waters of the State, unless on the basis of recent information, a more restrictive limitation is required to protect a designated use, concentrations of defined toxic substances, including heavy metals, shall be limited by application of the toxic substances, recommendations contained in the chapter on Freshwater Organisms, "Report of the National Technical Advisory Committee to the Secretary of the Interior, Water Quality Criteria, 1968," or by application of any toxic effluent standard, limitation or prohibition promulgated by the Administrator of the United States Environmental Protection Agency pursuant to section 307(a) of the United States Public Law 92-500, whichever is more restrictive. | |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|---------------------------|--|--|
| Michigan (con't) | (3) In addition to the standards prescribed in subrules (1) and (2), waters of the State used for public water supply shall, at the point of water intake, not exceed the permissible inorganic and organic chemicals criteria for raw public water supply in "Report of the National Technical Advisory Committee to the Secretary of the Interior, Water Quality Criteria, 1968," except that chlorides shall be limited to the same extent as prescribed by rule 1051(2). | |
| Minnesota ²¹ | Nitrates (NO ₃) 45.0 | Domestic water supply Classes A, B, and C |
| | 0.2 Ammonia (N) | Fisheries and recreation (Class A) |
| | 1.0 | Fisheries and recreation (Class B) |
| | 1.5 | Fisheries and recreation (Class C) |
| | Unspecified toxic substances - none at levels harmful either directly or indirectly. | Agriculture and wildlife (Class B) |
| Mississippi ²² | Not specified | All |
| Missouri ^D | 0.1 Ammonia nitrogen 0.02 | Aquatic life Coldwater fishery |
| | 10.0 Nitrate nitrogen | Drinking water supply |
| Montana ²³ | Not specified | All |
| Nebraska ²⁴ | Ammonia as N- Seasonal limits assigned to each designated stream segment with limits ranging from 1 to 6 mg/L. | All |
| Nevada ²⁵ | Nitrates (NO ₃) 0.8 - 7.66 Single Value | Variable |
| | .07-5.0 Annual average | Variable |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|-----------------------------|--|--|
| Nevada (con't) | Nitrates (NO ₃) 1.0 - 5.0 Single Value | Variable |
| | .09 - 1.5 Annual Average | Variable |
| | Single value and annual average varies for each basin. See Water Pollution Rules, Table 1 thru 55 for specific rivers, lakes, and streams. | |
| New Hampshire ²⁶ | Not specified | All |
| New Jersey ²⁷ | Ammonia or ammonium compounds: None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses. Where sources of public water supply is potential use, none which would cause standards for drinking water to be exceeded after appropriate treatment. | All |
| | Nitrate Nitrogen 2.0 | All uses in FW-central Pine Barrens |
| | 3.0 | All uses in FW-lower Mullica and Wading Rivers Central Pine Barrens. |
| New Mexico ²⁸ | Not specified | All |
| | Surface waters shall be free of nitrogen and other dissolved gasses at levels above 110% saturation when supersaturation is attributable to municipal, industrial or other discharges. | |
| New York ²⁹ | Nitrates: Not specified | All |
| | Nitrites: Not specified | All |
| | Ammonia or ammonium compounds: 2.0 as NH ₃ at pH of 8.0 or above | Water supply source for drinking, culinary or food processing; fish life |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|------------------------------------|--|--|
| North Carolina ³⁰ | 10.0 Nitrate nitrogen | Drinking water supply (treatment plus disinfection) |
| North Dakota ³¹ | Nitrates: 1.0 - 1.5 (depending upon type of drinking water treatment process utilized) | All |
| | NO ₃ as N: 0.375 (goal) | All lake uses |
| Ohio ³² | Ammonia: 0.1 - 13.0 depending upon temperature and pH | All except Ohio River uses |
| | The concentration of un-ionized ammonia (NH ₃) shall not exceed 0.05 mg/l, un-ionized ammonia shall be determined for values for total ammonia N, pH and temperature and the following equation: Un-ionized ammonia = $\frac{1.3 \text{ (total ammonia-N)}}{1 + 10^{(\text{pK}_a - \text{pH})}}$ where $\text{pK}_a = 0.0902 + \frac{2730}{273.2 + T}$ and T = Temperature in degrees C | All Ohio River uses |
| | Nitrate-N plus Nitrite-N: 10.0 | All Ohio River uses |
| | Nitrite-N: 1.0 | All Ohio River uses |
| | Nitrate-N: 10.0 | Public water supply |
| | Nitrates plus nitrites: 100.0 | Agricultural water supply |
| | Ammonia as Nitrogen 0.2 - 13.0 mg/l depending on temperature and pH | Warm water habitat |
| | 0.1 - 6.5 mg/l depending on temperature and pH | Lake Erie, exceptional warm water and cold water habitat |
| | 1.5 - 12.8 mg/l depending on temperature and pH | Seasonal warm water habitat |
| | 0.2 - 13.0 mg/l depending on temperature and pH except as indicated for specific streams | limited warm water habitat |
| | Nitrate - N; 10.0 mg/l | Lake Erie and public water supply |
| Nitrates plus nitrites: 100.0 mg/l | Lake Erie and agricultural water supply | |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|------------------------------|--|--|
| Ohio (con't) | Ammonia not greater than 12.0 mg/l from 12/1/74 to 6/30/76; nor greater than 8.0 mg/l from 7/1/76 to 1/1/79 | Lower Cuyahoga River |
| | Toxic substances less than 1/10 x 96 hr TLM (Applies to Ammonia) | Mahoning River |
| Oklahoma ³³ | Nitrates as N: 10.0 | Drinking water supply |
| Oregon ³⁴ | Not specified | All |
| Pennsylvania ³⁵ | Nitrite plus Nitrate: 10.0 (as nitrogen) | All |
| | Ammonia nitrogen: 0.5 - 1.5 Note: See Drainage lists A through E of Pennsylvania Water Quality Standards for applicable uses and streams | |
| Rhode Island ³⁶ | Not specified | All |
| | Chemical constituents narrative: bio-assays shall be performed as required. | Fisheries (fresh water) |
| | Chemical constituents narrative: the limit prescribed by the USEPA will be used where not superseded by more stringent state requirements. | Public drinking water supplies (fresh water) |
| South Carolina ³⁷ | Not specified | All |
| South Dakota ³⁸ | 10.0 Nitrates | Domestic water supply |
| | 50.0 | Wildlife propagation |
| | 0.02 un-ionized Ammonia (as N) | Domestic water supply, cold water fish |
| | 0.04 un-ionized ammonia (as N) | Warm water fish (permanent and semi-permanent) |
| | 0.05 | Warm water fish (marginal) |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|-----------------------------|---|--|
| South Dakota (con't) | Nitrites: Not specified | All |
| Tennessee ³⁹ | Not specified | All |
| Texas ⁴⁰ | Not specified | All |
| Utah ⁴¹ | NH ₃ as N 0.02 (un-ionized) | Aquatic life |
| | NO ₃ as N 0.02 | Aquatic life, recreation and aesthetics |
| Vermont ⁴² | There shall be no discharge of wastes to Class A waters that do not meet or exceed the technical and other requirements for such waters nor shall there be any discharge of wastes containing any form of nutrients which would encourage eutrophication or growth of weeds or algae. | All |
| | There shall be no new or increased discharge of wastes after May 27, 1971 containing any form of nutrients which would encourage eutrophication or growth of weeds and algae in any lake, pond or reservoir. Any discharge of wastes existing prior to May 27, 1971 containing soluble or other nutrients which would encourage eutrophication or growth of weeds and algae in any lake, pond, or reservoir shall receive the highest practical degree of treatment currently available to remove such nutrients. | |
| Virginia ⁴³ | Nitrates plus nitrites: 10.0 (as N) | Public water supply |
| Washington ⁴⁴ | Not specified | All |
| West Virginia ⁴⁵ | 45.0 Nitrates | All |
| Wisconsin ⁴⁶ | NH ₃ - N | |
| | 3.0 mg/l during warm temperature 6.0 mg/l during cold temperatures | Intermediate aquatic life waters |

| <u>State</u> | <u>Criteria Values in mg/l</u> | <u>Designated Stream Use</u> |
|------------------------------------|---|------------------------------|
| Wyoming ⁴⁷ | 0.02 Ammonia as (N) | All cold water fisheries |
| American Samoa ^E | The naturally occurring atomic ratio of NO ₃ -N to PO ₄ -P in a body of water will be maintained. Similarly, the ratio of inorganic phosphorus (orthophosphate) to total phosphorus (the sum of inorganic phosphorus, dissolved organic phosphorus, and particulate (phosphorus) will be maintained in the ratio and amount as it occurs in the receiving waters naturally. | All |
| District of Columbia ⁴⁸ | Ammonia - 0.02 mg/l as unionized ammonia | All waters |
| | Nitrates/Nitrites - 10 mg/l max. as nitrate (N) | Domestic water supply |
| Guam ^F | Total nitrogen shall not exceed 0.40 mg/l | AA |
| | Total nitrogen shall not exceed 0.75 mg/l | A, 2b-I, 2b-II, C |
| | Total nitrogen shall not exceed 1.5 mg/l | 2a-I, 2a-II |
| Puerto Rico ⁴⁹ | 10.0 Nitrate plus Nitrite (as N) | All surface waters |
| | 5.0 Nitrogen (NO ₂ , NO ₃ , NH ₃) | All coastal waters |
| Trust Territories ^G | 0.01 Ammonia (N) | Drinking water supply |
| | The naturally occurring ratio of the concentrations of nitrogen to phosphorus will be maintained in all waters. | All |
| Virgin Islands ^H | Not specified | All |

OREGON ENVIRONMENTAL QUALITY COMMISSION

September 27, 1985

BREAKFAST AGENDA

1. Regional Manager's Report Nichols
2. Case Management Practices for DEQ
Hearings Officers in Contested Cases Denecke
3. Portland International Airport Noise
Abatement Plan Hector
4. SB 138 (Toxic Waste Incinerator)
Implementation Danko
5. EQC Trip to Chem-Securities Hazardous
Waste Disposal Facility, Arlington Reiter
6. Future Meeting Dates Hansen

CASE MANAGEMENT PRACTICES FOR D.E.Q. HEARINGS OFFICERS
IN CONTESTED CASES

The Commission requests you set the docket for contested cases assigned to you; that is, you determine the date at which hearings and other proceedings will be held. The desires of the Department and other parties will be considered and accommodated if this can be done consistent with the expeditious disposition of the case.

The Commission requests the hearings officers decide all cases submitted to them within three months after submission unless prevented by illness or other unexpected event. (This is the time limit imposed by the Legislature on Oregon Trial Judges; ORS 1.050.)

8-25-85



DEPARTMENT OF JUSTICE

PORTLAND OFFICE
500 Pacific Building
520 S.W. Yamhill
Portland, Oregon 97204
Telephone: (503) 229-5725

September 18, 1985

Arno H. Denecke
3890 Dakota Road S.E.
Salem, Oregon 97302

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
SEP 19 1985

OFFICE OF THE DIRECTOR

Re: Proposed Policy on Scheduling of Contested Cases

Dear Commissioner Denecke:

As I discussed with you recently by telephone, I have no problem with the policy that you have proposed for the scheduling of contested cases. Our office can generally adhere to any schedule established by the hearings officer, provided that the agency is willing to accept the assignment of additional attorneys to represent the department. Fred Hansen and I have discussed this trade-off in the past, and he has been prepared to accept it toward the end of resolving cases as expeditiously as possible. As a result, we currently have at least four different attorneys representing the department in contested cases. So far, I do not think that the quality of representation has suffered, because we have been fortunate to recruit some very capable attorneys, and the agency and I have worked closely with them.

I would offer a few additional comments. You may wish to consider whether the policy should be adopted as an administrative rule or simply as a commission statement in the nature of a management directive. The former would require rule making procedures; the latter would not. Either approach is probably possible, depending upon your intent with the statement and the legal force you wish it to have. I assume you intend the statement merely to be "directory," such that failure to adhere to the time limits would not result in loss of jurisdiction or dismissal of the case. If, however, you intend that the time limit be "mandatory" and trigger particular legal consequences, it probably should be adopted as an administrative rule that specifically prescribes those consequences.

Arno H. Denecke
September 18, 1985
Page 2

I also want to make sure I understand your intent with respect to when the time limit would apply. I believe the word "submission," as used in ORS 1.050, is understood to mean the point at which a matter is before the judge and no further action of the parties is necessary. In this manner, the judge is not held responsible for circumstances beyond the judge's control. As applied to the administrative contested cases, this would mean that the hearings officer would have to render a decision within three months after the required pleadings had been filed and the hearing had been conducted. It would not mean that cases would be decided within three months of the time when they are first filed.

Thank you for the opportunity to comment.

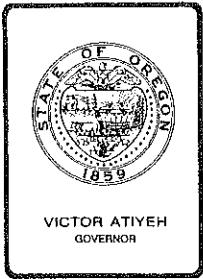
Sincerely,

Michael B. Huston
Assistant Attorney General

aa

cc: Jim Petersen, Chairman, EQC
✓ Fred Hansen, Director, DEQ

Denedcke



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207
522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

September 4, 1985

Joseph E. Penna, Attorney at Law
207 West Main St.
Monmouth, OR 97361

Arnold B. Silver, Assistant Attorney General
500 Pacific Building
520 S. W. Yamhill
Portland, OR 97204

Re: DEQ v Sperling
Case No. 23-AQ-FB-81-15
Polk County

Enclosed is a final order of the Environmental Quality Commission drafted to reflect the Commission's action in its review of this enforcement proceeding. The order is signed by Fred Hansen for the Commission.

As stated in the order, you may obtain judicial review of the order by filing a petition for review within 60 days from the service of this order. Judicial review is pursuant to the provisions of ORS 183.482 et seq.

Sincerely,

Linda K. Zucker
Hearings Officer

LKZ:y
HY917

Enclosure

cc: EQC Members

Fred Hansen, Director, DEQ
Air Quality Division, DEQ
Field Burning Office, DEQ
Enforcement Section, DEQ

*1/ Henry office sub Com order
with news 10
2/ Fred signs for Com
3/ work under review
740-11-130(4)*

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY)
OF THE STATE OF OREGON,)
)
Department,) NO. 23-AQ-FB-81-15
)
v.) FINDINGS OF FACT, CONCLUSIONS
) OF LAW AND FINAL ORDER
WENDELL SPERLING,)
)
Respondent.)

This matter came on regularly before the Environmental Quality Commission on the appeal of the Department on November 8, 1984. It appearing to the Commission that the Department had issued Wendell P. Sperling, respondent before the Department, a notice of assessment of civil penalty imposing a civil penalty of \$3,000.00 for burning a 54 acres field without first registering and obtaining a permit to burn it. It further appearing to the Commission that two hearings were held before its Hearings Officer, Linda Zucker, on March 3, 1983, in Salem and on March 17, 1983, in Monmouth. The Department was unrepresented by counsel, but appeared through Larry Schurr, Enforcement Section of the Department. Respondent was represented by Joseph E. Penna, attorney at law, Monmouth.

On March 15, 1984, the Hearings Officer entered her Findings of Fact, Conclusions of Law and Final Order in which she found in favor of respondent and against the Department and dismissed the civil penalty proceeding against the Department. The Department thereafter appealed the Hearings Officer's order to the Commission. The appeal was heard on November 8, 1985.

The Department was represented by Robert L. Haskins, Assistant Attorney General; the respondent was represented by Joseph E. Penna, attorney at law. After considering the argument of counsel, memoranda filed herein and the records and files of this proceeding, the Commission does reverse the Hearings Officer and enters the following order.

FINDINGS OF FACT

1. On March 30, 1981, respondent Wendell P. Sperling, doing business as W.P. Sperling Farms, registered with the Department of Environmental Quality a certain 61 acre cereal grain field ("respondent's registered field") for open burning pursuant to ORS 468.480(1)(a) and OAR 340-26-012(1), by filing a completed registration form with the Southeast Polk Rural Fire Protection District ("fire district") and paying the one dollar per acre registration fee. Respondent's registered field is located in Polk County.

2. At all material times the Southeast Polk Rural Fire Protection District ("fire district ") was the agent of the Department of Environmental Quality for registering and issuing DEQ permits to open field burn grass and cereal grain fields in the district pursuant to ORS 468.458(2) and OAR ch 340 division 26.

3. Respondent's registered field was part of a larger cereal grain field owned or controlled by respondent which totaled 115 acres ("respondent's 115 acre field"). At no time did respondent attempt to pay the one dollar per acre registra-

tion fee or file a registration form to register for open field burning the remaining 54 acres of respondent's 115 acre field. Respondent's 54 acre field was not registered and shall be referred to as "respondent's unregistered field."

4. On September 1, 1981, Southeast Rural Fire District representative Howard Pope, while searching for an appropriate field to test burn, had conversation with respondent about possibly test burning respondent's 115 acre field. Mr. Pope had no way of knowing whether this field was registered and asked the respondent to contact permit agent Susan Pope to obtain a permit and validation number before burning. This permit must be obtained before a grower may legally burn.

5. On September 1, 1981, respondent contacted Susan Pope and requested the fire district issue a DEQ permit to open field burn respondent's 115 acre field.

6. In response to respondent's request, the fire district issued a DEQ open field burning permit (i.e. issued a validation number, OAR 340-26-005(14)) authorizing respondent to open field burn respondent's 61 acre registered field. When told only 61 acres of the 115 acre field were registered, respondent, under the extreme time pressure resulting from the necessity of quickly lighting test fires, felt there was a mistake in the amount of registered acreage and that such mistake could be straightened out later.

7. On respondent's behalf, respondent's wife paid the \$2.50 per acre fee for the permit to burn respondent's 61 acre field.

8. On September 1, 1981, respondent open field burned respondent's 115 acre field including the 54 acre unregistered field. That air pollution source would not normally have been in existence for five days.

CONCLUSIONS OF LAW

1. The Commission has personal and subject matter jurisdiction.

2. On September 1, 1981, respondent open field burned respondent's 54 acre field without first registering it and paying the registration fees, as required by ORS 468.475(1), 468.480(1)(a) and OAR 340-26-012(1)(2).

3. On September 1, 1981, respondent open field burned respondent's 54 acre field without obtaining a DEQ open field burning permit and validation number and paying the permit fees, as required by ORS 468.458(2), 468.475(1), 468.480(1)(b) and OAR 340-26-010(2)(a).

4. ORS 468.300 does not require the DEQ to provide "negligence or wilful misconduct" on the part of a person to establish liability for violation of the field burning statutes, rules, standards or orders. Rather, ORS 468.300 provides persons charged with violation of field burning statutes, rules, standards or orders opportunity to affirmatively plead and prove the violation was caused by "an act of God, war, strife, riot or other condition" which was not proximately caused through the "negligence or wilful misconduct" of such person. ORS 468.300; See, State v. Fry Roofing Co., 9 Or App 189, 218, 495 P2d 751, 4

ERC 1116 (1972).

5. The facts of this case warrant reduction in the amount of penalty. Each violation of law (limited as Conclusions of Law 2 and 3) shall result in a fine of \$100. Respondent is liable for a total penalty of \$200.

OPINION

The law clearly requires that prior to open field burning any cereal grain acreage, that acreage be registered with the DEQ pursuant to ORS 468.475(1), 468.480(1)(a) and OAR 340-26-012(1), (2). Respondent failed to register respondent's 54 acre field prior to burning. The law also clearly requires that prior to open field burning any cereal grain acreage, a DEQ field burning permit and validation number must be obtained and fees paid pursuant to ORS 468.458(2), 468.475(1), 468.480(1)(b) and OAR 340-26-010(2)(9). Respondent failed to obtain the requisite permit and validation number prior to burning respondent's 54 acre field.

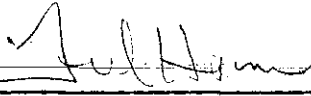
Therefore, the Commission finds a violation of the applicable statutes and rules but additionally finds mitigating circumstances warranting a reduction in the amount of the civil penalty imposed. The mitigating circumstances are found by the Commission to include the following factors. Respondent acted under extreme pressure to burn his fields. He apparently felt there was a mistake in the number of acres registered with the Permit Agent which could be subsequently rectified. This pressure and apparent feeling of a mistake in the number of registered acres

leads the Commission to believe the civil penalty should be reduced and mitigated.

ORDER

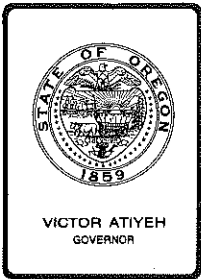
WHEREFORE, IT IS ORDERED AND ADJUDGED that respondent is liable for a total civil penalty for \$200 and the State of Oregon has judgment therefor.

Dated this 30th day of August, 1985.



Fred Hansen, Director
For the Environmental Quality Commission
Pursuant to OAR 340-11-136(2)

NOTICE: You are entitled to judicial review of this order. Judicial review may be obtained by filing a petition for review within 60 days from the service of this order. Judicial review is pursuant to the provisions of ORS 183.482, et seq.



Environmental Quality Commission

Mailing Address: BOX 1760, PORTLAND, OR 97207

522 SOUTHWEST 5th AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

MEMORANDUM

To: Environmental Quality Commission

From: John Hector, Noise Control Program

Subject: September 27, 1985, EQC Breakfast Agenda

Citizen Petition Regarding Portland International Airport's
Noise Impacts During Westerly Departures

Background

On August 19, 1983, the Environmental Quality Commission approved a noise abatement program for Portland International Airport (PDX) pursuant to Commission rule "Noise Control Regulations for Airports" (OAR 340-35-045). On April 19, 1985, the commission reviewed the status of the PDX noise abatement program and approved several amendments to the program.

On August 30, 1985, the Commission Chairman received a letter and petition from residents of Hayden Island, the Columbia Slough and areas of Portland on the south bank of the Slough. This letter requests an investigation of alleged violations of the PDX noise abatement plan for aircraft departing toward the west and creating excessive noise impacts to the petitioners.

Discussion

The petitioners listed the following items in support of their position, and staff offers comments in response to these items:

1. The petitioners believe the Department has not adequately responded to their complaints. Due to the very limited resources of the Department's noise control program, its staff frequently works closely with those entities (e.g., industry and government) that have personnel specifically assigned to resolve noise problems. We have generally found this approach is a better use of resources as it resolves problems faster than enforcement action. With respect to this issue, the Port of Portland, the proprietor of PDX, has two full-time positions to implement its noise abatement program. The Department therefore informs the Port of Portland staff of complaints for their response. DEQ monitors the activities of the PDX noise

program by direct contact with the Port's noise abatement staff and through quarterly PDX noise abatement committee meetings. In retrospect, the Department should have informed this complainant of our intended action. It will be our future intent to follow this course of action.

2. The petitioners note the Commission-approved PDX abatement program is enforceable and that the Department should investigate the petitioners claims that the program is not being met as they are experiencing aircraft overflights during westerly departures.

The noise program approved by the Commission in August 1983 included the following procedure for westerly departures of air carrier, business, and military jet aircraft:

If departing on Runway 28R or 28L (take-off to the west), maintain the initial runway heading (279 degrees) for a distance of 8 (nautical) miles or until reaching an altitude of 6,000 feet, whichever occurs first, before turning on course.

On January 1, 1985, a new navigational aid (VOR/DME) was added to the airport. This device is located between the two parallel runways and west of the crosswind runway (see attached map). The purpose of the VOR/DME is to allow pilots to more precisely follow the departure and arrival tracks as the influence of winds can dramatically affect the aircraft track over the ground when compass headings only are used. The VOR/DME also provides the pilot information on the distance the aircraft is from the airport, thus establishing the authorized turn point required in the abatement plan.

Subsequent to the installation of the VOR/DME navigational aid, the westerly departure procedure was slightly amended to take advantage of this new device. Instead of following the 279 degree runway heading, aircraft were directed to turn to a 276 degree radio signal being transmitted from the VOR/DME navigational aid that is located between the runways. As most aircraft departing toward the west use the south runway (28 Left), the pilot flying the VOR 276 degree track turns right to intercept this radio signal. These traces are shown on the attached map. This amendment to the plan was accepted by the Commission in its April 1985 review.

The Department agrees with the petitioners that it is responsible to ensure the Port of Portland is implementing the PDX noise abatement program within the terms of the approval by the Commission. The claims of lack of compliance with the departure procedure are addressed in items 4 and 5, below.

3. The petitioners have submitted noise level data contained in the 1985 PDX noise abatement program annual report as evidence of excessive noise in their residential areas.

The Department agrees that aircraft noise levels in this area are excessive. All of Hayden and Tomahawk Islands lie within the Ldn 65 decibel (dB) contour and portions of these islands are within the Ldn 70 dB contour. The Department and most authorities agree that residential uses are not generally compatible within the Ldn 65 dB contour. In order to limit future non-compatible development in these areas, Multnomah County adopted an ordinance that prohibits additional residential zoning within the Ldn 65 dB contour. New homes built on currently zoned residential land in noise impacted areas must add sound insulation to somewhat reduce interior noise levels. However, it might be concluded that residential uses will never be compatible with the current noise levels experienced on Hayden and Tomahawk Islands.

The Department has not duplicated the noise monitoring data submitted by the petitioners. However, this data appears to be similar to that measured by the Department in August 1979 on Hayden Island. Since that time two major events have affected the noise emission levels of individual aircraft. First, in 1977 the Federal Aviation Administration (FAA) approved rules to quiet the existing commercial aircraft fleet. By mid-1979 the fleet was approximately 35 percent compliant with these standards. At this time PDX estimates its fleet is approximately 90 percent compliant. Second, the air guard (Oregon Air National Guard) replaced its fleet of F-101 aircraft with F-4C aircraft in mid-1980. Special departure procedures developed by the air guard show that no significant increase of noise levels would result in this replacement. New measurements by Department staff could be taken to somewhat evaluate any significant changes between this time and mid-1979.

4. The petitioners claim the Port of Portland has admitted that full compliance with the abatement plan is not being met.

At the PDX noise abatement advisory committee meeting held May 21, 1985, one of the petitioners (Richardson) presented the concerns of the community. At that time the Port of Portland estimated approximately 40 percent of the aircraft were over the river during westerly departures. The Port staff explained that this rate would increase after the new departure procedure was published and pilots became familiar with the procedure. By May 31, 1985, the new procedure was approved by the Federal Aviation Administration and published. A copy of the published noise abatement departure procedure is attached. At this time the PDX noise abatement staff believe an average of 60 percent of the westerly departing aircraft are over the river. A typical observation taken on August 28, 1985, found 72 percent were over the river, 13 percent over land south of the river and 15 percent over land north of the river. Therefore, the Port of Portland has demonstrated improvement in this departure procedure and further improvement is projected.

In order to improve this departure procedure, and to also address noise issues affecting residents of the Blue Lake area located east of PDX, the Port's noise abatement officer met with the chief pilots of the major airlines on July 31, 1985. The Port has and appears to continue to work through several associations representing pilots and airlines to assist the implementation of the noise abatement program. These groups include the Airline Pilots Association and the Air Transport Association (commercial carriers).

The Port of Portland's next step to improve this departure procedure is to add a large sign instructing pilots of the noise abatement procedure as a final reminder to the pilot of the published procedure. Initially a sign will be placed at the taxiway of Runway 28 Left, as most westerly departures use this runway. The Port expects this sign to be placed by late-September, 1985.

Further improvements might be accomplished through the further modification of the published departure procedure. However, any changes to clarify this procedure would likely need approval of FAA and, therefore, could likely require several months of time to negotiate and process any requests.

5. The petitioners appear to believe that the Port of Portland is not committed to further reduce overflights of their residential areas.

The Commission approved PDX abatement program does not specify that all westerly departing aircraft will always avoid the residential areas of the petitioners. The departure procedure was designed to place aircraft at the center of the river channel. However, a number of factors influence the actual position of the aircraft when flying this procedure. The VOR/DME radio transmitter has an allowable error factor of approximately one degree. The aircraft VOR/DME radio receiver has an allowable error of four to six degrees. Both pilots and autopilots have error factors. Naturally, these errors can become cumulative and significant deviations from the ideal flight path will occur although all procedures are being followed. Staff calculated that an error of less than four degrees deviation from the VOR/DME navigational aid path could place aircraft over residential areas of Hayden Island. It may therefore be concluded that the petitioners will never find all departing aircraft flying a course directly down the center of the river channel.

6. The petitioners are also concerned of possible air pollution and aircraft crash hazards when residential areas are overflown. The Department's air quality staff do not believe air pollution is an issue at this location. Air safety is not a responsibility of the Department; however, these residential areas are far removed from the PDX clear zones required for crash safety.

Summary

The following facts are offered:

1. The intent of the PDX noise abatement program is to keep aircraft over the Columbia River during westerly departures.
2. The Port of Portland has been able to reduce the number of departing aircraft that fly over Hayden and Tomahawk Islands using a variety of techniques since the approval of the noise abatement program.
3. Noise levels on Hayden and Tomahawk Islands are not compatible with residential uses. Slight adjustments of the flight tracks will not measurably reduce average noise levels at these locations.
4. Staff believes the Port of Portland is committed to reduce the number of residential overflights to the greatest extent practicable. However, it is not possible under current technology, to ensure that no aircraft will fly over Hayden or Tomahawk Islands.
5. Department staff monitors the activity and compliance of the PDX noise program and we believe reasonable progress is being made to meet the intent of the plan. Based on the information gathered at this time, it does not appear that enforcement action is warranted due to the westerly departures from PDX.

Recommendation

Staff recommends the Commission concur with the following:

- a) Noise monitoring by the Department will be conducted to determine whether noise levels have increased on Hayden Island since the approval of the PDX noise abatement program.
- b) Department staff will also conduct periodic visual observation surveys of westerly departure procedures.
- c) The Department will review the results of its noise monitoring and visual surveys with the Port of Portland to assess whether sufficient efforts are being continued to meet the intent of the noise abatement plan's westerly departure procedure.

AS1754

Attachments

1. Goldsmith/Richardson Letter dated August 27, 1985
2. PDX Map
3. FAA Departure Procedure

August 27, 1985

Mr. James E. Peterson
Chairman
Oregon Environmental Quality Commission
835 NW Bond Street
Bend, Oregon 97701

Dear Mr. Peterson:

Transmitted herewith, please find petitions signed by some 255 residents impacted by excessive noise of westerly departing aircraft from Portland International Airport.

The petitions are self-explanatory. While they are directed to the Port of Portland, because it is responsible for PIA and the latter's implementation of its 1983 Noise Abatement Plan, they are being sent to your Commission because of its dominant authority over the adverse conditions of environmental quality involved.

For your information, and in further support of the justification of these petitions, we offer the following:

1. Inquiries for assistance from the local DEQ office over a period of time have brought no investigation. A most recent phone inquiry detailing the problem to the DEQ resulted in no DEQ response, rather, a detailed response by the Port of Portland was made to the DEQ inquiry. (Copy of letter 7/29/85 attached hereto.)
2. The following is from "EQC Adenda Item H", dated August 19, 1983, Page 3:

"Upon approval of the Plan, the abatement program shall have the force and effect of an order of the Commission. The Commission may also direct the Department to undertake such activity necessary to ensure compliance with the terms of its order."

Page 15:

"4. Approval of this program and these conditions is an order of the Commission and is enforceable pursuant to OAR 340-12-052."

In view of the above, we are perplexed at the DEQ's failure to investigate our complaints and their deferring response to the perpetrating source, the Portland International Airport.

This Port letter states that "we have used all of our authority and influence to not only implement the Plan, but to improve upon procedures that were recommended." If this is true, then the authority and influence of your Commission is needed to authenticate their implementation, as well as arbitrate their expressed accomplishments against the continued over-flights experience by the impacted residents.

3. Data from PIA Noise Abatement Plan, Annual Report 1985, discussed in a May 1985 meeting of the PIA Commission (five months after activation of their VOR/DME) substantiates the continued excess in noise, duration and frequency of noise impact on local neighborhoods. (See Table B, Monitoring Data from the Plan, Annual Report 1985, attached hereto.)
4. To reporter Gordon Oliver (article in Sunday Oregonian, August 4, 1985), John Newell is quoted: "Newell admitted, however, that up to forty percent of commercial pilots did not observe designated routes over the Columbia River that were established to keep noise away from populated areas." Article further quotes Newell: "He estimated that an average of 100 airplanes used the westerly runway each day."

These PIA statements confirm that the plan in this regard is being only sixty percent implemented. It further establishes that some forty aircraft per day are causing excessive noise impact, and many of these impacts are at night, during sleeping hours when the consequences of the impact are most severe; a very consequential corruption of the quality of the environment of those impacted. (Copy of the Oregonian article attached hereto.)

5. As a justification for this forty percent deficiency in conformance with the Plan, Newell is quoted: "He said some pilots were not regular users of the airport and were unaware of the routes, while others were diverted by adverse weather conditions." Familiarization of first-time pilots would be critical responsibility of all major airports; failure of such pilots to be aware of any airport's flight routes (including local noise-abatement requirement routes) would invite disaster. As for adverse weather, such does not occur in the Portland area during the summer months with any measurable significance or duration to impact a deficiency of this forty percent magnitude.

Please consider the following: The aircraft are, by their nature, the source of the noise; their flight patterns are reasonably adjustable. The land areas and their residents are fixed. Is it not reasonable that the first, and foremost, most fundamental and critical priority in the implementation of an aircraft noise abatement plan be the establishment and regimentation of the most noise abating aircraft flight patterns?

In this regard, the PIA is blessed with the exceptional opportunity of having the Columbia River as a natural uninhabited flyway for departing and arriving flights. The closer flight patterns can be to the center of the river, the less impact on adjacent land areas, the less discomfort to residents, the fewer complaints, the more limited the areas subjected to land use restrictions, building code restrictions and residential sale disclaimers. All these restrictions and limitations of the use and enjoyment of the otherwise uniquely advantaged land areas involved cannot justly be applied without clear, precise and controlled PIA flight patterns. Nor can reliable noise contour maps be drawn.

And the Port admits to a forty percent deficiency in compliance with the Plan's specified westerly departures after having used "all of our authority and influence to not only implement the Plan, but to improve upon the procedures recommended." That is their position, their conclusion, their solution to our continuing excessive aircraft noise impact problem.

6. Another important aspect of this matter, a part of which would concern your Commission, is that of public health and safety. The spent aircraft fuel that forty aircraft a day spread over the decks, outdoor furniture, etc., and introduce to the lungs by direct over-flights, would be much more healthily dispersed over the wide Columbia. And, should an aircraft malfunction and crash, such event over and into the Columbia would limit the disaster to the aircraft and its occupants. Should it happen to one of the forty errant flights over our populated land areas, the disaster would likely include a number of mobile homes, or houseboats, or condominiums, or homes, or one of the major motels, or Jantzen Beach Center, thus creating a catastrophe. And if the aircraft should not be in the prescribed flight pattern, official accounting of serious consequences would appear to be justified.

In conclusion, in the July 29, 1985 letter from the Port's John Newell to Charles Richardson, Newell describes in paragraph two the prescribed and improved flight pattern for westerly departing aircraft, concluding: "This course, when flown, places the aircraft near the center of the Columbia River."

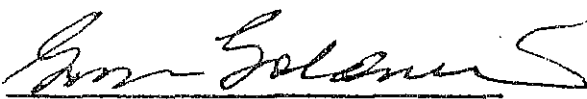
We commend the Port for this effort. This course would negate further complaints. The problem lies between the written prescription and the reality: Aircraft are rarely to be found arriving or departing utilizing

the center of the Columbia, and even the Port admits to a sixty percent conformance, or forty aircraft per day being off course.

The attached petitions represent a portion of the residents impacted; sufficient, we feel, to constitute a worthy appeal for the involvement of your Commission. These petitions and the accompanying data and observations are in support of our request for an in-depth, on site, investigation into this matter, free and independent from the power and influence of the Port of Portland.

Thank you for your consideration. We anxiously await your response.

Submitted by:



Gerson Goldsmith
525 N. Hayden Bay Drive
Portland, Oregon 97217



Charles D. Richardson
255 N. Lotus Beach Drive
Portland, Oregon 97217

Enclosures: Copies of Petition with 255 signatures
(originals available)

cc: Oregon Environmental Commission Commissioners:

Arno Denecke, Vice-Chairman, 3890 Dakota Road, S.E., Salem OR 97302
Mary Bishop, 01520 SW Mary Failing Dr., Portland OR 97219
Wallace Brill, 75 Lozier Lane, Medford OR 97501
Sonia Buist, Oregon Health Sciences University, Room 20, 52 Baird
Hall, 3181 SW Jackson Park Road, Portland OR 97201

Neighborhood Associations:

Dee Sholkoff Griffen, Riverhouse Assn., 456 N. Hayden Bay Drive
Bob Hungerford, Marina Riverhouse Assn., 704 N. Tomahawk Island Dr.
Carl Fisher, Hayden Bay Marina Homeowners Assn., 215 N. Lotus Beach Dr.
Stan Scrivner, Riverhouse East Condo Association, 406 N. Hayden Bay Dr.
Mike Goldsmith, Hayden Bay Condos, 525 N. Tomahawk Island Dr.
Doug Kemper, Hayden Island Homeowners and Renters Assn., 2361 N. Menzies Ct.



Port of Portland

Box 3529 Portland, Oregon 97208
503/231-5000
TWX 910-464-6151

July 29, 1985

Mr. Charles Richardson
255 N. Lotus Beach Drive
Portland OR 97217

Dear Charlie:

I am writing in response to your July 12 complaint to the Department of Environmental Quality (DEQ) concerning the Port not complying with provisions of the Airport's Noise Abatement Plan.

Let me assure you that we have used all of our authority and influence to not only implement the Plan, but to improve upon the procedures that were recommended. As an example, for west departures, the Plan states, "Maintain initial runway heading for a distance of 8 miles". Even under ideal conditions, an aircraft flying this pattern will still be along the north bank of Hayden Island. With installation of the navigational aid (VOR/DME), we changed that procedure to "intercept and fly the 276 degree radial." This course, when flown, places the aircraft near the center of the Columbia River.

Yes, some aircraft are still overflying Hayden Island. However, since implementation of the VOR/DME procedures in January, 1985, we have seen a gradual increase in the percentage of aircraft turning to intercept a course over the river. We expect this percentage to grow in the coming months.

The Noise Abatement Plan does not address fuel conservation as you have suggested. In fact, to fly the prescribed noise abatement procedures, has added an estimated \$2 million to airline operating costs. Additionally, the Plan does not restrict operations at night or during the early morning hours; however, market demand has limited the number of operations during those noise sensitive hours.

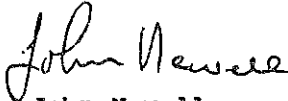


Port of Portland offices located in Portland, Oregon, U.S.A., Boise, Idaho, Chicago, Illinois, New York, N.Y., Washington, D.C., Hong Kong, Manila, Seoul, Singapore, Sydney, Taipei, Tokyo, Henley-on-Thames, England

Mr. Charles Richardson
July 29, 1985
Page 1002

In closing, let me again assure you that we are meeting our commitments to implement and support the Portland International Airport Noise Abatement Plan. We also are continuing to seek solutions to the noise concerns of Hayden Island residents. However, please understand that even with the aircraft on a track up the middle of the river, the noise levels impacting Hayden Island will remain significantly high.

Sincerely,



John Newell
Noise Abatement Officer

cc: John Hector, DEQ

0096N

The following contained in FIA Noise Abatement Plan
Annual Report 1985

TABLE B
MONITORING DATA

| Site | # of single events | Threshold dBA | Max dBA | Ave LMax | Ave Time Above Threshold | Ave. LEQ | Comments |
|------|--------------------------|------------------|------------|-------------|--------------------------------|-------------|-----------------|
| 1a | 38 | 65 | 85.3 | 79.6 | 22.2 | 63.5 | West departures |
| 1b | 15 | 65 | 90.2 | 78.2 | 24.7 | 66.9 | " |
| 3a | 63 | 65 | 88.0 | 74.9 | 36.3 | 64.3 | East departures |
| 3b | 29 | 65 | 88.3 | 79.3 | 26.1 | 62.8 | " |
| 4a | 171 | 65 | 102.1 | 82.4 | 35.5 | 71.4 | West departures |
| 4b | 56 | 65 | 99.8 | 82.1 | 40.4 | 68.1 | " |
| 4c | 9 | 70 | 92.5 | 87.8 | 35.2 | 71.2 | " |
| 4d | 12 | 60 | 76.2 | 69.4 | 24.4 | 56.0 | " |
| 4e | 15 | 65 | 92.0 | 77.2 | 30.3 | 62.4 | " |
| 5a | 26 | 60 | 77.0 | 70.0 | 35.2 | 58.8 | Cross Wind Dep. |
| 5b | 16 | 65 | 96.2 | 84.7 | 30.4 | 72.9 | " |
| 6a | 36 | 65 | 95.7 | 78.7 | 35.7 | 58.5 | East departures |
| 6b | 31 | 60 | 91.3 | 74.6 | 22.7 | 60.6 | East arrivals |
| 6c | 46 | 60 | 96.8 | 72.3 | 23.4 | 64.7 | East departures |
| 6d | 75 | 60 | 97.2 | 75.0 | 23.7 | 63.0 | " |
| 7a | 140 | 65 | 98.2 | 79.1 | 28.6 | 66.1 | " |
| 7b | 11 | 65 | 98.2 | 78.6 | 16.8 | 64.3 | " |
| 11 | 9 | 55 | 69.8 | 64.3 | 19.0 | 49.0 | West departures |

NW St Helena Rd

- 4a - N. Hayden Island Drive (E. of Red Lion)
- 4b - N. Tomahawk Island Drive
- 4c - N. Lotus Beach Drive

(Observation: West departures most prevalent departure in late spring, summer and early fall when N.W. winds prevail and when windows are open and residents are frequently outside, thus maximizing aircraft noise impact at all hours.

During these same periods clear weather optimizes visual flying of aircraft over the wide, unpopulated Columbia River.)

PORTLAND

Continuing airport noise rankles island's residents

By GORDON OLIVER
of The Oregonian staff

Hayden Island residents have begun circulating petitions asking the Port of Portland to put its 1983 airport noise-abatement plan into effect, but a Port official said the agency already had done so.

Petition forms have been sent to members of the Hayden Island Homeowners Association Committee for distribution, with copies delivered to the Port of Portland, the East Columbia Neighborhood Association and various city officials.

The form states that the Port's failure to implement part of its 2-year-old noise-abatement plan on Portland International Airport's westerly departure route has caused "excessive and unnecessary noise impact" on Hayden Island, the Columbia Slough and other areas.

Charles Richardson, a member of the homeowners association committee representing the Hayden Bay Marina Homeowners Association,

"It's very difficult to get every plane on a narrow path over the river."

said many airline pilots were not following flight paths designated in the Port's noise-abatement plan.

"These things are basically like shotgun pellets," Richardson said of the planes that fly

over his home. "They're all over the place."

Richardson said the noise problem was worse during periods of westerly winds, including summer months, because planes must take off into the wind.

However, John Newell, the Port's noise-abatement officer, said the noise-reduction plan was already in effect and had even been modified to improve conditions on Hayden Island. He said the most significant step in curbing noise problems came in January when the Port acquired a \$200,000 aircraft guidance system to direct pilots on a designated course within 25 miles of the airport.

Newell admitted, however, that up to 40 percent of commercial pilots did not observe designated routes over the Columbia River that were established to keep noise away from pop-

ulated areas. He said some pilots were not regular users of the airport and were unaware of the routes, while others were diverted by adverse weather conditions.

The Port of Portland is working on new programs to inform pilots of the airport noise-abatement program, and Newell recently met with chief pilots from airlines serving Portland to discuss the noise problem. He conceded the problem would not be easy to solve.

"It's not like driving a car," he said. "It's very difficult to get every plane on a narrow path over the river." He estimated that an average of 100 airplanes used the westerly runway each day.

Aircraft from the Oregon Air National Guard based at Portland International Airport also contribute to the noise problem, said Richardson. He said the military planes were taking

unnecessary shortcuts and should be required to remain in the river flight path.

Col. Wilfred Unverricht, base support manager at the Air National Guard Base in Portland, said he believed the base had been successful in implementing the Port's noise-abatement plan. "We've been able to respond to what the Port comes up with," he said.

Unverricht said even a slight drift by aircraft during high winds could affect noise levels over Hayden Island and other populated areas. He predicted continuing noise problems over part of the island because of its proximity to the airport's westerly runway and said planes sometimes appeared to be flying over land even when they were over the river.

"I can't see any great improvement, except that each generation of aircraft that comes out is quieter," he said.

P E T I T I O N

July, 1985

58

We, the undersigned, petition the Port of Portland to immediately implement and enforce that portion of Portland International Airport's noise Abatement Plan which reads: (aircraft) "If departing on Runway 28R or 28L (take-off to the west) maintain the initial runway heading for a distance of 8 miles or until reaching an altitude of 6,000 feet, whichever occurs first, before turning on course".

Failure of the Port to implement this critical specification of its Noise Abatement Plan (now two years old) results in westerly departing aircraft over-flying, with great frequency, the densely populated areas on Hayden Island, the Columbia Slough and areas of Portland southerly adjacent to the Slough. Such disregard for the plan's westerly departure route, causes excessive and unnecessary noise impact on these areas, as the requirement of the \$300,000 PIA Noise Abatement Plan anticipated.

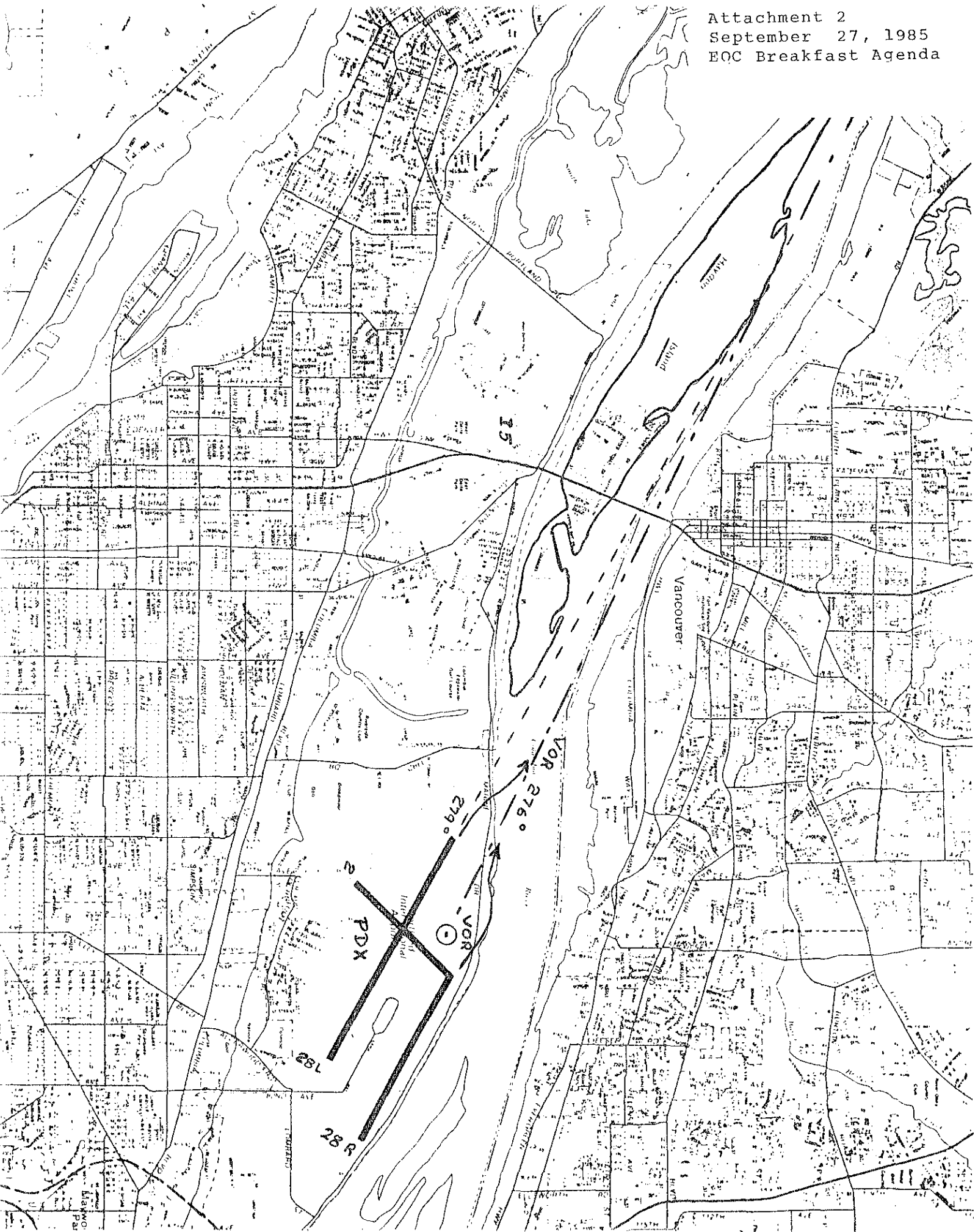
The publicized and promised relief via the activation of the VOR/DME at PIA in December 1984 has to date been meaningless. This brought the Port's investment in Plan and special equipment to \$500,000.00. The results for our areas? Only the Port prompted passage of a county ordinance with restrictive land use, zoning, building and insulation requirements, but NO AIRCRAFT NOISE ABATEMENT!

By the Port's own measurements (Noise Abatement Plan Annual Report '85), our area's noise impact exceeds human tolerance thresholds in some instances by over 50%. This impact is further enhanced by increasing occurrences of nighttime, sleeping hours, low flying aircraft. A City of Portland, Bureau of Planning report, April, 1985, cites a number of leading authorities who find excesses of such noise tolerance thresholds (65 DBA) as "causing potential adverse psychological or physiological effects".

Since implementation of the prescribed noise-abating westerly flight pattern is a matter of the Port directing and requiring aircraft conformance with this portion of the Plan; since there is no danger or discomfort to such aircraft, crews or passengers; since conformance has immediate and lasting benefit to people and land use in the areas presently adversely impacted, we ask the Port to immediately initiate implementation of the above requirement of it's own Noise Abatement Impact Plan of 1983.

Residents of Noise Impacted Area:

| <u>Name</u> | <u>Address</u> |
|------------------|-------------------------|
| Bette Webb | 12462 N. West Shore Dr. |
| John Webb | same |
| Ellen Thornstrom | 12271 N West Shore Dr |
| S. G. Thornstrom | - SAME - |
| Joy K. Miller | 12261 N. West Shore Dr. |
| Lorraine Puck | 12351 N West Shore Dr. |



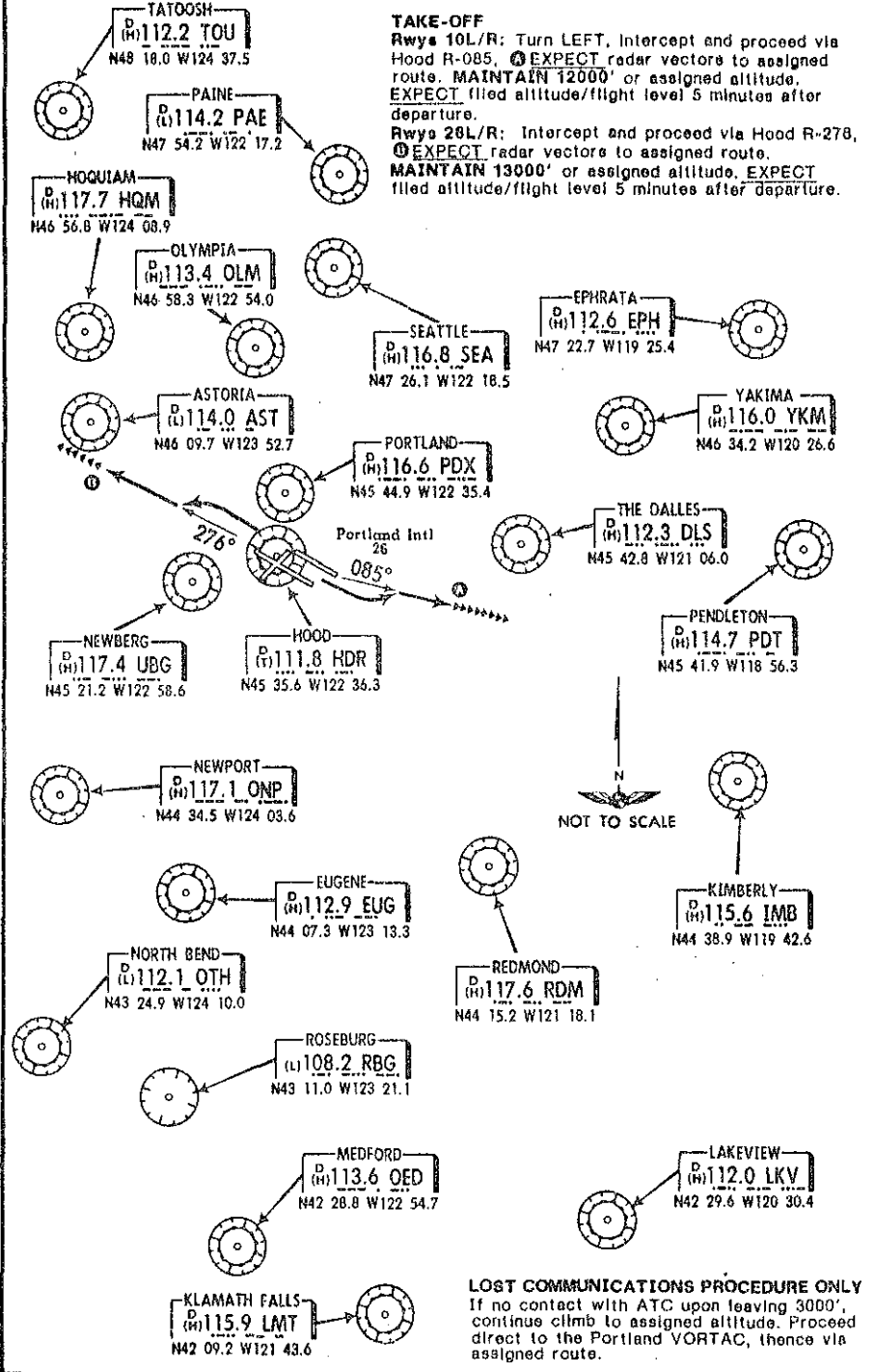
JEPPESEN

MAY 31-85 (0-3A) **EXPIRES**

PORTLAND, OREG
PORTLAND INTL

PORTLAND Departure(R) 100°-279°-118.1 280°-099°-119.8

RIVER ONE DEPARTURE (RIVR1.HDR)(VECTOR)





STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Memorandum

To: Environmental Quality Commission

Date: 9/25/85

From: Carol Splettstaszer *Carol*

Subject: Future Meeting Date

Your next scheduled meeting is November 22 in Eugene.

To try to avoid holding a meeting, or preparing staff reports over the December holidays, we proposed one of the following dates for the first meeting of 1986:

January 24

January 31

February 7

After you decide on one of the above dates, we'll propose a schedule for the rest of the year at your November meeting.

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| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>FEBRUARY</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td></td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | | | | 1 | 2 | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | | <p>AUGUST</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table> | S | M | T | W | T | F | S | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 25 | 26 | 27 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>MARCH</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | <p>SEPTEMBER</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr> <tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr> <tr><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 29 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>APRIL</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr> <tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr> <tr><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | <p>OCTOBER</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 29 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 14 | 15 | 16 | 17 | 18 | 19 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>FEBRUARY</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td></td></tr> </table> | S | M | T | W | T | F | S | | | | | | 1 | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | <p>AUGUST</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | |
| S | M | T | W | T | F | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | 24 | 25 | 26 | 27 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>MARCH</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr> <tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td></tr> </table> | S | M | T | W | T | F | S | | | | | | 1 | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | <p>SEPTEMBER</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table> | S | M | T | W | T | F | S | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
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| 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Memorandum

To: Environmental Quality Commission

Date: 9/20/85

From: Carol Spletstaszer *Carol*

Subject: Written Testimony - Item Q

Attached is additional written testimony on the water quality nutrient standards - item Q.

cc: Fred Hansen
Hal Sawyer
Michael Huston
Arnold Silver





Unified Sewerage Agency of Washington County

150 N. First Avenue
Hillsboro, Oregon 97124
503 648-8621

September 11, 1985

JAMES E PETERSEN CHAIRMAN
ENVIRONMENTAL QUALITY COMMISSION
PO BOX 1760
PORTLAND OR 97207

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
SEP 20 1985

OFFICE OF THE DIRECTOR

Dear Mr. Petersen:

It is my understanding that the Environmental Quality Commission may consider the establishment of nutrient limits for the waters of the state of Oregon at their meeting on September 27, 1985. Given that understanding, I wish to express my concerns regarding certain impacts that could result from the establishment of such standards.

The Unified Sewerage Agency of Washington County recently completed an update of its Master Sewerage Plan at a cost of approximately \$460,000. Eighteen months were spent in the development of this plan to address all aspects of sanitary sewerage requirements over the next twenty-year period. The plan was developed on the basis of the effluent standards and criteria currently in effect with input from DEQ, Lake Oswego and the public. Any change in those standards or the addition of standards could have a devastating effect on the effluent disposal portion of the plan and may well require a complete reevaluation of that element of the study.

Certain individuals have proposed the establishment of standards in the Tualatin River for nutrients that could very well result in a crippling effect on the economic development of Washington County through limited sewer connections. Furthermore such standards would also place a tremendous burden on the agricultural community of the County as well as cities and communities who have responsibility for storm water discharge.

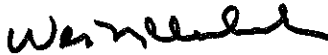
Finally if standards are established pursuant to the Environmental Protection Agency guidelines it may well be found that that standard is not achievable because background levels may be at or higher than the standard. In my view it is extremely important that your Commission be fully aware of the impacts prior to establishing any standards.

James E. Petersen, Chairman
Page 2
September 12, 1985

The Unified Sewerage Agency provides one of the highest degrees of treatment of any sewerage facility in the state of Oregon. The Agency recognizes the importance of maintaining acceptable water quality in the Tualatin River and will cooperate to that end.

In summary I strongly urge your commission to carefully consider this issue prior to taking any official action. I also request that this correspondence be placed in the hearing record.

Sincerely,



Wes Myllenbeck, Chairman
Board of County Commissioners

VT

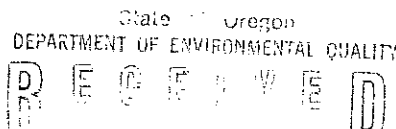


Northwest Environmental Defense Center

10015 S.W. Terwilliger Blvd., Portland, Oregon 97219
(503) 244-1181 ext.707

September 19, 1985

Environmental Quality Commission
522 SW Fifth Avenue
Portland, OR 97201



Sept 19 1985

Dear Commissioner:

OFFICE OF THE DIRECTOR

At the September 27 meeting of the EQC, **NEDC** intends to bring again before you our request for adoption of interim rules for certification of federally licensed projects under section 401 of the federal Clean Water Act. We will bring this request for the following three reasons:

First, DEQ has moved to dismiss our cross-petition for judicial review of the Benham Falls 401 decision in the Oregon Court of Appeals. DEQ claims that the question raised in our cross-petition is moot, that NEDC has no standing before the court, and that in any event there is no controversy between NEDC and EQC. Thus, we are being denied by DEQ the only forum which EQC had previously allowed us to resolve the issue we presented to you many long months ago.

Second, the enclosed letter from US EPA and federal regulations for water quality standards under section 303(c)(2) of the federal Clean Water Act make abundantly clear that our contention has been correct -- designated uses are a necessary component of Oregon's federally approved water quality standards and DEQ/EQC should include an evaluation of impact on those uses in the 401 certification of compliance with section 303.

Finally, recent action by the Energy Facility Siting Council and the Water Policy Review Board make clear that the fate of the proposed Salt Caves hydroelectric project will be decided by the state of Oregon solely on the basis of the 401 certification or denial by DEQ and EQC. To minimize the confusion of further litigation of this project and the procedural concerns NEDC and others have raised, there should be rules for the 401 process and these rules should incorporate the full definition and meaning of water quality standards under section 303(c)(2) of the federal Clean Water Act.

After a complete public notification and hearings process, DEQ presented proposed rules for 401 certification to EQC on January 25, 1985. NEDC at that time presented amendments to those proposed rules which would incorporate the necessary consideration of designated beneficial uses into the 401 evaluation and decision making process. Those January rules, with the NEDC amendments, remain adequate as a clearly understood process for deciding the Salt Caves project and for the Interim until final rules incorporating HB 2990 are promulgated. The Salt Caves proponents, the Salt Caves opponents, and the several agencies of the state that are involved with this project deserve to know and understand the rules of the game we are in good faith trying to play.

When NEDC and others requested a decision on this issue from EQC, we were denied and referred instead to the Court of Appeals. Now DEQ proposes that the court deny our request for consideration of the issue in that forum. We, therefore, return with this issue to you and respectfully again request from EQC a decision.

Very sincerely yours,

Northwest Environmental Defense Center



Jack Douglas Smith, Vice President

6980 SW 68th Avenue
Portland, OR 97223
(503) 245-2496

JDS:pc
Enclosures (2)



U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10

1200 SIXTH AVENUE /
SEATTLE, WASHINGTON 98101

AUG 22 1985

REPLY TO M/S 433
ATTN OF:

J. Douglas Smith, Ph.D.
Vice President
Northwest Environmental Defense Center
10015 S.W. Terwilliger Blvd.
Portland, Oregon 97219

Dear Dr. Smith:

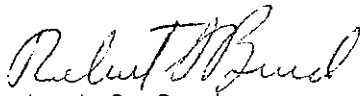
Enclosed is EPA's response to the seven issues raised in your July 11, 1985, letter. I regret the delay in answering your letter, but my staff has been severely overloaded by recent vacancies and our pending promulgation of Idaho water quality standards.

As you will note from my answers, the relationship between water quality standards and proposed hydroelectric facilities is not well defined. Jurisdictional controls vary so widely from case to case that it is difficult to generalize. Most court cases, however, have encouraged affected parties to reach reasonable compromises.

Given our difficulties in providing general guidance, I encourage you to raise specific issues on actual hydroelectric projects. While I cannot guarantee that you will like our answers, I can assure you that they will be more substantive.

Please call me (206-442-1237) or Tom Wilson, Chief of my Office of Water Planning (206-442-1354), if you wish to discuss our attached responses in greater detail.

Sincerely,


Robert S. Burd
Director, Water Division

Enclosure

cc: Harold Sawyer (ODEQ)

ISSUES
OREGON
WATER QUALITY STANDARDS

1. Does EPA require that the state's "water quality standards" consist of the designated uses of the waters plus the criteria necessary to protect those uses (i.e., STANDARD = USE + CRITERIA) as is appeared to be required by section 303(c) of PL 92-500, as amended, and 40 CFR Parts 35, 120, and 131?

Answer: Yes.

2. Do Oregon's Water Quality Standards (OAR 340-41-565, attached example) alone satisfy EPA's definition of "water quality standards" or does EPA consider Oregon's federally approved "water quality standards" to consist of Oregon's Beneficial Uses to be Protected (OAR 340-41-562, attached example) together with Oregon's Water Quality Standards not to be Exceeded (OAR 340-41-565, attached example)?

Answer: EPA defines water quality standards to consist of both designated uses and the criteria necessary to protect those uses. To use your example, we consider both OAR 340-41-562 and OAR 340-41-565 to be integral parts of the Oregon standards for the Deschutes Basin.

3. Has EPA approved Oregon's Water Quality Standards (OAR 340-41-565, attached example) as alone meeting the requirements of section 303 relative to water quality standards? If not, what specifically has EPA approved as meeting the requirements of section 303 relative to water quality standards for the state of Oregon?

Answer: Our past approvals of the State of Oregon's water quality standards have been based upon the presence of both designated uses and criteria to protect those uses in the documents submitted to EPA for review. We would not have approved the standards without such a listing of the beneficial uses to be protected. Please note, however, that we approved the State standards. The fact that the "beneficial uses" portion of the standards may have been established by a state agency other than the Department of Environmental Quality does not alter their critical role in the standards.

4. Does EPA consider that the Federal Clean Water Act requirements for the state's protection of water quality and water quality standards explicitly include the protection of designated uses? If so, is the state required to protect designated uses even if water quality criteria are not violated?

Answer: Yes, we consider the Clean Water Act requirements to include the protection of designated uses. Water quality criteria are simply levels of water quality considered sufficient to protect those designated uses. If the criteria for protecting a use are found to be inadequate, then those criteria should be modified.

5. By way of hypothetical example: If an existing stream segment is designated by the state and approved by EPA for recreational boating, swimming and fish propagation uses, and a proposed project would divert the entire stream flow outside of and around this stream segment to a point several miles downstream from this stream segment (without, however, appreciably altering dissolved oxygen, turbidity, etc. from the initial conditions at the point of diversion), would such a project be considered to violate the water quality standards for this stream segment? Why?

Answer: There is unfortunately no simple answer to this question. The constraints on such a project will vary greatly according to the nature of the project and the jurisdiction of the regulating agencies. Factors in addition to water quality standards must frequently be considered. As a practical matter, it is quite unusual for a project to divert the total stream flow. Compromises are usually negotiated in which in-stream uses are substantially protected by maintaining minimum stream flow.

6. As a second equally hypothetical example: If an existing stream segment is designated by the state and approved by EPA for white-water rafting and salmonid fish spawning uses, and a proposed 200-foot high dam would convert this stream segment to an impounded, stratified reservoir, would such a proposed dam be considered to violate the water quality standards for this stream segment? Why?

Answer: Again, the answer is not clear cut. In this case, the actual use of the waterbody has certainly changed but the designated use may or may not be impaired. To illustrate, in this example, the actual water use may shift from white-water rafting to swimming and water skiing without violating the designated use of "water contact recreation." Similarly, many salmonid species spawn in lakes so that the cold water fishery use could be maintained. (Please note that this answer is based upon the fact the question does not indicate that any water quality criteria would be violated.)

7. Regarding the meaning of the "total maximum daily load of pollutants" pursuant to section 303(d) of PL 92-500, as amended, does EPA consider that Oregon's "established pollutant load limits for all permitted discharges prior to passage of the Federal Clean Water Act in 1972" remain equivalent to the total maximum daily load of pollutants for each of the state's waters "established at a level necessary to implement the water quality standards for those waters"? If so, what is the purpose of the state's Water Quality Standards and for what purpose are they to be reviewed every three years?

Answer: Water quality standards establish the goals for a waterbody. A total maximum daily load (TMDL) is simply a determination of the amount of a pollutant that can be discharged to a waterbody without causing a violation of those water quality standards. Thus, once a TMDL is accurately established with an ample margin of safety, it should change significantly only if the criteria contained in the water quality standards are revised, the character of the waterbody changes, or the location of major dischargers changes.

The purpose of the triennial standards review is to ensure that both the criteria and designated uses reflect the latest scientific knowledge and actual water quality conditions.

Tuesday
November 8, 1983

Environmental Protection Agency

Part II

**Environmental
Protection Agency**

Water Quality Standards Regulation

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 35, 120, and 131

[WH-FRL 2466-3]

Water Quality Standards Regulation

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: This Regulation revises and consolidates in a new Part 131 the existing regulations now codified in 40 CFR Parts 120 and 35 that govern the development, review, revision and approval of water quality standards under Section 303 of the Clean Water Act (the Act). The Regulation was revised to reflect the experiences gained in the program by both EPA and the States. More explicit information is included in the Regulation on what EPA expects as part of State water quality standards reviews. The Regulation also clarifies that in promulgating Federal standards, EPA is subject to the same requirements as the States.

EFFECTIVE DATE: December 8, 1983.

FOR FURTHER INFORMATION CONTACT: David K. Sabock, Environmental Protection Agency, Chief, Criteria Branch (WH-585), 401 M Street SW., Washington, 20460 (202) 245-3042.

SUPPLEMENTARY INFORMATION: The Environmental Protection Agency (EPA) proposed changes to 40 CFR 120 and 35 on October 29, 1982 (47 FR 49234) and invited comments until February 10, 1983. Eleven public meetings were held nationwide on the proposed revisions. Nine hundred twenty people attended those meetings. EPA received 1405 letters and statements on the proposal prior to the closing of the public comment period. Comments received on the proposed Regulation may be inspected at the Environmental Protection Agency, Room 2818M, 401 M Street, SW., Washington, D.C. 20460 during the Agency's normal working hours of 8:00 a.m. to 4:30 p.m. For further information contact the individual listed above.

Information in this preamble is organized as follows:

- A. Major changes made in the Proposed Rule
 - B. Regulatory Impact Analyses, Regulatory Flexibility Act and Paperwork Reduction Act Requirements
 - C. List of Subjects in 40 CFR 131
- Appendix A—Response to Public Comments

A. Major Changes Made in the Proposed Regulation

The major additions and deletions made in the proposed Rule are

discussed in this section. We have also included a table summarizing all the changes.

Commitment to the Goals of the Clean Water Act

Several changes were made in the Regulation to reassure the public that EPA is committed to achieving the goals of the Act. EPA accepted the recommendations for including regulatory language explicitly affirming EPA's commitment to have standards move toward the Section 101(a)(2) goals of the Act and to use standards as a basis of restoring and maintaining the integrity of the Nation's waters.

A "Purpose" section (§ 131.2) has been added to the Regulation. The Purpose states that standards are to protect public health or welfare, enhance the quality of water and provide water quality for the protection and propagation of fish, shellfish and wildlife and recreation in and on the water, as well as for agricultural and industrial purposes and navigation. In addition, this section describes the dual role of water quality standards in establishing the water quality goals for a specific water body and in serving as the regulatory basis for the establishment of water quality based treatment controls and strategies beyond that level of treatment required by sections 301(b) and 306 of the Act.

The final regulation also clarifies that when a State changes the designated uses of its waters such that the uses of the water body do not include the uses specified in the Section 101(a)(2) goals of the Act (i.e., the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water), the State will have to demonstrate, through a use attainability analysis, that these uses are not attainable based on physical, chemical, biological or economic factors. This use attainability analysis is required for future changes that the State may make and for previous actions that the State took to designate uses for a water body which did not include the uses specified in Section 101(a)(2). Where water quality improvements result in new uses, States must revise their standards to reflect these new uses (See § 131.10(i)). This provision continues an existing EPA requirement although it was omitted from the proposed Regulation.

In addition, as discussed below, we have revised the proposed Antidegradation Policy to provide special protection for high quality waters and waters which constitute an outstanding National resource (See

§ 131.12) and we have eliminated the benefit-cost analysis.

We believe that these and other changes and clarifications in the Final Rule demonstrate EPA's commitment to the objectives, goals and spirit of the Clean Water Act.

Changes in Uses

The provisions included in § 131.10(h)(1)-(6) of the proposed Regulations, which dealt with circumstances under which uses could be changed, received substantial comment. Many commenters objected that the change in the phrase "States must demonstrate" to "States must determine" that certain conditions exist would mean that EPA would require less rigorous analyses for changing a use. They indicated that "determine" merely connotes a political process whereas "demonstrate" implies substantial proof supported by exacting analyses. EPA believes that structured scientific and technical analyses should be required to justify removing or modifying designated uses that are included in Section 101(a)(2) of the Act or to justify continuation of standards which do not include these uses. EPA agrees that the word "demonstrate" better reflects Agency policy and has made that change (see § 131.10(g)).

Some commenters asked whether modifications in water quality standards, such as defining a level of protection for aquatic life or setting seasonal standards, were changes in standards subject to the public participation requirements of § 131.20(b) of the regulation: Yes, any modification or change that a State makes in its standards is subject to those requirements.

Many commenters also objected to the inclusion of a benefit-cost assessment in justifying changes in uses. Historically, economic considerations have been a part of water quality standards decisions. Senate Report No. 10 on the Federal Water Pollution Control Amendments of 1965, 89th Congress, 1st Session, included the statement that "Economic, health, esthetic, and conservation values which contribute to the social and economic welfare of an area must be taken into account in determining the most appropriate use or uses of a stream". Section 303(c)(2) of the Act provides that "... standards shall be established taking into consideration their use and value for . . ." various water uses. Under the 1975 regulation governing the establishment of standards in Part § 35.1550(c)(1), States were to "... take into consideration environmental

technological, social, economic, and institutional factors" in determining the attainability of standards for any particular water segment. In addition, there is and has been an economic consideration in the antidegradation policy. The Agency recognizes that there are inherent difficulties in a balancing of the benefits of achieving the Section 101(a)(2) goals of the Act with the costs. As a result, the Agency was persuaded that the provision in the existing rule allowing changes in designated uses where there would be substantial and widespread economic impact better reflected the process required by the Act. For these reasons, the wording of the existing regulation has been retained.

Several commenters objected to proposed § 131.10(h)(5) which allowed States to remove or to modify designated uses which are not attainable based on physical factors. After considering the comments, the Agency decided to limit the reference to physical factors to aquatic life protection uses and to clarify the existing policy.

Physical factors may be important in evaluating whether uses are attainable. However, physical limitations of the stream may not necessarily be an overriding factor. Common sense and good judgment play an important role in setting appropriate uses and criteria. In setting criteria and uses, States must assure the attainment of downstream standards. The downstream uses may not be affected by the same physical limitations as the upstream uses. There are instances where non-water quality related factors preclude the attainment of uses regardless of improvements in water quality. This is particularly true for fish and wildlife protection uses where the lack of a proper substrate may preclude certain forms of aquatic life from using the stream for propagation, or the lack of cover, depth, flow, pools, riffles or impacts from channelization, dams, diversions may preclude particular forms of aquatic life from the stream altogether. EPA recognizes that while physical factors also affect the recreational uses appropriately designated for a water body, States need to give consideration to the incidental uses which may be made of the water body. Even though it may not make sense to encourage use of a stream for swimming because of the flow, depth or the velocity of the water, the States and EPA must recognize that swimming and/or wading may occur anyway. In order to protect public health, States must set criteria to reflect recreational uses if it appears that

recreation will in fact occur in the stream.

In keeping with the purposes of the Act, the wording of § 131.10(h)(4) of the proposed Rule (now § 131.10(g)(4)) was modified so that changes in uses could only occur if dams, diversions or other types of hydrologic modifications *preclude* rather than just interfere with the attainment of the designated uses. It should also be pointed out that if physical limitations of the water body were used as the basis of not including uses for a water body that are specified in Section 101(a)(2) of the Act, those physical factors must be reviewed every three years.

While many commenters objected to the number of reasons the States could use in justifying changes in uses, the Agency decided to keep the six factors, with the changes described above, because they better explain when changes may be made. The terse wording of the existing Rule does not adequately explain when changes can be made.

A number of comments related to use attainability analyses. In demonstrating that a use is not attainable, States will be required to prepare and submit to EPA a use attainability analysis. A use attainability analysis is a multi-step scientific assessment of the physical, chemical, biological and economic factors affecting the attainment of a use. It includes a water body survey and assessment, a wasteload allocation, and an economic analysis, if appropriate.

A water body survey and assessment examines the physical, chemical and biological characteristics of the water body to: identify and define the existing uses of that water body; determine whether the designated uses in the State water quality standards are impaired, and the reasons for the impairment; and assist States in projecting the potential uses that the water body could support in the absence of pollution. A wasteload allocation utilizes mathematical models to predict the amount of reduction necessary in pollutant loadings to achieve the designated use. Economic analyses are appropriate in determining whether the more stringent requirements would cause substantial and widespread economic and social impact. These analyses should address the incremental effects of water quality standards beyond technology-based or other State requirements. The Agency's guidance suggests that States consider effects due to compliance by private and municipal dischargers. If the requirements are not demonstrated to have a substantial and widespread impact on the affected community, the

standard must be maintained or made compatible with the goals of the Act.

There was considerable comment on whether the use attainability analyses should be required, and if so when. In keeping with section 510 of the Act, EPA is *not* requiring States to conduct and submit a use attainability analysis if adding a use specified in Section 101(a)(2) of the Act or a use requiring more stringent criteria. In the final rule, EPA is requiring that States conduct and submit to EPA a use attainability analysis if the State (a) is designating uses for the water body such that the water body will not have all uses which are included in Section 101(a)(2) of the Act, (b) maintaining uses for the water body which do not include all of the uses in Section 101(a)(2) of the Act, (c) removing a use included in Section 101(a)(2) of the Act or (d) modifying a use included in Section 101(a)(2) of the Act to require less stringent criteria. A State need only conduct a use attainability once for a given water body and set of uses. During subsequent triennial review, States will be required to review the basis of not including uses for the water body that are specified in Section 101(a)(2) of the Act to show that circumstances have not changed and that protection and propagation of fish, shellfish and wildlife and/or recreation in and on the water remain unattainable. If such uses have become attainable, the standard must be revised accordingly (See § 131.20(a)). However, States may wish to conduct a use attainability analysis, even where not required, if they believe that there will be questions as to whether the protection and propagation of fish, shellfish and wildlife and recreation in and on the water is, in fact, attainable.

The guidance on conducting the water body survey and assessment is included in the *Water Quality Standards Handbook*. The earlier draft of the Handbook has been revised and expanded. Test cases illustrating the water body survey and assessment guidance have been completed and are included in the Handbook. In addition, the Agency has published a *Technical Support Manual: Water Body Surveys and Assessments for Conducting a Use Attainability Analyses*. These publications may be obtained by writing or calling David K. Sabock at the address and phone number listed under **FOR FURTHER INFORMATION CONTACT**.

By publishing guidance on conducting use attainability analyses, EPA is not requiring that specific approaches, methods or procedures be used. Rather, States are encouraged to consult with EPA early in the process to agree on

appropriate methods and procedures for conducting any of the analyses before the analyses are initiated and carried out. States will have the flexibility of tailoring the analyses to the specific water body being examined as long as the methods used are scientifically and technically supportable.

EPA will review the adequacy of the data, the suitability and appropriateness of the analyses and how the analyses were applied. In cases where the analyses are inadequate, EPA will identify how the analyses need to be improved and will suggest the type of evaluation or data needed. When the State has initially consulted EPA on the analyses to be used, EPA will be able to expedite its review of the State's analyses of any new or revised State standard.

Criteria

EPA has revised the section on criteria (§ 131.12 in the proposal; renumbered to § 131.11 in the final rule) in several respects. First, EPA has accepted the recommendation that the phrase "criteria are compatible with" protecting a designated use is confusing and unnecessary and should be removed. The provision now reads: "States must adopt those water quality criteria that protect the designated use."

In addition, EPA consolidated parts of the provisions and stated more concisely the basis of EPA's review of the appropriateness of State criteria. Section 131.11(a) now reads: "Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use," eliminating the need for proposed § 131.12(c) (1)-(3).

A number of comments concerned criteria for toxic pollutants. Some questioned EPA's commitment to controlling toxic pollutants based on the fact that EPA was not "requiring" States to adopt specific *numerical* toxic pollutant criteria. EPA has made a number of changes to more clearly reflect our commitment. For example, EPA has tried to restructure § 131.11(a)(2) on toxic pollutants to assist States in providing the most effective control of toxic pollutants as possible. All States have a requirement in their standards that their waters be free from toxic pollutants in toxic amounts. States are to review their water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely impacting water quality or the designated uses or where the level of a

toxic pollutant in the water is at a level to warrant concern. States are expected to conduct such reviews beginning with an in-depth analysis of water bodies with known toxic pollutant problems. States are to adopt numerical or narrative criteria for those toxic pollutants of concern. Numerical criteria are appropriate where a few specific pollutants have been identified as the concern, or where human health rather than aquatic life is the controlling factor. To implement such criteria, models are used to translate the specific criterion on a chemical-by-chemical basis into a wasteload allocation to obtain a specific permit limit.

However, where the effluent or ambient conditions are complex, due to multiple dischargers or multiple pollutants, toxic pollutant limits may be more appropriately set through narrative criteria (such as the "free from statements"). Where narrative criteria are adopted, the State should indicate as part of its water quality standards submission, how it intends to regulate the discharge of the toxic pollutants. Biological monitoring is one mechanism to test compliance with "free from" narrative criteria. Biological monitoring may include periodic sampling of the ecosystem, trend monitoring and/or periodic bioassays using the effluent. Acute and chronic toxicity testing methods have been developed that enable a permit writer to ensure that the discharge will not be toxic to aquatic life. When using biological monitoring to test compliance with narrative criteria, reference should be made to the maximum acceptable levels of toxicity and the basic means by which these levels are to be measured or otherwise determined.

Both the pollutant-by-pollutant and biological methods are being refined and need to be applied in a conservative fashion. They hold great promise and are relatively inexpensive. In many cases a combination of biological monitoring and a chemical-by-chemical approach will provide the best toxic pollutant control.

Finally, a number of comments dealt with site-specific criteria. It was apparent from the comments that some commenters had the mistaken impression that EPA was advocating that States use site-specific criteria development procedures for setting all criteria as opposed to using the national Section 304(a) criteria. Site-specific criteria development procedures are not needed in all situations. Many of the procedures are expensive. Site-specific criteria development appears most appropriate on water quality limited water bodies where:

- Background water quality parameters, such as pH, hardness, temperature, suspended solids, etc., appear to differ significantly from the laboratory water used in developing the Section 304(a) criteria; or

- The types of local aquatic organisms in the region differ significantly from those actually tested in developing the Section 304(a) criteria.

The protocols for establishing site-specific criteria, as well as the test cases illustrating use of the protocols, are included in the *Water Quality Standards Handbook*. EPA also has a limited number of copies of *Recalculation of State Toxic Criteria* using the family recalculation procedure. These publications may be obtained by writing or calling David K. Sabock at the address and phone number listed under **FOR FURTHER INFORMATION CONTACT** at the beginning of this Rule.

Antidegradation Policy

The preamble to the proposed rule discussed three options for changing the existing antidegradation policy. Option 1, the proposed option, provided simply that uses attained would be maintained. Option 2 stated that not only would uses attained be maintained but that high quality waters, i.e. waters with quality better than that needed to protect fish and wildlife, would be maintained (that is, the existing antidegradation policy minus the "outstanding natural resource waters" provision). Option 3 would have allowed changes in an existing use if maintaining that use would effectively prevent any future growth in the community or if the benefits of maintaining the use do not bear a reasonable relationship to the costs.

Although there was support for Option 2, there was greater support for retaining the full existing policy, including the provision on outstanding National resource waters. Therefore, EPA has retained the existing antidegradation policy (Section 131.12) because it more accurately reflects the degree of water quality protection desired by the public, and is consistent with the goals and purposes of the Act.

In retaining the policy EPA made four changes. First, the provisions on maintaining and protecting existing instream uses and high quality waters were retained, but the sentences stating that no further water quality degradation which would interfere with or become injurious to existing instream uses is allowed were deleted. The deletions were made because the terms "interfere" and "injurious" were subject to misinterpretation as precluding any activity which might even momentarily

add pollutants to the water. Moreover, we believe the deleted sentence was intended merely as a restatement of the basic policy. Since the rewritten provision, with the addition of a phrase on water quality described in the next sentence, stands alone as expressing the basic thrust and intent of the antidegradation policy, we deleted the confusing phrases. Second, in § 131.12(a)(1) a phrase was added requiring that the level of water quality necessary to protect an existing use be maintained and protected. The previous policy required only that an existing use be maintained. In § 131.12(a)(2) a phrase was added that "In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully". This means that the full use must continue to exist even if some change in water quality may be permitted. Third, in the first sentence of § 131.12(a)(2) the wording was changed from ". . . significant economic or social development . . ." to ". . . important economic or social development . . .". In the context of the antidegradation policy the word "important" strengthens the intent of protecting higher quality waters. Although common usage of the words may imply otherwise, the correct definitions of the two terms indicate that the greater degree of environmental protection is afforded by the word "important."

Fourth, § 131.12(a)(3) dealing with the designation of outstanding National resource waters (ONRW) was changed to provide a limited exception to the absolute "no degradation" requirement. EPA was concerned that waters which properly could have been designated as ONRW were not being so designated because of the flat no degradation provision, and therefore were not being given special protection. The no degradation provision was sometimes interpreted as prohibiting *any* activity (including temporary or short-term) from being conducted. States may allow some limited activities which result in temporary and short-term changes in water quality. Such activities are considered to be consistent with the intent and purpose of an ONRW. Therefore, EPA has rewritten the provision to read ". . . that water quality shall be maintained and protected," and removed the phrase "No degradation shall be allowed. . . ."

In its entirety, the antidegradation policy represents a three-tiered approach to maintaining and protecting various levels of water quality and uses. At its base (Section 131.12(a)(1)), all existing uses and the level of water

quality necessary to protect those uses must be maintained and protected. This provision establishes the absolute floor of water quality in all waters of the United States. The second level (Section 131.12(a)(2)) provides protection of actual water quality in areas where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water ("fishable/swimmable"). There are provisions contained in this subsection to allow some limited water quality degradation after extensive public involvement, as long as the water quality remains adequate to be "fishable/swimmable." Finally § 131.23(a)(3) provides special protection of waters for which the ordinary use classifications and water quality criteria do not suffice, denoted "outstanding National resource water." Ordinarily most people view this subsection as protecting and maintaining the highest quality waters of the United States; that is clearly the thrust of the provision. It does, however, also offer special protection for waters of "ecological significance." These are water bodies which are important, unique, or sensitive ecologically, but whose water quality as measured by the traditional parameters (dissolved oxygen, pH, etc.) may not be particularly high or whose character cannot be adequately described by these parameters.

General Policies

Except for a general statement that States may adopt policies affecting the application and implementation of standards and that such policies are subject to EPA review and approval, all other elements of proposed Section 131.13 have been deleted, including the detailed statements on mixing zones, low flow exemptions, and variances.

Specific subsections on mixing zones, low flow exemptions and variances were deleted because, as the public comments suggested, they were not regulatory in nature and therefore were more appropriately addressed in guidance. More detailed information on these subjects is included as guidance in the *Water Quality Standards Handbook*.

Many objected to the temporary variance policy because it appeared to be outside the normal water quality standards setting process and because the test for granting a variance was different from that applied to changing a designated use. While a variance does not change a standard *per se*, there was concern that such a policy would stimulate "pollution shopping" or would unfairly penalize firms that had

managed their operations to maintain a profit while installing pollution control equipment, to the advantage of those that had not.

EPA has approved State-adopted variances in the past and will continue to do so if: each individual variance is included as part of the water quality standard, subject to the same public review as other changes in water quality standards and if each individual variance is granted based on a demonstration that meeting the standard would cause substantial and widespread economic and social impact, the same test as if the State were changing a use based on substantial and widespread social and economic impact. EPA will review for approval individual variances, not just an overall State variance policy. A State may wish to include a variance as part of a water quality standard rather than change the standard because the State believes that the standard ultimately can be attained. By maintaining the standard rather than changing it, the State will assure further progress is made in improving water quality and attaining the standard. With the variance provision, NPDES permits may be written such that reasonable progress is made toward attaining the standards without violating Section 402(a)(1) of the Act which states that NPDES permits must meet the applicable water quality standards.

State Review

Section 131.20(a) was changed from the proposal in several respects. These changes were made in response to the public's concern that the language in the proposed regulation either removed or diluted the Act's requirement to review all standards every three years and that EPA's proposed regulatory language did not provide adequate recognition of the goals of the Act. First, the language on the 3-year review requirement was changed to read exactly as the Act. It now reads that "the State shall, from time to time, but at least once every three years, hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards."

Second, a mandatory review and upgrading requirement has been added. On segments with water quality standards that do not include all of the uses specified in Section 101(a)(2) of the Act, States must reexamine the basis of that decision every three years to determine whether any new information, technology, etc. has become available that would warrant adding the protection and propagation

of fish, shellfish and wildlife and/or recreation in and on the water.

Third, EPA has retained the concept of allowing a State to select specific water bodies for an in-depth review of the appropriateness of the water quality standard. This was done in order to make maximum use of limited resources and ensure that the most critical environmental problems are addressed. This review could include an examination of the use, the existing water quality criteria, and the need for revised or additional criteria on segments where the standards are not projected to be achieved with

implementation of the technology-based requirements of the Act. Factors which may cause a State to select a water body for review include areas where advanced treatment and combined sewer overflow funding decisions are pending, major water quality-based permits are scheduled for issuance or renewal, toxic pollutants have been identified or are suspected of precluding the attainment of water quality standards. This list is not meant to be all inclusive, and a State may have other reasons for examining a particular standard. The procedures established for identifying and reviewing such water

bodies should be incorporated into the State's Continuing Planning Process.

There were numerous comments either advocating mechanisms to ensure the right of dischargers to petition the State to review particular standards or advocating the burden of proof be on the discharger to justify any changes in standards. EPA does not believe that it should dictate particular administrative mechanisms that States use to initiate the review of standards on particular water bodies. However, we do believe that whatever mechanism the State uses, it should be made known to the public and included in the State's Continuing Planning Process document.

SUMMARY OF THE CHANGES MADE IN THE PROPOSED REGULATION

| Section No. in the proposed regulation | Section No. in the final regulation | Title | Summary of changes |
|--|-------------------------------------|---|--|
| 131.1 | 131.1 | Scope..... | No change made. |
| | 131.2 | Purpose..... | New section <i>Purpose</i> . Defines the dual purpose of water quality standards. Standards establish the water quality goals for a specific water body and serve as a regulatory basis for the establishment of water quality based controls beyond the technology required under the Act consistent with Section 101(a)(2) and 303(c) of the Act. |
| 131.2 | 131.3 | Definitions..... | Minor changes made in the definitions of "criteria", "Section 304(a) criteria" and "water quality standards". Definition of "uses" and "attain" were removed. A definition of a "Use Attainability Analysis" was added. |
| 131.3 | 131.4 | State Authority..... | Word "reviewing" added to sentence "States are responsible for reviewing, establishing and revising water quality standards." |
| 131.4 | 131.5 | EPA Authority..... | The wording of this section has been slightly revised to show that EPA makes a determination of "whether" State standards meet the five criteria. Subsection (c) revised to read "whether the State has followed its legal procedures for revising or adopting standards." Subsection (d) modified to read "whether the State standards are based on appropriate technical and scientific data and analyses" rather than whether the decision making process is based on appropriate technical and scientific data and analyses. Subsection (e) added to include minimum requirements for State submission. |
| 131.5 | 131.6 | Minimum Requirements for Water Quality Stds. Submissions. | Under (d) the statement now reads: "An Antidegradation policy consistent with § 131.12." Under (e) after Attorney General the phrase "or other appropriate legal authority within the State" was added. |
| 131.10 | 131.10 | Designation of Uses. | Statement added to (a) prohibiting designating a stream for waste transport or assimilation. Added a new (b) that in designating uses of a water body and the appropriate criteria, States are to ensure the attainment and maintenance of downstream standards. Removed (c). The Antidegradation Policy is now described in § 131.12. Section (b) renumbered (c), removed (e), Section (f) renumbered (e), and Section (g) renumbered (f). Paragraph (h) now (g) has been changed. It now requires that a State must <i>demonstrate</i> that the designated use, which is not an existing use, is not attainable. Items 4 and 6 were also reworded. Item 4 now reads that changes in uses can be justified if dams, diversions or other types of hydrologic modifications <i>preclude</i> the attainment of a use rather than just interfere with the attainment of a use. Item 5 limits the consideration of physical factors to aquatic life protection uses. Item 6 has been totally changed. It now reads that changes in uses can be made if controls more stringent than those required by Section 301(b) and 306 of the Act would result in substantial and widespread economic and social impact. In paragraph (i) now (h), (2) and (3) are consolidated. Subparagraph (4) has been eliminated because of the revision to the Antidegradation Policy (see § 131.12). Subparagraph (5) now appears in § 131.6(b). New paragraph (i) requires States to revise their standards to reflect improvements in water quality. In paragraph (j), EPA has defined that States must conduct a Use Attainability Analysis if designating uses not specified in Section 101(a)(2) of the Act, when removing a use specified in Section 101(a)(2) or if modifying uses specified in Section 101(a)(2) by requiring less stringent criteria. Paragraph (k) clarifies that States are not required to conduct a Use Attainability Analysis when designating uses specified in Section 101(a)(2) of the Act. |
| 131.11 | | Analyses for Changing or Modifying Uses. | Eliminated. |
| 131.12 | 131.11 | Criteria | Eliminated. Under (a)(1) the phrase "are compatible with" has been removed and following the first sentence the following has been added: "Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For water with multiple use designations, the criteria shall support the most sensitive use." Subparagraph (a)(2) has been revised to read that States <i>must</i> review water quality data and information and where toxic pollutants may be adversely affecting the attainment of the water quality or the attainment of the designated use or where the levels of toxic pollutants are at a level to warrant concern <i>must</i> adopt criteria for the toxic pollutants. Where States adopt narrative criteria for toxic pollutants, the State <i>must</i> adopt a policy identifying the method by which the State intends to regulate point source discharges based on such narrative criteria. Subparts (b)(2) and (3) were combined. |
| | 131.12 | Antidegradation Policy. | Paragraph (c) has been removed because the concepts are now included in paragraph (a). The Antidegradation Policy found in the former 40 CFR 35.1550(e) has been adopted into the final Regulation with several modifications. The phrase "interfere with or become injurious to" was removed, a phrase was added in (a)(1), (2), and (3) to maintain and protect instream water quality to protect existing uses, in (a)(2) "important" replaces "significant" in the phrase on economic and social development, and "no degradation" was deleted from (a)(3). |
| 131.13 | 131.13 | General Policies..... | Paragraph (a) revised to clarify that General Policies if adopted are to be included in a State's water quality standards and are subject to EPA review and approval. Subsections (b)(c)(d) removed. |
| 131.20 | 131.20 | State Review and Revision of Water Quality Standards. | Paragraph (a) State Review has been rewritten to track the wording in the Act on the three year review of water quality standards. States are required to review every three years State standards on segments that do not include uses specified in Section 101(a)(2) of the Act to determine whether these standards are still appropriate. Finally a statement has been added that procedures States use to identify water bodies for review should be incorporated into their Continuing Planning Process document. Under paragraph (c) after 30 days we added a phrase, "of the final State action to adopt and certify" to clarify when the 30 day time period starts. |

SUMMARY OF THE CHANGES MADE IN THE PROPOSED REGULATION—Continued

| Section No. in the proposed regulation | Section No. in the final regulation | Title | Summary of changes |
|--|-------------------------------------|---|--|
| 131.21 | 131.21 | EPA Review and Approval of Water Quality Standards. | No Change. |
| 131.22 | 131.22 | EPA Promulgation of Water Quality Standards. | Paragraphs (a) and (b) were clarified to indicate Administrator may promulgate as well as just propose standards. Under paragraph (c), a requirement was added that EPA in promulgating water quality standards is also subject to the public participation requirements of this Regulation. |

B. Regulatory Impact Analysis and Regulatory Flexibility Analysis and Paperwork Reduction Act Requirements

Under Executive Order 12291, EPA must judge whether a Regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. It is difficult for EPA to assess the likely net cost of this Regulation because of the offsetting character of its basic provisions. The Regulation does establish new obligations on the States for control of toxic pollutants. However, the Regulation also increase the ability of the States to determine the attainability of stream uses, to set site-specific criteria sufficient to protect those uses, and to focus limited State and Federal resources on reviewing standards for priority water quality limited segments. These changes are designed to enable States to better use water quality standards as a pragmatic tool in improving water quality where necessary to protect water uses. For these reasons the Agency judges this not to be a major Regulation under Executive Order 12291.

This notice was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comments from OMB to EPA and any EPA response to those comments are available for public inspection through contracting the person listed at the beginning of this notice.

Under the Regulatory Flexibility Act, 5 U.S.C. Section 601 *et seq.*, EPA must prepare a Regulatory Flexibility Analysis for all proposed regulations that have a significant impact on a substantial number of small entities. EPA has determined that, for reasons discussed above, this Rule does not have significant adverse impact on small entities.

The information collection provisions in this rule have been approved by OMB under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, and have been assigned control number 2040-0049.

List of Subjects

40 CFR Part 35

Water pollution control.

40 CFR Part 120

Water pollution control.

40 CFR Part 131

Water pollution control, Intergovernmental relations, Administrative practices and procedures, Reporting and record keeping.

Dated: November 2, 1983.

William D. Ruckelshaus,
Administrator.

PART 35—STATE AND LOCAL ASSISTANCE

§ 35.1550 [Removed]

1. Section 35.1550 is removed.

PART 120—WATER QUALITY STANDARDS

§§ 120.1-120.3 [Removed]

2. Sections 120.1 through 120.3 are removed.

§§ 120.27 and 120.43 [Removed]

3. Sections 120.27 and 120.43 are removed.

4. Part 131 is added as set forth below:

4A. Subparts A, B, and C are added as follows:

PART 131—WATER QUALITY STANDARDS

Subpart A—General Provisions

Sec.

131.1 Scope.

131.2 Purpose.

131.3 Definitions.

131.4 State authority.

131.5 EPA authority.

131.6 Minimum requirements for water quality standards submission.

Subpart B—Establishment of Water Quality Standards

131.10 Designation of uses.

131.11 Criteria.

131.12 Antidegradation policy.

131.13 General policies.

Subpart C—Procedures for Review and Revision of Water Quality Standards

Sec.

131.20 State Review and Revision of Water Quality Standards.

131.21 EPA Review and Approval of Water Quality Standards.

131.22 EPA Promulgation of Water Quality Standards.

Authority: Clean Water Act, P.L. 92-500, as amended; 33 U.S.C. 1251 *et seq.*

Subpart A—General Provisions

§ 131.1 Scope.

This part describes the requirements and procedures for developing, reviewing, revising and approving water quality standards by the States as authorized by Section 303(c) of the Clean Water Act. The reporting or recordkeeping (information) provisions in this rule were approved by the Office of Management and Budget under 3504(b) of the Paperwork Reduction Act of 1980, U.S.C. 3501 *et seq.* (approval number 2040-0049).

§ 131.2 Purpose.

A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States adopt water quality standards to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (the Act). "Serve the purposes of the Act" (as defined in Sections 101(a)(2) and 303(c) of the Act) means that water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value of public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water and agricultural, industrial, and other purposes including navigation.

Such standards serve the dual purposes of establishing the water

quality goals for a specific water body and serve as the regulatory basis for the establishment of water-quality-based treatment controls and strategies beyond the technology-based levels of treatment required by sections 301(b) and 306 of the Act.

§ 131.3 Definitions.

(a) *The Act* means the Clean Water Act (Public Law 92-500, as amended, (33 U.S.C. 1251 *et seq.*)).

(b) *Criteria* are elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use.

(c) *Section 304(a) criteria* are developed by EPA under authority of Section 304(a) of the Act based on the latest scientific information on the relationship that the effect of a constituent concentration has on particular aquatic species and/or human health. This information is issued periodically to the States as guidance for use in developing criteria.

(d) *Toxic pollutants* are those pollutants listed by the Administrator under Section 307(a) of the Act.

(e) *Existing uses* are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.

(f) *Designated uses* are those uses specified in water quality standards for each water body or segment whether or not they are being attained.

(g) *Use Attainability Analysis* is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in § 131.10(g).

(h) *Water quality limited segment* means any segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by Sections 301(b) and 306 of the Act.

(i) *Water quality standards* are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act.

(j) *States* include: the 50 States, the District of Columbia, Guam, the

Commonwealth of Puerto Rico, Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands, and the Commonwealth of the Northern Mariana Islands.

§ 131.4 State authority.

States are responsible for reviewing, establishing and revising water quality standards. Under Section 510 of the Act, States may develop water quality standards more stringent than required by this regulation.

§ 131.5 EPA authority.

Under Section 303(c) of the Act, EPA is to review and to approve or disapprove State-adopted water quality standards. The review involves a determination of: (a) Whether the State has adopted water uses which are consistent with the requirements of the Clean Water Act; (b) whether the state has adopted criteria that protect the designated water uses; (c) whether the State has followed its legal procedures for revising or adopting standards; (d) whether the State standards which do not include the uses specified in Section 101(a)(2) of the Act are based upon appropriate technical and scientific data and analyses, and (e) whether the State submission meets the requirements included in Section 131.6 of this part. If EPA determines that State water quality standards are consistent with the factors listed in (a)—(e) of this subsection, EPA approves the standards. EPA must disapprove the State water quality standards and promulgate Federal standards under Section 303(c)(4) of the Act, if State adopted standards are not consistent with the factors listed in (a)—(e) of this subsection. EPA may also promulgate a new or revised standard where necessary to meet the requirements of the Act.

§ 131.6 Minimum requirements for water quality standards submission.

The following elements must be included in each State's water quality standards submitted to EPA for review:

(a) Use designations consistent with the provisions of Sections 101(a)(2) and 303(c)(2) of the Act.

(b) Methods used and analyses conducted to support water quality standards revisions.

(c) Water quality criteria sufficient to protect the designated uses.

(d) An antidegradation policy consistent with § 131.12.

(e) Certification by the State Attorney General or other appropriate legal authority within the State that the water quality standards were duly adopted pursuant to State law.

(f) General information which will aid the Agency in determining the adequacy of the scientific basis of the standards which do not include the uses specified in Section 101(a)(2) of the Act as well as information on general policies applicable to State standards which may affect their application and implementation.

Subpart B—Establishment of Water Quality Standards

§ 131.10 Designation of uses.

(a) Each State must specify appropriate water uses to be achieved and protected. The classification of the waters of the State must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States.

(b) In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.

(c) States may adopt sub-categories of a use and set the appropriate criteria to reflect varying needs of such sub-categories of uses, for instance, to differentiate between cold water and warm water fisheries.

(d) At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under Sections 301(b) and 306 of the Act and cost-effective and reasonable best management practices for nonpoint source control.

(e) Prior to adding or removing any use, or establishing sub-categories of a use, the State shall provide notice and an opportunity for a public hearing under § 131.20(b) of this regulation.

(f) States may adopt seasonal uses as an alternative to reclassifying a water body or segment thereof to uses requiring less stringent water quality criteria. If seasonal uses are adopted, water quality criteria should be adjusted to reflect the seasonal uses, however, such criteria shall not preclude the attainment and maintenance of a more protective use in another season.

(g) States may remove a designated use which is *not* an existing use, as defined in § 131.3, or establish sub-categories of a use if the State can

demonstrate that attaining the designated use is not feasible because:

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by Sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

(h) States may not remove designated uses if:

(1) They are existing uses, as defined in Section 131.3, unless a use requiring more stringent criteria is added; or

(2) Such uses will be attained by implementing effluent limits required under Sections 301(b) and 306 of the Act and by implementing cost-effective and reasonable best management practices for nonpoint source control.

(i) Where existing water quality standards specify designated uses less than those which are presently being attained, the State shall revise its standards to reflect the uses actually being attained.

(j) A State must conduct a use attainability analysis as described in § 131.3(g) whenever:

(1) The State designates or has designated uses that do not include the uses specified in Section 101(a)(2) of the Act, or

(2) The State wishes to remove a designated use that is specified in Section 101(a)(2) of the Act or to adopt subcategories of uses specified in Section 101(a)(2) of the Act which require less stringent criteria.

(k) A State is not required to conduct a use attainability analysis under this

Regulation whenever designating uses which include those specified in Section 101(a)(2) of the Act.

§ 131.11 Criteria.

(a) Inclusion of pollutants:

(1) States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

(2) Toxic Pollutants—States must review water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of the designated water use or where the levels of toxic pollutants are at a level to warrant concern and must adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use. Where a State adopts narrative criteria for toxic pollutants to protect designated uses, the State must provide information identifying the method by which the State intends to regulate point source discharges of toxic pollutants on water quality limited segments based on such narrative criteria. Such information may be included as part of the standards or may be included in documents generated by the State in response to the Water Quality Planning and Management Regulations (40 CFR Part 35).

(b) Form of criteria: In establishing criteria, States should:

(1) Establish numerical values based on:

(i) 304(a) Guidance; or

(ii) 304(a) Guidance modified to reflect site-specific conditions; or

(iii) other scientifically defensible methods;

(2) establish narrative criteria or criteria based upon biomonitoring methods where numerical criteria cannot be established or to supplement numerical criteria.

§ 131.12 Antidegradation policy.

(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

§ 131.13 General policies.

States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances. Such policies are subject to EPA review and approval.

Subpart C—Procedures for Review and Revision of Water Quality Standards

§ 131.20 State review and revision of water quality standards.

(a) State Review: The State shall from time to time, but at least once every three years, hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Any water body segment with water quality standards that do not include the uses specified in Section 101(a)(2) of the Act shall be re-examined every three years to determine if any new information has become available. If such new information indicates that the uses specified in Section 101(a)(2) of the Act are attainable, the State shall revise its

standards accordingly. Procedures States establish for identifying and reviewing water bodies for review should be incorporated into their Continuing Planning Process.

(b) **Public Participation:** The State shall hold a public hearing for the purpose of reviewing water quality standards, in accordance with provisions of State law, EPA's water quality management regulation (40 CFR 130.3(b)(6)) and public participation regulation (40 CFR Part 25). The proposed water quality standards revision and supporting analyses shall be made available to the public prior to the hearing.

(c) **Submittal to EPA:** The State shall submit the results of the review, any supporting analysis for the use attainability analysis, the methodologies used for site-specific criteria development, any general policies applicable to water quality standards and any revisions of the standards to the Regional Administrator for review and approval, within 30 days of the final State action to adopt and certify the revised standard, or if no revisions are made as a result of the review, within 30 days of the completion of the review.

§ 131.21 EPA review and approval of water quality standards.

(a) After the State submits its officially adopted revisions, the Regional Administrator shall either:

(1) notify the State within 60 days that the revisions are approved, or

(2) notify the State within 90 days that the revisions are disapproved. Such notification of disapproval shall specify the changes needed to assure compliance with the requirements of the Act and this regulation, and shall explain why the State standard is not in compliance with such requirements. Any new or revised State standard must be accompanied by some type of supporting analysis.

(b) The Regional Administrator's approval or disapproval of a State water quality standard shall be based on the requirements of the Act as described in §§ 131.5, and 131.6.

(c) A State water quality standard remains in effect, even though disapproved by EPA, until the State revises it or EPA promulgates a rule that supersedes the State water quality standard.

(d) EPA shall, at least annually, publish in the Federal Register a notice of approvals under this section.

§ 131.22 EPA promulgation of water quality standards.

(a) If the State does not adopt the changes specified by the Regional

Administrator within 90 days after notification of the Regional Administrator's disapproval, the Administrator shall promptly propose and promulgate such standard.

(b) The Administrator may also propose and promulgate a regulation, applicable to one or more States, setting forth a new or revised standard upon determining such a standard is necessary to meet the requirements of the Act.

(c) In promulgating water quality standards, the Administrator is subject to the same policies, procedures, analyses, and public participation requirements established for States in these regulations.

§§ 120.12 and 120.34 (Redesignated as §§ 131.31 and 131.33)

4B. Sections 120.12 and 120.34 are redesignated as §§ 131.31 and 131.33 respectively and constitute Subpart D, of new Part 131. The heading of new § 131.31 is revised to read "§ 131.31 Arizona". The table of contents for new Subpart D is set forth below:

Subpart D—Federally Promulgated Water Quality Standards

131.31 Arizona
131.33 Mississippi.

Authority: Clean Water Act, Pub. L. 92-500, as amended; 33 U.S.C. 1251 *et seq.*

5. The heading for Part 120 is removed and reserved.

[Note.—Appendix A will not appear in the CFR.]

Appendix A—Response to Public Comments

The public comments and statements submitted to EPA on the proposed Water Quality Standards Regulation before the close of the comment period are summarized in a separate publication, "Summary of Public Comments on the Proposed Water Quality Standards Regulation," March 11, 1983. Limited numbers of the Summary are available from David K. Sabock at the address listed under **FOR FURTHER INFORMATION CONTACT.**

This appendix describes EPA's response to the recommendations for changes in the proposed Regulation. Similar recommendations have been grouped together. Major additions and deletions made in the Rule in response to public comments are described in greater detail in the Preamble. Subjects discussed in the Preamble, along with EPA's rationale for accepting or rejecting the public's suggestions include: commitment to the goals of the Clean Water Act, changes in uses (including comments on benefit-cost assessments), criteria, the

antidegradation policy, general policies, and State review.

Definitions

Several commenters asked what waters were included in the Standards program. We changed the term "navigable waters" to "waters of the United States" in the Regulation to avoid confusion. The CWA defines "navigable waters" as "waters of the United States," a broader class of waters than considered "navigable" under some other statutes.

A number of recommendations were made to improve the series of definitions relating to uses. The terms "uses" and "attain" were removed from the list of definitions as being unnecessary to define. A definition of "Use Attainability Analysis" was added as a means of providing a common basis for understanding this analysis. This definition is derived from the language of the existing Regulation. The recommendation that the definition of "water quality limited segment" be moved from the Preamble of the proposed Rule to the definition section of the final Rule was accepted. The definition is important to understanding certain provisions of the Rule and is, therefore, logically part of the Rule.

Several suggestions were offered regarding the definition of "criteria" which resulted in the addition of "or narrative statement" after "concentration or level" and the deletion of the final sentence to remove the erroneous implication that only numerical values may be established. However, we rejected the suggestion that we include in the definition of criteria a statement that criteria are purely scientific determinations and do not consider the availability of treatment technology or the costs or economic impact of such treatment requirements, because to do so would be misleading. Section 304(a) criteria developed by EPA are purely scientific determinations, published as guidance for the State's use. They are not enforceable. Criteria adopted as part of State water quality standards are set taking into consideration the protection of a particular designated use, and thus may indirectly reflect a judgment as to the availability of treatment technologies needed to attain that use and the associated economic impacts. Such criteria, adopted as part of a State standard, are enforceable.

State Review of Water Quality Standards

There was considerable public comment on the subject of *State Review*

of *Water Quality Standards*, primarily directed to the apparent lack of EPA's commitment to the goals and philosophy of the Clean Water Act and the substitution of a review of standards for a limited number of priority water bodies in lieu of a Statewide review of standards at least once every 3 years. These concerns were addressed in detail in the Preamble and will only be briefly discussed here.

Because of the overwhelming support for the Section 101(a)(2) goals of the Act, EPA added a requirement that any stream segment with uses not specified in Section 101(a)(2) of the Act be re-examined every 3 years by the State to determine if new information has become available. If such new information indicates that the uses specified in Section 101(a)(2) are attainable, the State shall revise its standards accordingly. This provision in effect established a mandatory requirement to "upgrade" water quality standards as a balance to the provisions allowing the "downgrading" of standards. This policy also removes problems dealing with equity considerations among competing dischargers. Dischargers on a stream with an unduly "low" designated use should not be given an advantage over dischargers on streams whose designated uses and criteria were properly set to reflect attainable uses.

We have retained the statutory 3-year review requirement. The proposed regulation was intended to implement that requirement, but subsequent statements on priority water bodies in that subsection of the proposal and discussions in the Preamble and *Water Quality Standards Handbook* tended to confuse the issue. Many commenters thought EPA was attempting to delete or minimize that requirement. This is not EPA's intention.

EPA has changed the language in part 131.20 to emphasize the statutory nature of the 3-year review of all State standards. However, EPA continues to believe that the concept of focusing limited State resources on specific water bodies is an appropriate management technique to ensure that the most critical environmental problems are adequately addressed. The Preamble discusses this in more detail.

In addition, many commenters erroneously assumed that EPA was proposing a rigid system for determining priority water bodies. EPA has no rigid priority system in mind other than assuming the States will address known problems first. Rather, EPA views setting priorities as a basic management tool and a necessary step for States to make the best use of limited resources.

Priority lists are viewed as flexible working documents, not as mandatory lists. Public involvement in developing these lists is encouraged.

Although there were suggestions that EPA define for States the processes that should be used in establishing the list of priority water bodies, the Act does not require such guidance and EPA does not believe it is appropriate to do so. However, whatever procedures States establish should be incorporated into the States Continuing Planning Process document and be made known to the public-at-large.

Antidegradation Policy

EPA's proposal, which would have limited the antidegradation policy to the maintenance of existing uses, plus three alternative policy statements described in the preamble to the proposal notice, generated extensive public comment. EPA's response is described in the Preamble to this final rule and includes a response to both the substantive and philosophical comments offered. Public comments overwhelmingly supported retention of the existing policy and EPA did so in the final rule.

EPA's response to several comments dealing with the antidegradation policy, which were not discussed in the Preamble are discussed below.

Option three contained in the Agency's proposal would have allowed the possibility of exceptions to maintaining existing uses. This option was either criticized for being illegal or was supported because it provided additional flexibility for economic growth. The latter commenters believed that allowances should be made for carefully defined exceptions to the absolute requirement that uses attained must be maintained. EPA rejects this contention as being totally inconsistent with the spirit and intent of both the Clean Water Act and the underlying philosophy of the antidegradation policy. Moreover, although the Agency specifically asked for examples of where the existing antidegradation policy had precluded growth, no examples were provided. Therefore, wholly apart from technical legal concerns, there appears to be no justification for adopting Option 3.

Most critics of the proposed antidegradation policy objected to removing the public's ability to affect decisions on high quality waters and outstanding national resource waters. In attempting to explain how the proposed antidegradation policy would be implemented, the Preamble to the proposed rule stated that no public participation would be necessary in certain instances because no change

was being made in a State's water quality standard. Although that statement was technically accurate, it left the mistaken impression that all public participation was removed from the discussions on high quality waters and that is not correct. A NPDES permit would have to be issued or a 208 plan amended for any deterioration in water quality to be "allowed". Both actions require notice and an opportunity for public comment. However, EPA retained the existing policy so this issue is moot. Other changes in the policy affecting ONRW are discussed in the Preamble.

Designation of Uses

The question of whether there is a hierarchy of uses generated much discussion. Many indicated there is no hierarchy of uses since none of the uses mentioned in Section 303(c) of the Clean Air Water Act are ranked or were put into any order of priority. However, others believed that fish, wildlife and recreation or potable water supply clearly have precedence. The short answer is that Congress, in setting the goals in Section 101(a)(2), established that, where attainable, water quality "shall provide for the protection of fish, shellfish, wildlife and recreation in and on the water. . ." Therefore, EPA has revised the proposed regulation to better emphasize the uses specified in the Section 101(a)(2) goals of the Act. Under the final regulation, wherever States have set or set uses for a water body which do not include all of the uses specified in Section 101(a)(2) of the Act, they must conduct a use attainability analysis to demonstrate that these uses are not attainable. Of course, if they are not attainable, the State must select one or more of the other uses included in 303(c)(2). While the States need only conduct a use attainability analysis once, every three years States will have to review the basis of prior decisions to designate uses a water body which do not include uses specified in Section 101(a)(2) of the Act to determine if there is any information which would warrant a change in the standards. This change responds positively to the criticism that the proposed regulation settled for the status quo and did not adequately support the improvement of water quality.

The provision in the proposal allowing States to designate subcategories of aquatic use (Section 131.10(b)) has been changed slightly in the final rule (Section 131.10(c)) in response to suggestions made by various commenters. EPA is attempting to convey the concept that some use classifications included in the Act and

in State standards are so broad that they do not adequately describe to the public the actual use to be protected. The final rule provides that a State may, because of physical, chemical, biological, and economic factors, wish to adopt sub-categories of a use and set criteria appropriate to protect a particular use sub-category. The alteration of the language from the proposal to the final rule specifically follows suggestions that uses other than aquatic life protection should be covered, and that factors other than economics should be considered, in designating particular sub-categories of uses.

Many of the comments on setting sub-categories of uses levels of aquatic protection, and seasonal uses were similar, focusing primarily on the availability of guidance and the adequacy of information on how to establish levels of protection or seasonal uses. Guidance is available in the *Water Quality Standards Handbook* on what considerations are involved in determining levels of protection and seasonal uses to designating appropriate uses for a water body. The availability of information will vary depending on the site involved. EPA intends to continually improve the scientific and technical basis of the guidance and to revise such guidance from time to time. Moreover, EPA will not approve standards unless they are based on sound scientific and technical analysis. Establishing sub-categories of uses and seasonal uses are optional considerations on the part of the State.

Several commenters suggested that EPA establish a minimum level of protection. EPA believes it provides the basic scientific information on various levels of protection with the water quality criteria recommendations under Section 304(a) of the Act. However, for EPA to mandate certain levels of aquatic life protection within a use would override the primary authority of the State to adopt use classifications and supporting criteria through public hearings. EPA does not believe as being valid the concern expressed by the public that when establishing various levels of protection that the most sensitive species will not be protected. The degree of protection may vary depending upon what life stage of the most sensitive species the public wishes to protect. For example, water quality criteria necessary to protect spawning of aquatic life generally requires more stringent water quality criteria than does protection of the species during other stages of its life cycle. If spawning is not part of a designated use for a

specific water body, then less stringent criteria levels may be established and they will be adequate to protect the use fully.

The public also was concerned that uses or sub-categories of uses would not be based on original habitat conditions. It has never been the intention of the water quality standards program to bring all waters to a pristine condition or necessarily to set standards based on original habitat conditions. In the first instance, some waters are naturally of "poor" quality, and in the second, man has changed the environment and there are instances where an attempt to correct or control some sources of pollution either simply cannot be effected or would cause more environmental damage to correct than to leave in place.

In response to comments that the provision on seasonal uses was too loose, we revised the wording to clarify that the criteria may not be adjusted in a way that precludes a more protective use in another season.

A basic policy of the standards program throughout its history has been that the designation of a water body for the purposes of waste transport or waste assimilation is unacceptable. At the public's suggestion, an explicit statement of this policy has been added to § 131.10(a). The objective is to prevent water bodies from being used as open sewers. Thus, this "no waste transport" policy does not mean that wastes cannot be conveyed by barge or boat; such activity is encompassed by the navigation use designation.

Use Attainability Analysis

Because of the wide range of comments on the use attainability analysis, EPA revised the regulation to better define when such an analysis is appropriate. The changes were described in the Preamble.

EPA also reworded the proposed concept of the use attainability analysis to include, where appropriate, an analysis of the economic impacts of attaining a use consistent with or more stringent than the Section 101(a)(2) goals of the Act. EPA agrees with the comments that attainability and affordability are integral components of the same analyses. This is consistent with the previous regulation, which provided that, in determining attainability, States were to consider economic factors (§ 35.1550(c)(1)).

In the proposed Rule, EPA recommended conducting a benefit-cost assessment in determining whether the benefits of attaining a use bear a reasonable relationship to the costs. That concept has been removed from

the final Rule. As explained in the preamble, the Agency was persuaded by the arguments that there are inherent conceptual and procedural difficulties in *balancing* the benefits of achieving the Section 101(a)(2) goals versus the costs. The final regulation avoids these problems while still recognizing the relevance of economic factors in determining attainability. The Agency has retained the concept that economic analysis be judged on substantial and widespread economic and social impact.

Defining Attainable Uses

Several recommendations were made to delete references to Section 301(c) from the definition of the minimum baseline technology defining when a use is considered attainable and cannot be modified or removed. They also suggested making 301(c) waivers subject to the requirements of proposed § 131.13(c). The Agency believes that it is appropriate to use all applicable sections of the Act in defining the minimum technology based requirements of the Act; section 301(c) is one such section. In addition, Section 301(c) prescribes the eligibility requirements for a Section 301 waiver. Therefore, EPA has not made the suggested changes relating to Section 301(c).

Others pointed out that the proposed rule did not, but should, allow a mix of point and nonpoint source controls in determining whether a use is attainable. It was not EPA's intent to prevent that type of analysis, and the final regulation has been clarified by combining the two paragraphs on point and nonpoint source controls with the word "and" in § 131.10(h).

Other comments on nonpoint sources focused on the use of the terminology "cost effective and reasonable best management practices." EPA used the term "cost effective and reasonable best management practices" to cover the development of nonpoint source controls with Section 205(j) funding. We believe generally that nonpoint source controls developed as part of a State's water quality management plan are cost effective and reasonable. If a designated use can be attained through such BMPs; it would be inconsistent to allow a change in the use. Some comments also expressed concern that the Agency was forcing a mandatory regulatory program for nonpoint source controls through the Water Quality Standards Regulation. The Agency does not believe that the wording will impose any new requirements for the development of regulatory programs for nonpoint source controls; rather, the regulation simply

takes into account those programs which exist in ascertaining the minimum requirements. States are still free to review and revise their non-point source requirements in accordance with 208, 303(e), and 205(j).

One commenter recommended that the Agency include in the section on use attainability a discussion of the relationship between best management practices and water quality standards similar to that in *U.S. EPA, State and Areawide Memorandum*, Number 32, Nov. 14, 1978. EPA has included that memorandum in the chapter on "Water Body Survey and Assessments for Conducting Use Attainability Analyses" in the *Water Quality Standards Handbook*.

Changes in Uses

EPA received substantial comment on § 131.10(h)(1)-(6) and (i)(1)-(6) of the proposed regulation, which deal with the circumstances under which changes may (or may not) be made in designated uses. These sections have been revised; the changes are discussed in Section A of the Preamble.

Criteria

We accepted the comment that the added test of criteria being "compatible with" protecting a designated use might raise the possibility of unnecessary debate over what is compatible with protecting a designated use. The sentence was revised to read "States must adopt water quality criteria that protect a designated use." In response to several comments, EPA also added language to clarify that criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. Some commenters apparently believe that the Agency continues to have a policy of "presumptive applicability" applied to the Federal water quality criteria or that the proposed Regulation recreated that policy. That policy existed from July 10, 1978 to Nov. 28, 1980, when it was rescinded. No such policy now exists nor is intended in the final rule. While States are free to draw on EPA's 304(a) criteria as support for State criteria, they are equally free to use any other criteria for which they have sound scientific support.

Comments received from the public clearly indicated concern that the proposed rule did not appear to provide sufficient emphasis on the control of toxic pollutants. The proposed paragraph on toxic pollutants was therefore strengthened to provide that States "must" review water quality data and information on dischargers to

identify where toxic pollutants may be adversely affecting the attainment of designated water uses and "must" adopt criteria to ensure the protection of the designated uses. Furthermore, where States adopt narrative statements for toxic pollutants, EPA is requiring that States submit along with their standards submission information identifying the method by which the State intends to regulate point source discharges of toxic pollutants based on the narrative provisions. For example, States may require biological monitoring of dischargers' effluents such that a particular tolerance or LC₅₀ value is not exceeded. EPA made these changes because it agrees that more emphasis needs to be placed on the control of toxic dischargers. Information on implementing methods will ensure that EPA and State have a common understanding of what the narrative criteria really mean, and will facilitate permit writing on water quality limited streams.

The regulation provides several ways of establishing water quality criteria, including criteria development based on site-specific characteristics. EPA's field tests of the proposed guidance supporting the concept of developing site-specific criteria, the comments received during the public review, and the review conducted by the Agency's Science Advisory Board identified difficulties with the proposed guidance. The final guidance has been carefully revised to reflect the concerns and comments received to ensure that the mechanisms used to develop site-specific criteria are scientifically credible. Research will also continue on improved techniques, and as validated they will be made available to the States.

General Policies

While many commenters supported including the General Policies provision (Section 131.13) in the framework of the Regulation, others recommended deleting the General Policies section from the Regulation and including it in guidance documents. Since much of the language in that proposed part was in fact guidance, EPA decided to delete paragraphs (b)-(d). Only the first part of the section which recognizes that States do adopt policies that impact on the implementation and application of water quality standards and that such policies, if adopted, are subject to EPA review and approval was retained.

EPA believes that it is important for the public to understand that while the adoption of these policies is optional, if adopted they are subject to EPA review and approval. EPA will continue to

include a discussion of mixing zones, low flows, variance and other general program policies in a guidance document, as has been done since 1975. Detailed guidance on these optional policies is included in the *Water Quality Standards Handbook*.

Resource Capabilities

The issue of resources was of concern to many. While some States over the years have collected the scientific and technical information to set appropriate water quality standards, others have done significantly less data collection. EPA recognizes that use attainability analyses and site specific criteria studies may require some States to program more resources for setting their water quality standards than in the past. However, the use attainability analyses apply only to water quality limited segments—segments where standards will not be attained even with implementation of technology-based controls of the Act, where the State wishes to justify uses less than "fishable/swimmable". Moreover, nothing in the guidance or in the requirement for conducting use attainability analyses suggests that every analysis be similar in scope and detail or that they must be intrinsically expensive and difficult. EPA expects quite the opposite to be true; the analyses only need to be sufficiently detailed to support the specific standards decision in question. Consequently, when attempting to establish appropriate aquatic protection uses it will, for example, be relatively simple to demonstrate to EPA that certain aquatic life forms will be unable to exist in an area because of physical factors regardless of the level of water quality attained, i.e., no level of water quality will induce fish to spawn in areas where the bottom strata are not what the particular species requires for spawning. In other instances, given the environmental problems, number of people involved, the cost of pollution control to municipalities and industries, and the political aspects of the situation, the use attainability analyses may be quite costly. Because resources are and will likely continue to be a problem, EPA recommends that States set priorities for conducting these analyses. The Agency also believes that it is appropriate for States to enlist the cooperation and resources of dischargers in conducting these analyses. EPA continues to believe that there is considerable expertise and data available from various State agencies that can be tapped to assist in establishing attainable standards. This

expertise does, of course, vary from State to State but that situation exists under any regulation EPA may promulgate.

In addition to the technical concerns on the development of site-specific criteria addressed earlier in both the Preamble and this Appendix, the public expressed concern with the cost of the procedures and the availability of State personnel to conduct and manage such procedures. Because it is a new concept in terms of application in a regulation, the Preamble to the proposed rule discussed the procedures in detail. This conveyed the impression that site-specific criteria development would be the basic method of setting water quality criteria. EPA believes the States will continue to base most of their standards on EPA developed Section 304(a) criteria because of the resource question and because of the fact that site-specific criteria will not be necessary in most water bodies. The Final Rule allows States to develop site-specific criteria; it does not require them to do so. As with use attainability analyses, States should set priorities and enlist the assistance of dischargers in conducting site specific criteria. EPA will be providing training seminars for State personnel in applying site-specific criteria development procedures. EPA is also developing simpler and improved techniques.

State/Federal Roles

There were a number of diverse comments on the sections of the proposed rule dealing with "State Review and Revision of Water Quality Standards", "EPA Review and Approval of Water Quality Standards" and "EPA Promulgation of Water Quality Standards".

Several comments on § 131.20 of the proposed regulation "State Review and Revision of Water Quality Standards", requested specific mechanisms be included in the regulation on how States should generate data and information, how to involve local government and industry in the data collection and decision making, how permittees could request a review of inappropriate water quality standards and how the public participates in the water quality standards revision process. All of these comments were evaluated but few changes were made other than those in § 131.20 which were described earlier. States are responsible, within the guidelines of Section 303(c) of the Act and the Water Quality Standards Regulation, for setting water quality standards. EPA does not believe it is appropriate to specify particular administrative mechanisms States must

use in that process. Ensuring such administrative uniformity would be disruptive to the States without yielding any significant environmental benefit.

There was also a recommendation to include in the rule the policy statement that was in the preamble to the proposal on the relationship of Section 24 of the "Municipal Waste Water Treatment Construction Grant Amendments of 1981" (Pub. L. 97-117, December 29, 1981, 33 U.S.C. 1313(a)), to water quality standards reviews. The Agency chose not to do so because, for the purposes of Section 24, water quality standards reviews are synonymous with the water quality standards reviews under Section 303(c) of the Act and the one final rule.

A number of letters and statements expressed concern that the various EPA Regional Offices will interpret the regulation differently. It is recognized that with 10 Regional Offices responsible for the review and approval of State water quality standards, there is potential for inconsistencies between Regions on recommended data and analyses. Of course, since water quality problems in different regions may vary considerably, the regions must also be able to respond to those problems in ways that make the most sense under the particular circumstances. However, it is believed that EPA's guidance and Headquarters evaluations of the Regional Offices will, to the extent possible, minimize inconsistencies in the interpretation of the Regulation by our Regional Offices.

There were suggestions that EPA change the rule to read that the State water quality standards go into effect only after EPA approval. Standards are adopted by States under State law. Consistent with the Clean Water Act, EPA's policy has always been that a State standard goes into effect when adopted by the State and remains in effect, even if disapproved, until the State revises its standards or EPA promulgates a Federal standard. This interpretation is necessary because otherwise there would be no standard at all until Federal action was completed. A State rescinds its prior standard whenever it adopts a revised standard. In addition, EPA approval of a standard should not be interpreted as superseding the State's right to amend its own laws. By the same token, if EPA promulgates a Federal standard, the State is obliged to apply that standard in its pollution control programs or until the State adopts a State standard identical to or more stringent than the Federal standards.

EPA proposed to publish a notice of approvals of State water quality

standards in the Federal Register at least annually. One letter requested that EPA publish the notice of approvals at the time the Agency take action. EPA believes that this action is unnecessary since publication of these notices (or any delay in publishing them) in no way affects the legal standing of the standards or the status of EPA's approval action. When a State adopts a standard, it publishes a notice under State law. This should be sufficient to ensure that the regulated community is informed of any changes in State water quality standards. EPA's annual publication will serve as a convenient check.

A number of respondents recommended that in promulgating State standards, EPA move expeditiously to avoid excessive delays. EPA's approach in disapproving State standards is to work with the State to assist the State in revising its standard to meet the Act's requirements. Only as a last resort will EPA promulgate Federal standards. In working with a State to revise its standard, EPA will try to do so within the timeframe of the Act. However, this may not always be possible depending on State administrative and/or legislative procedures. However, we intend to try harder to eliminate unnecessary delay.

In response to a number of questions raised, the final rule clearly states that in promulgating State standards, the Administrator will be subject to the same public participation policies and procedures established for States.

Interstate/International Water Quality Standards Issues

In the Preamble to the proposed water quality standards regulation, EPA discussed its role in interstate and international water quality standards issues. There were those that believed that EPA should include in the regulation specific procedures for resolving interstate/international conflicts and require States to adopt standards that meet treaty requirements. Since these issues have been associated with the standards program since its inception and have been adequately resolved previously without the need for regulatory language, EPA sees no need to include such language in the Final Rule.

When interstate/international conflicts arise, EPA will play a stronger role in the standards process in addition to the ordinary review and approval procedures described in the regulation. First, if an interstate conflict occurs between States in the same EPA region, the EPA Regional Administrator is in a

position to help resolve the dispute through the ability to review and approve each State's standards and by participating in the standards development process.

Interstate and interregional organizations can also play a positive role in this situation. Second, if the issue involves more than one EPA region and the EPA regions are unable to resolve the issues, then the EPA Administrator can be requested to render a judgment. While it is theroretically possible that

two States might have incompatible standards, both of which meet the requirements of the Act and this regulation, such as situation is likely to be rare. If it occurs, EPA will assist the States in resolving the inconsistency. The exact procedures will depend upon the specific circumstances. Therefore, we do not believe it is appropriate to include specific procedures in the Water Quality Standards Regulation to resolve interstate conflicts.

Any specific treaty requirements have

the force of law. Therefore, State water quality standards will have to meet any treaty requirements.

Finally, in response to commenters' suggestions, we have made some editorial and format changes to clarify the regulation. In addition, the substantive changes made to demonstrate the Agency's commitment to the goals of the Act should also help clarify the regulation.

[FR Doc. 83-30233 Filed 11-7-83; 8:45 am]
BILLING CODE 6560-50-M

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

BEND, OREGON

SEPTEMBER 27, 1985

PROPOSED AMENDMENTS TO JANUARY 25, 1985 RULES FOR 401 CERTIFICATION

SUBMITTED BY NORTHWEST ENVIRONMENTAL DEFENSE CENTER

On January 25, 1985, the Department (DEQ) proposed to the Commission (EQC) rules for certification under section 401 of the federal Clean Water Act of federally licensed or permitted activities. At that time, NEDC proposed the following amendments to those rules:

"The first paragraph on page 1 of the staff report speaks of certification of "any such discharge or activity." The Summation section on page 5 of the staff report speaks of a requirement to review and to certify "the proposal" and of "requirements for the protection of public waters." Under the description of Purpose on page 1 of Attachment A is language about certification "for projects." On page 2 of Attachment A, however, under Certification Required is the more narrowly construed description of a certification of "any such discharge." We recommend that this phrase be changed from "any such discharge" to the more broadly construed any such activity.

"On page 2 of Attachment A under the information requirements listed as 340-48-020(2), we recommend the addition of the following subsection: (1) Information and evidence demonstrating that the project is compatible and consistent with all designated beneficial uses of the affected waters.

"Also on page 2 of Attachment A under 340-48-020(3), to the end of the sentence presently ending with the phrase "project impacts on water quality" we recommend the addition of the words or designated beneficial uses of the affected waters.

"On page 4 of Attachment A under Issuance of a Certificate, the last sentence under 340-48-025(1) should be stricken in its entirety and replaced with the sentence: The applicant shall be notified promptly that until the Department completes action on the application for certification the certification shall be considered to be denied.

"Also on page 4 of Attachment A under 340-48-025(2), we recommend the addition of the following subsection: (1) Findings that the project is compatible and consistent with all designated beneficial uses of the affected waters."

Proposed Rules with Modifications
to Reflect Public Comment

DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Quality Program

OREGON ADMINISTRATIVE RULES
Chapter 340, Division 48

DIVISION 48

CERTIFICATION OF COMPLIANCE WITH WATER QUALITY REQUIREMENTS AND STANDARDS.

Purpose

340-48-005 The purpose of these rules is to describe the procedures to be used by the Department of Environmental Quality for receiving and processing applications for certification of compliance with water quality requirements and standards for projects which are subject to federal agency permits or licenses and which may result in any discharge into navigable waters or impact water quality.

Definitions

340-48-010 As used in these rules unless otherwise required by context:

(1) "Certification" means a written declaration by the Department of Environmental Quality, signed by the Director, that a project or activity subject to federal permit or license requirements will not violate applicable water quality requirements or standards.

(2) "Clean Water Act" means the Federal Water Pollution Control Act of 1972, PL 92-500, as amended.

(3) "Coast Guard" means U.S. Coast Guard.

(4) "Commission" means Oregon Environmental Quality Commission.

(5) "Corps" means U.S. Army Corps of Engineers.

(6) "Department" or "DEQ" means Oregon Department of Environmental Quality.

(7) "Director" means Director of the Department of Environmental Quality or the Director's authorized representative.

(8) "Local Government" means county and city government.

Certification Required

340-48-015 Any applicant for a federal license or permit to conduct any activity, including but not limited to the construction or operation of facilities which may result in any discharge to waters of the State, must provide the licensing or permitting agency a certification from the Department that any such discharge will comply with Sections 301, 302, 303, 306, and 307 of the Clean Water Act which generally prescribe effluent limitations, water quality related effluent limitations, water quality standards and implementation plans, national standards of performance for new sources, and toxic and pretreatment effluent standards.

Application for Certification

340-48-020 (1) Except as provided in section (6) below, completed applications for project certification shall be filed directly with the DEQ.

(2) A completed application filed with DEQ shall contain, at minimum, the following information:

- (a) Legal name and address of the project owner.
- (b) Legal name and address of owner's designated official representative, if any.
- (c) Legal description of the project location.
- (d) A complete description of the project proposal, using written discussion, maps, diagrams, and other necessary materials.
- (e) Name of involved waterway, lake, or other water body.
- (f) Copies of the environmental background information required by the federal permitting or licensing agency.
- (g) Copy of any public notice and supporting information, issued by the federal permitting or licensing agency for the project.
- (h) A statement from the appropriate local planning agency that the project is compatible with the acknowledged local comprehensive plan or that the project is consistent with statewide planning goals if the local plan is not acknowledged. If a county is the applicant for a project for which it has also made the land use compatibility determination, the State Land Use Conservation and Development Department may be asked to review and comment on the County's compatibility determination.

(3) The DEQ reserves the right to request any additional information necessary to complete an application or to assist the DEQ to adequately evaluate the project impacts on water quality. Failure to complete an application or provide any requested additional information within the time specified in the request shall be grounds for denial of certification.

(4) [Public notice of all applications filed with DEQ shall be by publication in the Secretary of State's Bulletin, mailing of notification to those persons who request to be on a DEQ mailing list for receiving such notices, and mailing of notification to local governments in the project area. Notices shall specify the duration of the comment period which will normally be 30 days.] In order to inform potentially interested persons of the application, a public notice announcement shall be prepared and circulated in a manner approved by the Director. The notice shall tell of public participation

opportunities, shall encourage comments by interested individuals or agencies, and shall tell of any related documents available for public inspection and copying. The Director shall provide a period of not less than 30 days following the date of the public notice during which time interested persons may submit written views and comments. All comments received during the 30-day period shall be considered in formulating the Department's position. The Director shall add the name of any person or group upon request to a mailing list to receive copies of public notice.

(5) The Director shall provide an opportunity for the applicant, any affected state, or any interested agency, person, or group of persons to request or petition for a public hearing with respect to certification applications. If the Director determines that useful information may be produced thereby, or if there is significant public interest in holding a hearing, a public hearing will be held prior to the Director's final determination. Instances of doubt shall be resolved in favor of holding the hearing. There shall be public notice of such a hearing.

(6) For projects or activities where the Division of State Lands is responsible for compiling a coordinated state response (normally applications requiring permits from the Corps or Coast Guard), the following procedure for application and certification shall apply:

(a) Application to the Federal agency for a permit constitutes application for certification.

(b) Applications are forwarded by the Federal Agency to the Division of State Lands for distribution to affected agencies.

(c) Notice is given by the Federal Agency and Division of State Lands through their procedures. Notice of request for DEQ certification is circulated with the Federal Agency Notice.

(d) All comments including DEQ Water Quality Certification are forwarded to the Division of State Lands for evaluation and coordination of response. The Division of State Lands is responsible for [determination of] assuring compatibility with the local comprehensive plan or consistency with statewide planning goals.

(7) The Department's evaluation of an application for project certification will include but not be limited to the following:

(a) Existing and potential beneficial uses of surface or groundwater which could be affected by the proposed facility.

(b) Potential impact from the generation and disposal of waste chemicals or sludges at a proposed facility.

(c) Potential modification of surface water quality or quantity.

(d) Potential modification of groundwater quality.

(e) Potential impacts from the construction of intake or outfall structures.

(f) Potential impacts from waste water discharges.

(g) Potential impacts from construction activities.

(h) The project's compliance with plans applicable to Section 208 of the Federal Clean Water Act.

Issuance of a Certificate

340-48-025 (1) Within ninety (90) days of receiving a complete application for project certification, the DEQ shall serve written notice upon the applicant that the certification is granted or denied or that a further specified time period is required to process the application. Written notice shall be served in accordance with the provisions of OAR 340-11-097 except that granting of certification may be by regular mail. Any extension of time shall not exceed 1 year from the date of filing a completed application. If the Department fails to take timely action on an application for certification, the certification requirements of Section 401 of the Clean Water Act are waived.

(2) DEQ's Certification for a project shall contain the following information:

- (a) Name of Applicant;
- (b) Project's name and federal identification number (if any);
- (c) Type of project activity;
- (d) Name of water body;
- (e) General location;
- (f) Statement that the project complies with applicable requirements of the Federal Clean Water Act;
- (g) Special conditions if necessary to assure compliance with Sections 301, 302, 303, 306, and 307 of the Clean Water Act and state water quality requirements.
- (h) Findings that the project is compatible with the local comprehensive plan and/or the statewide planning goals, except for those projects for which the Division of State Lands coordinates the response.

(3) If the applicant is dissatisfied with the conditions of any granted certification, the applicant may request a hearing before the Commission. Such requests for a hearing shall be made in writing to the Director within 20 days of the date of mailing of the certification. Any hearing shall be conducted pursuant to the rules of the Commission for contested cases.

(4) Certifications granted pursuant to these rules are valid for the applicant only and are not transferable.

Certification Delivery

340-48-030 For projects where application for certification is filed directly with DEQ by the applicant, the DEQ certification will be returned directly to the applicant. For those applications that are coordinated by the Division of State Lands, DEQ certification will be delivered to the Division of State Lands for distribution to the applicant and the federal permitting agencies as part of the State of Oregon coordinated response.

Denial of Certification

340-48-035 If the Department proposes to deny certification for a project, a written notice setting forth the reasons for denial shall be served upon the applicant following procedures in OAR 340-11-097. The written notice shall advise the applicant of appeal rights and procedures. A copy shall also be

provided to the federal permitting agency. The denial shall become effective 20 days from the date of mailing such notice unless within that time the applicant requests a hearing before the Commission or its authorized representative. Such a request for hearing shall be made in writing to the Director and shall state the grounds for the request. Any hearing held shall be conducted pursuant to the rules of the Commission for contested cases.

Revocation or Suspension of Certification

340-48-040 (1) Certification granted pursuant to these rules may be suspended or revoked if the Director determines that:

- (a) The federal permit or license for the project is revoked.
- (b) The federal permit or license allows modification of the project in a manner inconsistent with the certification.
- (c) The application contained false information or otherwise misrepresented the project.
- (d) Conditions regarding the project are or have changed since the application was filed.
- (e) Special conditions or limitations of the certification are being violated.

(2) Written notice of intent to suspend or revoke shall be served upon the applicant following procedures in OAR 340-11-097. The suspension or revocation shall become effective 20 days from the date of mailing such notice unless within that time the applicant requests a hearing before the Commission or its authorized representative. Such a request for hearing shall be filed with the Director and shall state the grounds for the request. Any hearing held shall be conducted pursuant to the rules of the Commission for contested cases.

GDC:t
WT245.A
Revised 1/3/85

Testimony of John R. Churchill before the Environmental Quality Commission
Friday, September 27, 1985.

Mr. Chairman, I come to the table to address this Commission today at the public comment time to clarify what I referred to as an "Orwellian word think game" in my letter to the Commission under Item I or L of your last meeting.

Mr. Chairman, I was greatly disturbed when you accused Dr. Smith and I at the OEC public forum last Friday night of attempting to change the Commission's policy with regard to what is a water policy standard under both the Statutes of the Federal Government and the State of Oregon and the implementing regulations and more important, long standing established policy of this Department and this Commission.

No, Mr. Chairman, Dr. Smith and I hold the stare decisis position in this argument. Our position is simply that you carry out the policy as it has long been established by this Department, by this Commission, and by federal and state statute.

The EPA letter signed by Mr. Burd is definitive, written evidence that uses and criteria are the two ingredients of standards and always have been. In following up on receipt of the EPA letter, I talked to several DEQ and EPA personnel and asked them the following question: Have you ever heard the argument raised by the Department that the uses are not an integral and legal part of any water quality standard? Mr. Chairman, every answer was, "Uses are the central thrust of water quality standard and this has always been the policy in Oregon." It has always been federal policy. It has always been the policy in every one of our fifty states.

The EPA letter and my subsequent investigation confirmed completely my earlier testimony Mr. Chairman, that uses have always been an integral part of water quality standards. In fact, no one, until the 401 administration issue arose, has ever questioned that they were not. Every statement on water quality standard that I have ever seen from DEQ explicitly or implicitly deals with the uses. In fact, the uses and their protection are the central thrust of the in-stream water quality management program.

So how did this new policy of the Departments originate, Mr. Chairman. I have investiaged this matter. My investigations show that after the NW Environmental Defense Council staff investigated the 200 cases of the rubber stamping 401 certifications the Department admitted that it had not administered the program properly. As a result of our investigation and as a result of our request for rules and standards to protect the public, as well as the applicant, the Department proposed rules that only included degregation of criteria not uses, "they appear to have made the argument that the designation of uses is a now function of the Water Policy Review Board (now Water Policy Commission) and presumably this Commission enforces against use degradation when threatened by a lowering of water quality.

Under our long standing federal and state water quality policies we have indeed adopted the uses as enunciated in the water resources basin programs as a starting off place for use designation of uses under our water quality standards program. The Department and then the Commission has added refinement of uses such as different classifications of fisheries and in many cases instream uses not established in basin programs such as aesthetics. One example is swimming as a use designated by this Commission. The crucial issue is how the Commission regulated the adoption of uses and is it responsible for enforcement of water quality standards. That was aptly demonstrated by Commissioner Deneke's question to Mr. Sawyer and Mr. Sawyer's non-answer under Agenda Item I of the last meeting. When the Commission adopted and revised uses in water quality standards. Commissioner Deneke asked Mr. Sawyers what are thses Uses in this Use Table that we are asked to adopt by the Department. Mr. Sawyers argument was not enlightening and I suggest you review the transcript or have a transcript made to refresh yourself on this point. Mr. Sawyer could not answer because it would have destroyed the argument that he has been trying to persuade the public, the legislature, the department and this commission that water uses are not the responsibility of the department.

I ask the simple question, Is this Commission responsible for the enforcement of the water quality program of the State of Oregon? Does it share the responsibility of enforcement with some other agency? The answer is clear in federal and state statute. This Commission bears the sole responsibility for enforcement of water quality standards which includes the mitigation or degradation of water quality standards and the uses authorized in those standards.

No, Mr. Chairman, it is not I or Dr. Smith that is encouraging you to change the standing policy of the Commission. What we are asking you to do is reject the solutions and "Orwellian word thinking" approach to policy change as proposed to administration 401 hydro certifications. The disinformation that has clouded this issue has severely damaged the public interest and wasted a lot of people's time.

Mr. Chairman, if you reject your responsibility for the enforcement against water use degradation this will have substantial implications far beyond the 401 program and cuts the very guts out of instream water quality management programs.

Mr. Chairman, read the EPA letter, call for evidence from the Department on what they contend has been policy ever was enunciated as policy of this commission. There is not a scintilla of evidence to support the position. What you have experienced is retrograding tactics by a bureaucracy that wants to duck some touch political decision making.

JOHN R. COUTRAKON, P.C.
JOHN C. BABIN, P.C.

* ALSO LICENSED IN
CALIFORNIA

COUTRAKON & BABIN
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BROOKINGS, OREGON
97415-0600
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(503) 469-5331

September 24, 1985

Environmental Quality Commission
522 Southwest 5th Avenue
P.O. Box 1760
Portland, OR 97207

Re: Agenda Item No. M
EQC Meeting-9/27/85
Brookings Energy Facility
Variance Review

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
SEP 26 1985
OFFICE OF THE DIRECTOR

Dear Commissioners:

I have reviewed a copy of the memorandum prepared by director Fred Hansen in reference to the above matter. You will note from some of the attachments to Mr. Hansen's memorandum that I have recently become somewhat involved in this matter in my representation of Brookings Energy Facility (BEF).

Due to certain personal matters I will not be able to attend your meeting on September 27; however, I would request that you consider my statements and comments made herein in lieu of such a personal appearance.

As indicated in my letter of August 15, 1985 to director Fred Hansen (Agenda Item No. M Packet-Attachment G), the core problems which my clients are encountering are both the nature of and the application of OAR 340-21-027. While that rule appears to be of a "general" nature, the reality is simply that it is meant to apply to the four existing incinerators in the State of Oregon, being those located in Coos and Curry counties.

ORS 468.295 lists 15 factors which should be considered in determining air purity standards set forth in a Commission rule; and, ORS 468.345 sets forth four additional circumstances under which variances may be granted. Subsection 4 of the latter statute continues by stating that consideration be given to "the equities involved and the advantages and disadvantages to residents and to the person conducting the activity for which the variance is sought."

Brookings Energy Facility is quite sincere and in earnest in desiring to maintain a well run solid waste disposal operation; however, the requirements of OAR 340-21-027 are simply not realistic (in terms of how my client's incinerators

Environmental Quality Commission
September 24, 1985
Page 2

actually work) nor do they practically take into account the factors and circumstances referenced in the above cited statutes.

Quite simply, as expressed in my letter of August 15, 1985 to Mr. Hansen, we believe that it is not possible to separate the requirements and concerns of § 1 and § 2 contained within OAR 340-21-027. My clients would request that the current status quo be maintained at its operation until the Commission can consider the nature and application of OAR 340-21-027, hopefully with the result being a modification of that rule to fit the facts and circumstances of the facilities which fall under its parameters.

While the DEQ has maintained that § 1 and 2 under the rule should be separately considered, it is obvious from Mr. Hansen's memorandum to you in the agenda packet (as well as sprinkled throughout the attachments thereto) that the operating temperatures, and alleged violations thereof, are being stated as a primary concern for the request for you to disallow a further variance of § 1.

In summary, my client wishes to fulfill the policy of air pollution control contained within ORS 468.280 and, most specifically, that "each of its successive objectives shall be sought to be accomplished by cooperation and conciliation among all the parties concerned." It is in this spirit and with such intendments that my client would request the present variance be continued or renewed; and further, that the Commission set a time table on the order of 6 to 9 months such that a well informed hearing may be had on a requested modification of the presently existing rule.

Very truly yours,

COUTRAKON & BABIN, P.C.'S

John R. Coutrakon

JRC:clb

cc: ✓ Fred Hansen

Richard E. AuFranc

John Mayea (Chairman, Curry County Board of
Commissioners)

Bill Bradbury (State Senator)



"Accent on Excellence"

September 26, 1985

Environmental Quality Commission

RE: LaPine Sanitary District Boundaries

Dear Commissioners:

This letter serves as a rebuttal to the comments offered by the Department of Environmental Quality (DEQ) to our previous inquiry dated August 20, 1985. Hopefully, its contents will be considered carefully before any decision is forthcoming by the Commission.

Several points were raised in our previous submittal. Our concerns basically boil down to two issues: First, the rationale for the schools to be included within the sanitary district boundaries and, secondly, what costs the School District is required to pay.

Addressing the first issue, the core area groundwater movement is generally in the northerly direction as indicated by previous studies and as conceded by DEQ. Yet, the arguments continue to be made that the School District is contributing to the "core area pollution" as a major user in the area.

That position is not defensible based on the fact the school is located at the northern-most reaches of the LaPine area and the groundwater movement is also in the northerly direction; meaning that at the school the groundwater movement is away from the core area and not towards it.

The School District does not claim nor has it ever claimed the treatment system being used does not add nitrates to the groundwater. Using the type of treatment existing (septic tank and drain field), the district will most certainly add some nitrates to the groundwater. But again, this additional nitrogen loading is away from the core area and not towards it. To our knowledge, a high nitrate level has not been documented to the north of the school property. Also, please note the results of the most recent laboratory tests (attached) monitoring the nitrate levels in the septic tank effluent. These tests were conducted after school had been in session more than two weeks. The district plans to continue these tests over the next several months to help establish an information base on the operation of the LaPine treatment facility.

September 26, 1985

The quote from the ruling was not misquoted; however the part which read ". . . or the community of LaPine school wastewater water disposal system . . ." should have been noted as an editorial comment.

The School District agrees with the statement made by DEQ ". . . we believe the core area should include all sources of sewage, particularly the larger sources . . ." However, one conditional statement should be added "for those systems which are not adequately treating the sewage flows from their operations."

The School District has recently invested over \$150,000 in the treatment and disposal system. This system appears, from the laboratory tests available, to be operating very satisfactorily. The system also has a great deal of reserve capacity which can be utilized either as a backup or for future expansions of the school facilities.

Secondly, the cost issue. Although not part of the decision made by the Commission, the School District would like to express their concern over the cost issues. School budgets are very sensitive to large dollar increases in support functions. Increases from \$100/month to \$1657/month are very substantial to the School District as it would be to any business or agency. Granted these increases have been mitigated verbally by the sanitary district to some extent, but the School District is not sure where the charges are actually going to stabilize and until that happens the School District cannot be in a supporting position for the project. If the questions raised in our previous letter could be officially responded to, the School District would be able to understand the project costs and ascertain their ability to support the LaPine project.

The School District has just recently paid for a treatment system, approved by DEQ, and working well above the required standards. It is of grave concern that we are now being asked to abandon that system to pay somewhere between \$800-\$1600 per month for a "core area sewerage system".

As a note of comparison, several school districts similar in size to Bend LaPine School District were surveyed to determine the sewerage costs on a per person equivalent (this includes both students and staff). The values were considered during the winter months only. This value is in the range of \$0.30-0.40/person/month. This compares to the cost of \$1.96/person/month that was originally sought (LaPine Special Sanitary District letter of May 6, 1985) and the amount of \$0.93/person/month as recommended by the LaPine Special Sanitary District (June 10, 1985).

As documented above, we feel the projected costs are critically out of line with the state average costs and what is currently being required in the Bend area. (Bend costs are \$0.35/person/month)


Environmental Quality Commission

Page 3

September 26, 1985

Once these issues above can be clarified, the School District would be in a much better position to evaluate the budgetary efforts and rationale used to select the district boundaries. Hopefully this spirit of cooperation will lead to an environmental solution that is appropriate for the entire LaPine community of which the School District is an active and vital part.

Very truly yours,


Orval D. Boyle
Director of Support Services

ODB:cp

LABORATORY ANALYSIS

Paul Eggleston
Bend School District
501 NW Bond St.
Bend, OR 97701

DATE: September 24, 1985

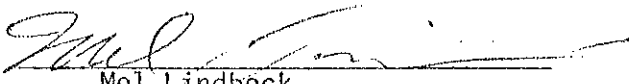
DATE RECEIVED: September 17, 1985

LAB NO: 4188

ANALYSIS OF: Jr. High School

| | | |
|-------------------|---------|------|
| BOD ₅ | 72 | mg/l |
| Nitrate Nitrogen | 1.1 | mg/l |
| Ammonia Nitrogen | 0.73 | mg/l |
| Nitrogen Kjeldahl | 4.3 | mg/l |
| Phosphorus Total | 7.3 | mg/l |
| Solids Total | 669 | mg/l |
| Cadmium | < 0.005 | mg/l |

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LABORATORY ANALYSIS

Paul Eggleston
Bend School District
501 NW Bond St.
Bend, OR 97701


DATE: September 24, 1985
DATE RECEIVED: September 17, 1985

LAB NO: 4187

ANALYSIS OF: Sr. High School

| | | |
|------------------|--------|------|
| BOD ₅ | 162 | mg/l |
| Nitrate Nitrogen | 1.1 | mg/l |
| Ammonia Nitrate | 0.70 | mg/l |
| Nitrate Kjeldahl | 3.1 | mg/l |
| Phosphorus Total | 6.8 | mg/l |
| Solids Total | 460 | mg/l |
| Cadmium | <0.005 | mg/l |

CENTURY TESTING LABORATORIES, INC.


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OREGON ENVIRONMENTAL COUNCIL

2637 S.W. Water Avenue, Portland, Oregon 97201

Phone: 503/222-1963

Testimony of John A. Charles
and Ann Wheeler-Bartol

representing

Oregon Environmental Council
Oregon Chapter, Sierra Club
Northwest Environmental Defense Center

Regarding Department of Environmental Quality
Proposed Amendment to OAR 340-20-276

September 27, 1985

The Oregon Environmental Council, Oregon Chapter Sierra Club, and the Northwest Environmental Defense Center are all opposed to the proposed amendment to OAR 340-20-276 and to the existing exemption language in the rule. In allowing this exemption, the DEQ is violating the visibility provisions of the Clean Air Act, the relevant portion of which reads:

"Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." Sec. 169 A (a)(1)

The intent of Congress is plain and unequivocal. The use of the phrases "prevention of any" and "remedying of any" does not allow EPA or individual states the discretion to arbitrarily set any level of pollution for which blanket exemptions will be allowed. To exempt a source of 249 tons or 99 tons, whichever may be the case, of a particular pollutant from any kind of analysis or regulatory action simply does not comply with the provisions of Sec. 169 of the Act.

I. Both EPA and DEQ have erred in using Prevention of Significant Deterioration (PSD) standards for the visibility program.

Both EPA and DEQ have mistakenly assumed that the PSD program and the visibility program are essentially the same, and therefore similar regulations can be used to implement both sections of the Act. The two sections are not the same. The PSD program, reprinted in part below, addresses the problem of "significant" deterioration of air quality in areas that are already cleaner than the ambient standards require. PSD provisions apply to any area that is outside a nonattainment area. The

PSD program sets up a complicated system of increments for allowing new sources of pollution, and also allows regulatory bodies to weigh competing values in the decision making process. Section 160(5) explicitly acknowledges that some levels of increased pollution will be allowed, albeit with appropriate substantive and procedural safeguards:

"to assure that any decision to permit increased air pollution in any areas to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decisionmaking process."

The visibility program is not parallel to the PSD program, it is a subset of PSD that has much stricter requirements because it applies only to the tiny fraction of the state's airshed that has been designated as Class I. Regulations for PSD are not, by themselves, appropriate for the visibility program because Section 169 does not allow for any impairment of visibility in Class I areas, while PSD regulations allow pollution increments that are less than significant.

"PART C—PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

"SUBPART I

"PURPOSES

"Sec. 160. The purposes of this part are as follows:

42 USC 7470.

"(1) to protect public health and welfare from any actual or potential adverse effect which in the Administrator's judgment may reasonably be anticipated to occur from air pollution or from exposures to pollutants in other media, which pollutants originate as emissions to the ambient air), notwithstanding attainment and maintenance of all national ambient air quality standards;

"(2) to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value;

"(3) to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources;

"(4) to assure that emissions from any source in any State will not interfere with any portion of the applicable implementation plan to prevent significant deterioration of air quality for any other State; and

"(5) to assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decisionmaking process.

"PLAN REQUIREMENTS

"Sec. 161. In accordance with the policy of section 101(b)(1), each applicable implementation plan shall contain emission limitations and such other measures as may be necessary, as determined under regulations promulgated under this part, to prevent significant deterioration of air quality in each region (or portion thereof) identified pursuant to section 107(d)(1)(D) or (E).

Regulations.
42 USC 7471.
42 USC 7401.

Ante, p. 687.

II. The proposed rule borrows language from OAR 340-20-245(3) but eliminates the most important provision of that section.

The proposed new rule simply references language from OAR 340-20-245(3), but specifically excludes Section 3(a)(A). Unfortunately, that is the only subsection in the entire section that requires any analysis for ambient air quality impacts. It requires sources to prove that:

- "(A) the proposed source or major modification does not have a significant air quality impact on a designated nonattainment area, and
- (B) The potential emissions of the source are less than 100 tons/year for sources in the following categories or less than 250 tons/year for sources not in the following source categories: ..."

By tying the 250/100 ton exemption language to the preceding analysis subsection with the word "and", it imposes, rather appropriately, a burden on sources to prove that their emissions will not have a significant air quality impact even if they are under the 250/100 ton cutoff. If they cannot meet both criteria, they cannot get the exemption.

By eliminating this requirement from the proposed new rule for visibility, sources merely have to fall into the 250/100 ton categories to get the blanket exemption, regardless of their impacts on visibility. This totally circumvents the requirements of the federal Act.

It should also be noted that both the 250 and the 100 ton levels are far above the levels that the Commission has already established as "significant". OAR 340-20-225(22) defines "significant emission rates" for TSP as 25 tons/year and for nitrogen oxides and sulfur dioxide as as 40 tons/year. Thus, for TSP, under the proposed new rule the blanket exemption could be for an emission level 10 times what has been defined by rule as "significant." There is no explanation offered in the staff report as to why such levels should be allowed, given the Commission's own rules and the strict requirements of the federal Act.

III. The analysis of "small" sources committed to by the staff should be part of the rules.

On page 3 of the staff report, the department commits to providing an analysis of the so-called "small sources" locating close to Class I areas and exempted by the rules. There are 2 problems with this.

First, the commitment is only in the staff report, not in the rule. Therefore it has no legal significance.

And second, this commitment has no operational usefulness because it refers only to an analysis. If the department does do an analysis and finds that a source will indeed adversely impact a Class I area, then what? The department has already taken away all its regulatory options by exempting these sources from all provisions of OAR 340-20-220 to 340-20-270. DEQ cannot very well ask a source to comply with regulations that specifically exempt that source, even if the department analysis shows that the source will impact the Class I area.

IV. The Commission should eliminate the blanket exemption rule and establish a variance procedure to deal with unusual circumstances.

The best way for the Commission to comply with Section 169 of the Act and still allow itself some regulatory flexibility would be to abolish the existing exemption and establish a variance procedure to allow sources to seek an exemption on a case by case basis. By establishing criteria for how the variance would be granted, the Commission would weed out most applicants early in the process and only have to deal with those requests where there are extraordinary circumstances that may prevent strict compliance with the rules.

Elimination of the current exemption today and a directive to the staff to draft variance procedures for future adoption would satisfy EPA's concerns with the program and thereby eliminate any possibility that the federal government would move in to set standards for Oregon. Removing the exemption language would simply give Oregon a program more strict than the federal program, which is always allowable under the federal Act.

V. Conclusion

The department's proposed rule is both internally inconsistent and a violation of the visibility provisions of the Clean Air Act. The Commission should reject the proposed new rule and repeal the existing exemption, and develop a variance procedure to deal with unusual circumstances on a case by case basis.



STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Memorandum

To: Fred Hansen through Fred Boley

Date: September 4, 1985

From: JAGillaspie
Subject: Durham NPDES Permit Renewal
Washington County

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED
SEP 9 1985

BACKGROUND

The National Pollutant Discharge Elimination System permit for the Unified Sewerage Agency's Durham plant is up for renewal. Three parties have requested a public hearing or commented on the permit: The Oregon Environmental Council, the Northwest Environmental Defense Fund, and the Lake Oswego Corporation through its attorney's Stoel, Rives, Boley. Each party is concerned about the nutrient loading into the Tualatin River and into Lake Oswego. The Department held a meeting September 4, 1985, with the parties which had requested a public hearing and USA to attempt to reach consensus on the appropriate wording for the permit conditions related to phosphate removal. The current and draft permit reads that phosphates should be removed to the greatest extent practicable from May 1 through October 31.

RESULTS OF MEETING

No consensus could be reached on the permit condition. OEC, NEDF and Lake Oswego believe that no phosphate permit condition can be set until a nutrient standard is set for the Tualatin River. This nutrient standard can then be applied to the USA permits (the other major nutrient contributor from the USA system is the Rock Creek plant. Its permit is up for renewal in the next few months). The staff believes that additional information is needed to accurately and carefully set the statewide nutrient standard. The staff wants more complete information on the effects of the nutrient standard, causes and extent of the problem prior to forwarding a standard to the Commission for adoption. The environmental groups believe that a standard can and should be set in the next 60 days, and that the permit conditions should be drafted to reflect those standards.

FUTURE ACTION

The Environmental Quality Commission requested the staff report back at its September meeting with additional information on a possible nutrient standard. Water Quality Division intends to revise that draft report after this meeting. The report should accurately explore the exact informational needs of the Department in proposing a standard, and should set out a realistic



Durham NPDES Permit Renewal Memo

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but accelerated schedule for gathering the information and setting a standard. Once the schedule has been agreed to at the staff level, the Durham permit issue (hold or set public hearing) should be decided. We should be prepared to discuss the nutrient issue in detail at the September EQC meeting.

JAG/emc

cc: Water Quality Division, DEQ

MMHalliburton

HLSawyer